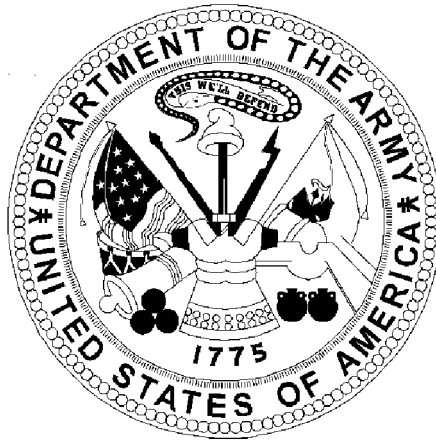


UNCLASSIFIED

Supporting Data FY 2000/2001 Biennial Budget Estimate
Submitted to Congress - February 1999

DESCRIPTIVE SUMMARIES OF THE



**RESEARCH, DEVELOPMENT, TEST AND EVALUATION
Army Appropriation, Budget Activities 4 and 5**

Department of the Army
Office of the Secretary of the Army (Financial Management and Comptroller)

"READINESS THROUGH MODERNIZATION"

VOLUME II

UNCLASSIFIED

UNCLASSIFIED

**DESCRIPTIVE SUMMARIES FOR PROGRAM ELEMENTS
OF THE
RESEARCH, DEVELOPMENT, TEST AND
EVALUATION, ARMY
FY 2000/2001
FEBRUARY 1999**

**VOLUME II
Budget Activities 4 and 5**

**Department of the Army
Office of the Assistant Secretary of the Army (Financial Management and Comptroller)**

UNCLASSIFIED

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

ii

UNCLASSIFIED

UNCLASSIFIED

FY 2000/2001 RDT&E, ARMY
PROGRAM ELEMENT DESCRIPTIVE SUMMARIES

INTRODUCTION AND EXPLANATION OF CONTENTS

1. General. This section has been prepared for the purpose of providing information concerning the Army Research, Development, Test and Evaluation program. The Descriptive Summaries are comprised of R-2 (Army RDT&E Budget Item Justification – Program Element level), R-2A (Army RDT&E Budget Item Justification – project level) and R-3 (Army RDT&E Cost Analysis) Exhibits which provide narrative information on all RDT&E program elements and projects for the FY 1998, 1999, 2000 and 2001 time period.

2. Relationship of the FY 2000 Budget Submission to the FY 1999 Budget submitted to Congress. This paragraph provides a list of program elements restructured, transitioned, or established to provide specific program identification.

A. Program Element Restructures. Explanations for these changes can be found in the narrative sections of the Program Element R-2/R-3 Exhibits.

OLD		NEW
<u>PE/PROJECT</u>	<u>NEW PROJECT TITLE</u>	<u>PE/PROJECT</u>
0203761A/399	Striker (Force XXI Initiative)	0203762A/008
0203761A/414	Radio Frequency Tags (RF Tags – Force XXI Initiative)	0203763A/007
0602618A/H81	Armor Exploratory Development	0602601A/C05
0603005A/C62	Combat Vehicle Survivability	0603005A/221
0603710A/K87	Night Vision Advanced Technology	0603710A/K70
0602710A/K87	Night Vision, ABN	0603710AK86
0603713A/370	Joint Tactical Radio System – Ground Domain Integration	0604805A/615
0604824A/112	COSSI	0708045A/E32
0604280A/152 (BA 3)	Joint Tactical Radio System	0604280A/162 (BA 5)

UNCLASSIFIED

B. FY 2000 Developmental Transitions.

FROM		TO
<u>PE/PROJECT</u>	<u>PROJECT TITLE</u>	<u>PE/PROJECT</u>
0602303A/214	Advanced Missile Demos	0603313A/704
0602720A/896	Environmental Compliance Technology	0603728A/002
0603640A/B91 & 0603854A/C68	Crusader – Advanced Development	0603854A/505
0603804A/266/428 & 0604804A/279/429	Soldier Support Equipment – Advanced Development	0603747A/C09
0603805A/246	Tactical Communications System – Engineering Development	0604805A/629

C. Establishment of New FY 2000 Program Elements/Projects. There are no major system new starts. Minor new initiatives for FY 2000, in addition to Congressionally directed initiatives for FY 1999, are shown below with asterisks. The remaining programs listed are outyear initiatives or restructures beyond FY 1999 or were previously funded from other Defense appropriations.

<u>TITLE</u>	<u>PE/PROJECT</u>
Emergency Preparedness Training	0203610A/E33
Striker (Force XXI Initiative)	0203762A/008
Radio Frequency Tags (RF Tags - Force XXI Initiative)	0203763A/007
Tactical Reconnaissance Sensors	0305206A/K98
Common Imagery Ground/Support Systems (CIGSS) Development	0305208A/956
Photonics Research	0602308A/D01
Sustaining Green Manufacturing	0602720A/947
Electronic Equipment Demanufacture*	0602720A/946
Army Research Office Chemical/Hazardous Material Disposal	0602720A/F27
Multimedia Tactical Adapter*	0602782A/J06
University Partnering for Operational Support	0602784A/T49
Enhanced Geographic Synthetic Aperture Radar (GeoSAR)*	0602784A/T50
Portable Cardiopulmonary Bypass	0602787A/948
Advanced Cancer Detection	0602787A/949

UNCLASSIFIED

C. Establishment of New FY 2000 Program Elements/Projects - continued

<u>TITLE</u>	<u>PE/PROJECT</u>
Teleradiology	0602787A/950
Diagnostics and Surgical Breast Imaging	0602787A/951
Musculoskeletal Injuries*	0602787A/952
Disaster Relief and Emergency Medical Services (DREAMS)	0602787A/953
Telemedicine Testbed	0603002A/800
Digital X-Ray	0603002A/954
Assistive Technology	0603002A/955
Robotic Ground Systems	0603005A/515
Global Broadcast System (GBS) Information Management	0603006A/617
Tactical Simulation Interface Unit (TSIU)	0603308A/979
Range Upgrades	0603308A/988
Anti-Personnel Landmine Alternatives	0603606A/683
Millimeter Wave Technology	0603710A/K89
Joint Tactical Radio System – BA 5	0604280A/162
Trailer Development	0604622A/E50
Forward Repair System – Heavy	0604622A/E51
Digital Topographic Support System – WRAP	0604716A/653
Air and Missile Defense Planning and Control Support (PCS) – WRAP*	0604741A/169
Joint Tactical Radio Systems – Ground Domain Integration	0604805A/615
Tactical Communications System – Engineering Development	0604805A/629
Digital Information Technology Testbed	0605326A/309

D. FY 2000 programs for which funding was shown in the FY 1999 President's Budget Submit (February 1998), but which are no longer funded.

<u>PE/PROJECT</u>	<u>TITLE</u>	<u>BRIEF EXPLANATION</u>
0602308A/636	Army After Next (AAN) Applied Research	Program terminated
0602618A/H81	Armor/Anti-Armor Technology	Program restructured to 0602601A/C05
0602720A/895	Pollution Prevention	Program terminated
0603710A/K87	Night Vision, Combat Vehicle	Program restructured to 0603710A/K70/K86
0603780A/852	SERDP/Environmental Security Technology	Program transferred back to OSD

UNCLASSIFIED

D. FY 2000 programs for which funding was shown in the FY 1999 President's Budget Submit (February 1998), but which are no longer funded - Continued

<u>PE/PROJECT</u>	<u>TITLE</u>	<u>BRIEF EXPLANATION</u>
0603313A/496	Enhanced Fiber Optic Guided Missil (EFOG-M)	ATD Completed
0603645A/Q19	Future Combat System	Program terminated
0604325A/E18	Follow-On to TOW	Program terminated by Congress
0604768A/686	ATACMS Block II	Program restructured to the outyears.
0604804A/H02	Bridge Site Mobility	Program terminated
0605853A	Environmental Conservation	Program transferred to OMA PE 0408853
0605854A	Pollution Prevention	Program transferred to OMA PE 0408854
0605856A	Environmental Complianc	Program transferred to OMA PE 0408856
0605876A	Minor Construction – RPM	Program transferred to OMA PE 0409876
0605878A	Maintenance and Repair – RPM	Program transferred to OMA PE 0409878
0605879A	Real Property (RPS)	Program transferred to OMA PE 0408879
0605896A	Base Operations – RDTE	Program transferred to OMA PE 0408896
0203735A/718	Ground Combat Vehicle HTI	Program terminated

3. Classification. This document contains no classified data. Classified/Special Access Programs which are submitted offline are listed below.

0203735A/DC64	0603005A/DC62/DC66	0603851A
0203808A	0603009A	0603854A/DC68
0301359A	0603020A	0604649A/DG15
0602104A	0603017A	0604328A
0602122A	0603018A	
0602712A/AC61	0603122A	
0602786A/AC60	0603322A	
0603003A/D391	0603710A/DC63/DC65/ DC67	

UNCLASSIFIED

Department of the Army
FY 2000/2001 RDT&E Program

Exhibit R-1

Summary	Date: Feb 1999			
	Thousands of Dollars			
	FY 1998	FY 1999	FY 2000	FY 2001
<u>Summary Recap of Budget Activities</u>				
Basic Research	177,269	183,727	186,872	191,101
Applied Research	663,035	628,091	555,258	563,386
Advanced Technology Development	677,814	653,024	524,925	494,101
Demonstration and Validation	536,628	497,598	405,723	281,322
Engineering and Manufacturing Development	1,130,519	1,267,285	1,495,741	1,893,978
RDT&E Management Support	1,216,038	1,136,691	665,304	739,807
Operational Systems Development	<u>622,010</u>	<u>665,782</u>	<u>592,371</u>	<u>586,883</u>
Total Research Development Test & Eval Army	5,023,313	5,032,198	4,426,194	4,750,578

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

ii

UNCLASSIFIED

Department of the Army
FY 2000/2001 RDT&E Program

Exhibit R-1

Appropriation: 2040 A Research Development Test & Eval Army

Date: Feb 1999

Line	Element	Program	Item	Act	Thousands of Dollars			
					FY 1998	FY 1999	FY 2000	FY 2001
No	Number							
1	0601101A	IN-HOUSE LABORATORY INDEPENDENT RESEARCH		1	13,325	13,574	14,193	14,499
2	0601102A	DEFENSE RESEARCH SCIENCES		1	120,211	125,314	125,613	128,578
3	0601104A	UNIVERSITY AND INDUSTRY RESEARCH CENTERS		1	<u>43,733</u>	<u>44,839</u>	<u>47,066</u>	<u>48,024</u>
		Basic Research			177,269	183,727	186,872	191,101
4	0602104A	TRACTOR ROSE		2	0	0	6,766	6,667
5	0602105A	MATERIALS TECHNOLOGY		2	12,319	13,012	13,849	13,825
6	0602120A	SENSORS AND ELECTRONIC SURVIVABILITY		2	25,545	16,614	22,978	23,723
7	0602122A	TRACTOR HIP		2	6,872	11,603	9,298	7,191
8	0602211A	AVIATION TECHNOLOGY		2	22,698	24,943	30,165	31,184
9	0602270A	EW TECHNOLOGY		2	15,927	16,116	17,487	18,082
10	0602303A	MISSILE TECHNOLOGY		2	22,199	30,130	32,892	31,469
11	0602308A	ADVANCED CONCEPTS AND SIMULATION		2	19,660	21,494	24,955	24,799
12	0602601A	COMBAT VEHICLE AND AUTOMOTIVE TECHNOLOGY		2	62,141	39,208	39,749	41,625
13	0602618A	BALLISTICS TECHNOLOGY		2	36,678	27,229	36,287	37,687
14	0602622A	CHEMICAL, SMOKE AND EQUIP DEFEATING TECHNOLOG		2	3,500	5,078	3,996	4,042
15	0602623A	JOINT SERVICE SMALL ARMS PROGRAM		2	8,714	5,188	5,187	5,428
16	0602624A	WEAPONS AND MUNITIONS TECHNOLOGY		2	27,962	28,913	34,687	37,487
17	0602705A	ELECTRONICS AND ELECTRONIC DEVICES		2	23,974	25,238	25,796	27,719
18	0602709A	NIGHT VISION TECHNOLOGY		2	16,563	19,008	20,111	20,966
19	0602712A	COUNTERMINE SYSTEMS DEVELOPMENT		2	9,928	10,547	10,321	10,453
20	0602716A	HUMAN FACTORS ENGINEERING TECHNOLOGY		2	16,577	16,473	16,392	16,270
21	0602720A	ENVIRONMENTAL QUALITY TECHNOLOGY		2	58,711	64,386	12,758	14,041
22	0602782A	COMMAND, CONTROL, COMMUNICATIONS TECHNOLOGY		2	16,197	22,359	19,613	21,010
23	0602783A	COMPUTER AND SOFTWARE TECHNOLOGY		2	658	2,170	5,210	4,012
24	0602784A	MILITARY ENGINEERING TECHNOLOGY		2	55,978	52,074	41,085	42,820
25	0602785A	MANPOWER/PERSONNEL/TRAINING TECHNOLOGY		2	10,736	8,533	12,071	11,904
26	0602786A	WARFIGHTER TECHNOLOGY		2	17,372	18,420	23,971	23,405
27	0602787A	MEDICAL TECHNOLOGY		2	171,362	138,264	70,136	68,014
28	0602789A	ARMY ARTIFICIAL INTELLIGENCE TECHNOLOGY		2	764	1,156	1,276	1,346
29	0602805A	DUAL USE APPLICATIONS PROGRAM		2	<u>0</u>	<u>9,935</u>	<u>18,222</u>	<u>18,217</u>
		Applied Research			663,035	628,091	555,258	563,386

UNCLASSIFIED

Department of the Army
FY 2000/2001 RDT&E Program

Exhibit R-1

Appropriation: 2040 A Research Development Test & Eval Army

Date: Feb 1999

Line	Program Element No	Item Number	Act	Thousands of Dollars			
				FY 1998	FY 1999	FY 2000	FY 2001
30	0603001A	WARFIGHTER ADVANCED TECHNOLOGY	3	33,126	30,430	31,287	16,337
31	0603002A	MEDICAL ADVANCED TECHNOLOGY	3	202,504	229,325	10,539	12,591
32	0603003A	AVIATION ADVANCED TECHNOLOGY	3	85,778	44,834	34,167	38,585
33	0603004A	WEAPONS AND MUNITIONS ADVANCED TECHNOLOGY	3	23,694	24,858	39,893	38,686
34	0603005A	COMBAT VEHICLE AND AUTOMATIVE ADVANCED TECH	3	38,694	61,300	90,941	97,200
35	0603006A	COMMAND, CONTROL, COMM ADVANCED TECHNOLOGY	3	24,884	23,747	20,883	21,508
36	0603007A	MANPOWER, PERSONNEL AND TRAINING ADV TECH	3	3,913	2,949	3,030	3,074
37	0603009A	TRACTOR HIKE	3	13,901	9,807	12,553	13,537
38	0603013A	TRACTOR DIRT	3	3,178	48	0	0
39	0603017A	TRACTOR RED	3	5,190	4,559	4,582	2,830
40	0603020A	TRACTOR ROSE	3	10,379	2,001	11,151	10,950
41	0603105A	MILITARY HIV RESEARCH	3	17,541	5,672	5,976	5,926
42	0603122A	TRACTOR HIP	3	0	0	2,432	986
43	0603238A	AIR DEFENSE/PRECISION STRIKE TECHNOLOGY	3	12,174	9,907	24,618	21,434
44	0603270A	EW TECHNOLOGY	3	7,672	11,425	16,169	17,008
45	0603313A	MISSILE AND ROCKET ADVANCED TECHNOLOGY	3	91,280	71,394	43,639	24,011
46	0603322A	TRACTOR GEM	3	5,758	4,377	2,665	3,083
47	0603606A	LANDMINE WARFARE AND BARRIER ADV TECHNOLOGY	3	30,529	23,777	47,456	44,935
48	0603607A	JOINT SERVICE SMALL ARMS PROGRAM	3	8,784	9,608	4,869	5,468
49	0603654A	LINE-OF-SIGHT TECHNOLOGY DEMO	3	4,683	11,920	41,619	52,940
50	0603710A	NIGHT VISION ADVANCED TECHNOLOGY	3	17,628	27,273	36,628	37,035
51	0603728A	ENVIRONMENTAL QUALITY TECHNOLOGY DEVELOPMENT	3	0	0	1,337	1,626
52	0603734A	MILITARY ENGINEERING ADVANCED TECHNOLOGY	3	18,922	15,523	15,881	5,240
53	0603772A	ADV TACTICAL COMPUTER SCIENCE & SENSOR TECH	3	17,602	18,257	22,610	19,111
54	0604280A	JOINT TACTICAL RADIO SYSTEM	3	0	10,033	0	0
		Advanced Technology Development		677,814	653,024	524,925	494,101
55	0603308A	ARMY MISSILE DEFENSE SYSTEMS INTEGRATION	4	72,009	38,957	12,353	12,580
56	0603619A	LANDMINE WARFARE AND BARRIER - ADV DEV	4	14,845	6,707	4,099	19,832
57	0603639A	ARMAMENT ENHANCEMENT INITIATIVE	4	36,036	35,784	36,937	42,511
58	0603640A	ARTILLERY PROPELLANT DEVELOPMENT	4	7,983	0	0	0
59	0603645A	ARMORED SYSTEMS MODERNIZATION-ADVANCED DEVEL	4	1,130	0	0	0
60	0603653A	ADVANCED TANK ARMAMENT SYSTEM	4	8,485	8,867	1,937	8,870
61	0603713A	ARMY DATA DISTRIBUTION SYSTEM	4	19,785	15,162	10	17

UNCLASSIFIED

UNCLASSIFIED

Department of the Army
FY 2000/2001 RDT&E Program

Exhibit R-1

Appropriation: 2040 A Research Development Test & Eval Army

Date: Feb 1999

Line	Element	Program	Item	Act	Thousands of Dollars			
					FY 1998	FY 1999	FY 2000	FY 2001
No	Number							
			x					
62	0603747A		SOLDIER SUPPORT AND SURVIVABILITY	4	6,196	7,522	12,804	13,642
63	0603766A		TAC EXPLOIT OF NAT CAP (TENCAP)-DEM/VAL TIARA	4	18,957	0	0	0
64	0603774A		NIGHT VISION SYSTEMS ADVANCED DEVELOPMENT	4	2,152	2,664	3,188	4,036
65	0603790A		NATO RESEARCH AND DEVELOPMENT (H)	4	7,885	4,132	1,872	1,971
66	0603801A		AVIATION - ADV DEV	4	14,869	11,404	5,746	5,870
67	0603802A		WEAPONS AND MUNITIONS - ADV DEV	4	0	0	1,751	2,810
68	0603804A		LOGISTICS AND ENGINEER EQUIPMENT - ADV DEV	4	6,570	18,845	6,514	6,265
69	0603805A		CBT SERVICE SUPPORT CONTROL SYS EVAL & ANALYS	4	7,037	14,056	11,062	8,839
70	0603807A		MEDICAL SYSTEMS - ADV DEV	4	9,181	11,329	12,723	12,235
71	0603851A		TRACTOR EARL	4	1,779	960	1,087	985
72	0603854A		ARTILLERY SYSTEMS DEMONSTRATION/VALIDATION	4	301,160	313,526	282,937	120,457
73	0603856A		SCAMP BLOCK II (SPACE)	4	<u>569</u>	<u>7,683</u>	<u>10,703</u>	<u>20,402</u>
			Demonstration and Validation		536,628	497,598	405,723	281,322
74	0604201A		AIRCRAFT AVIONICS	5	32,504	14,780	6,372	2,990
75	0604223A		COMANCHE	5	262,601	364,784	427,069	565,800
76	0604270A		EW DEVELOPMENT	5	84,106	86,258	78,603	81,037
77	0604280A		JOINT TACTICAL RADIO SYSTEM	5	0	0	36,797	68,296
78	0604321A		ALL SOURCE ANALYSIS SYSTEM	5	25,275	33,776	49,684	46,399
79	0604325A		FOLLOW-ON TO TOW	5	9,002	0	0	0
80	0604328A		TRACTOR EARL	5	11	1,777	2,848	2,934
81	0604601A		INFANTRY SUPPORT WEAPONS	5	0	0	0	1,747
82	0604604A		MEDIUM TACTICAL VEHICLES	5	2,917	0	1,973	1,971
83	0604609A		SMOKE, OBSCURANT AND TARGET DEFEATING SYS-ED	5	0	701	918	2,480
84	0604611A		JAVELIN (AWWS-M)	5	7,512	5,242	493	493
85	0604619A		LANDMINE WARFARE	5	21,448	23,036	13,318	0
86	0604622A		FAMILY OF HEAVY TACTICAL VEHICLES	5	4,683	8,244	0	0
87	0604633A		AIR TRAFFIC CONTROL	5	6,750	1,724	1,981	2,035
88	0604640A		ADVANCED COMMAND AND CONTROL VEHICLE	5	9,382	0	0	0
89	0604641A		TACTICAL UNMANNED GROUND VEHICLE	5	2,397	2,452	0	0
90	0604642A		LIGHT TACTICLE WHEELED VEHICLE	5	0	0	7,498	9,954
91	0604645A		ARMORED SYSTEMS MODERNIZATION (ASM)-ENG DEV	5	0	4,470	2,899	6,064
92	0604649A		ENGINEER MOBILITY EQUIPMENT DEVELOPMENT	5	52,388	70,590	58,321	37,741

UNCLASSIFIED

UNCLASSIFIED

Department of the Army
FY 2000/2001 RDT&E Program

Exhibit R-1

Appropriation: 2040 A Research Development Test & Eval Army

Date: Feb 1999

Line	Program Element No	Item Number	Act	Thousands of Dollars			
				FY 1998	FY 1999	FY 2000	FY 2001
93	0604710A	NIGHT VISION SYSTEMS - ENG DEV	5	33,338	21,167	30,644	31,270
		xi					
94	0604713A	COMBAT FEEDING, CLOTHING, AND EQUIPMENT	5	58,579	67,674	110,829	136,899
95	0604715A	NON-SYSTEM TRAINING DEVICES - ENG DEV	5	75,977	63,778	71,034	51,925
96	0604716A	TERRAIN INFORMATION - ENG DEV	5	2,831	6,157	5,348	6,120
97	0604726A	INTEGRATED METEOROLOGICAL SUPPORT SYSTEM	5	1,823	1,777	2,318	1,782
98	0604739A	JTT/CIBS-M (TIARA)	5	4,215	4,400	4,552	6,096
99	0604741A	AIR DEFENSE C2I - ENG DEV	5	20,591	11,458	7,995	8,942
100	0604746A	AUTOMATIC TEST EQUIPMENT DEVELOPMENT	5	7,925	9,962	10,252	12,632
101	0604760A	DISTRIBUTIVE INTERACTIVE SIMULATIONS ENG DEV	5	19,572	2,727	7,657	20,646
102	0604766A	TAC EXPLOIT NAT CAP (TENCAP)-EMD (TIARA)	5	17,221	43,950	70,940	57,008
103	0604768A	BRILLIANT ANTI-ARMOR SUBMUNITION(BAT)	5	225,241	128,521	128,026	112,149
104	0604770A	JOINT SURVEILLANCE/TARGET ATTACK RADAR SYSTEM	5	6,464	5,463	11,535	26,871
105	0604778A	POSITIONING SYS DEVEL (SPACE)	5	405	377	443	435
106	0604780A	COMBINED ARMS TACTICAL TRAINER (CATT)	5	14,950	7,472	19,925	18,627
107	0604801A	AVIATION - ENG DEV	5	5,402	11,519	6,312	9,264
108	0604802A	WEAPONS AND MUNITIONS - ENG DEV	5	18,114	35,566	54,943	55,077
109	0604804A	LOGISTICS & ENGINEER EQUIPMENT - ENG DEV	5	21,591	25,820	22,996	16,074
110	0604805A	COMMAND, CONTROL, COMMUNICATIONS SYSTEMS - ED	5	14,352	16,280	23,987	23,842
111	0604807A	MEDICAL MATERIEL/MED BIO DEFENSE EQUIPMENT ED	5	4,200	5,299	9,705	9,448
112	0604808A	LANDMINE WARFARE/BARRIER - ENG DEV	5	4,040	52,680	40,916	39,187
113	0604814A	SENSE AND DESTROY ARMOR - ENG DEV	5	10,485	31,602	19,366	9,775
114	0604817A	COMBAT IDENTIFICATION	5	19,227	13,379	8,658	2,395
115	0604818A	ARMY TACTICAL COMM & CONT HARDWARE & SOFTWARE	5	20,600	32,548	35,299	33,620
116	0604820A	RADAR DEVELOPMENT	5	0	6,742	5,128	8,481
117	0604823A	FIREFINDER	5	2,400	20,583	32,353	37,589
118	0604824A	COSSI	5	0	21,457	0	0
119	0604854A	ARTILLERY SYSTEMS - ENGINEERING DEVELOPMENT	5	0	1,093	65,806	327,883
		Engineering and Manufacturing Development		1,130,519	1,267,285	1,495,741	1,893,978
120	0604256A	THREAT SIMULATOR DEVELOPMENT	6	15,501	12,837	13,680	13,791
121	0604258A	TARGET SYSTEMS DEVELOPMENT	6	11,149	13,038	13,397	14,423
122	0604759A	MAJOR TEST & EVALUATION INVESTMENT	6	40,256	37,030	39,380	40,190
123	0605103A	RAND ARROYO CENTER	6	15,983	16,685	17,656	17,995

UNCLASSIFIED

UNCLASSIFIED

Department of the Army
FY 2000/2001 RDT&E Program

Exhibit R-1

Appropriation: 2040 A Research Development Test & Eval Army

Date: Feb 1999

Line	Program Element No	Item Number	Act	Thousands of Dollars			
				FY 1998	FY 1999	FY 2000	FY 2001
124	0605301A	ARMY KWAJALEIN ATOLL	6	117,096	133,027	140,344	140,958
125	0605326A	CONCEPTS EXPERIMENTATION	6	0	13,948	16,990	73,006
		xii					
126	0605502A	SMALL BUS INV RSCH/SMALL BUS TECH PILOT PROG	6	106,048	0	0	0
127	0605601A	ARMY TEST RANGES AND FACILITIES	6	114,970	118,571	137,193	134,335
128	0605602A	ARMY TECHNOLOGY & SUSTAINING INSTRUMENTATION	6	30,518	43,638	30,470	33,332
129	0605604A	SURVIVABILITY/LETHALITY ANALYSIS	6	30,263	34,131	30,138	33,916
130	0605605A	DOD HIGH ENERGY LASER SYS TEST FAC (HELSTF)	6	28,048	23,848	14,230	14,260
131	0605606A	AIRCRAFT CERTIFICATION	6	2,734	2,893	3,021	3,169
132	0605702A	METEOROLOGICAL SUPPORT TO RDT&E ACTIVITIES	6	6,235	6,628	6,843	6,952
133	0605706A	MATERIEL SYSTEMS ANALYSIS	6	27,120	9,617	8,796	8,718
134	0605709A	EXPLOITATION OF FOREIGN ITEMS	6	7,277	4,004	4,143	3,605
135	0605712A	SUPPORT OF OPERATIONAL TESTING	6	74,656	65,460	68,946	69,038
136	0605716A	ARMY EVALUATION CENTER	6	0	25,313	24,255	26,362
137	0605801A	PROGRAMWIDE ACTIVITIES	6	79,128	64,047	64,121	73,259
138	0605803A	TECHNICAL INFORMATION ACTIVITIES	6	15,795	16,006	15,973	16,330
139	0605805A	MUNITIONS STANDARDZION EFFECTIVENESS & SAFETY	6	10,707	10,422	10,537	10,814
140	0605853A	ENVIRONMENTAL CONSERVATION	6	2,435	3,174	0	0
141	0605854A	POLLUTION PREVENTION	6	4,773	10,624	0	0
142	0605856A	ENVIRONMENTAL COMPLIANCE-RDT&E	6	55,058	48,986	0	0
143	0605876A	MINOR CONSTUCTION (RPM) - RDTE	6	4,003	4,177	0	0
144	0605878A	MAINTENANCE AND REPAIR (RPM) - RDTE	6	79,639	80,059	0	0
145	0605879A	REAL PROPERTY SERVICES (RPS)	6	84,756	86,441	0	0
146	0605896A	BASE OPERATIONS-RDT&E	6	224,968	229,573	0	0
147	0605898A	MANAGEMENT HEADQUARTERS (RSCH & DEVELOPMENT)	6	24,361	22,514	5,191	5,354
148	0909999A	CLOSED ACCOUNT ADJUSTMENT	6	<u>2,561</u>	<u>0</u>	<u>0</u>	<u>0</u>
		RDT&E Management Support		1,216,038	1,136,691	665,304	739,807
149	0603778A	MLRS PRODUCT IMPROVEMENT PROGRAM	7	33,022	25,159	36,540	58,591
150	0102419A	JOINT LAND ATTACK CRUISE MISSILE DEFENSE (JLENS)	7	29,910	14,572	24,903	25,141
151	0203610A	EMERGENCY PREPAREDNESS TRAINING	7	0	15,000	0	0
152	0203726A	ADV FIELD ARTILLERY TACTICAL DATA SYSTEM	7	36,225	34,646	36,222	34,528
153	0203735A	COMBAT VEHICLE IMPROVEMENT PROGRAMS	7	151,520	104,000	29,544	23,938
154	0203740A	MANEUVER CONTROL SYSTEM	7	23,712	28,623	45,125	25,682

UNCLASSIFIED

UNCLASSIFIED

Department of the Army
FY 2000/2001 RDT&E Program

Exhibit R-1

Appropriation: 2040 A Research Development Test & Eval Army

Date: Feb 1999

Line	Element	Program	Act	Thousands of Dollars			
				FY 1998	FY 1999	FY 2000	FY 2001
No	Number	Item					
155	0203744A	AIRCRAFT MODIFICATIONS/PRODUCT IMPROV PROGRAM	7	21,847	26,628	51,644	61,033
156	0203752A	AIRCRAFT ENGINE COMPONENT IMPROVEMENT PROGRAM	7	2,756	6,901	2,900	2,946
157	0203758A	DIGITIZATION	7	91,248	46,240	28,180	26,830
		xiii					
158	0203759A	FORCE XXI BATTLE CMD, BRIGADE & BELOW	7	0	52,121	44,225	28,876
159	0203761A	FORCE XXI WARFIGHTING RAPID ACQUISITION PGM	7	8,686	26,942	55,921	66,058
160	0203762A	STRIKER (WRAP)	7	3,654	0	0	0
161	0203763A	RADIO FREQUENCY TECHNOLOGY	7	1,592	0	0	0
162	0203801A	MISSILE/AIR DEFENSE PRODUCT IMPRV PROGRAM	7	29,471	15,151	29,985	28,649
163	0203802A	OTHER MISSILE PRODUCT IMPROVEMENT PROGRAMS	7	1,613	1,239	9,914	14,817
164	0203806A	TRACTOR RUT	7	1,967	0	0	0
165	0203808A	TRACTOR CARD	7	6,146	3,967	3,898	3,861
166	0208010A	JOINT TACTICAL COMMUNICATIONS PROG (TRI-TAC)	7	20,815	35,664	18,432	19,666
167	0208053A	JOINT TACTICAL GRD STATION (TIARA)	7	4,835	12,148	28,061	6,306
168	0301359A	SPECIAL ARMY PROGRAM	7	10,543	9,704	6,584	5,471
169	0303140A	INFORMATION SYSTEMS SECURITY PROGRAM	7	11,406	11,338	9,426	8,178
170	0303142A	SATCOM GROUND ENVIRO (SPACE)	7	45,679	52,447	36,230	47,743
171	0303150A	ARMY GLOBAL C2 SYS	7	14,094	17,339	11,606	14,295
172	0305114A	TRAFFIC CNTL/APPROACH/LANDING SYS (JPALS)	7	610	0	0	788
173	0305128A	SECURITY AND INTELLIGENCE ACTIVITIES	7	468	944	0	0
174	0305204A	TACTICAL UNMANNED AERIAL VEHICLE	7	0	53,224	3,866	4,309
175	0305206A	AIRBORNE RECONNAISSANCE ADVANCED DEVELOPMENT	7	0	7,451	4,932	4,928
176	0305208A	DISTRIBUTED COMMON GROUND SYSTEMS	7	0	8,853	8,066	7,943
177	0708045A	MANUFACTURING TECHNOLOGY	7	60,044	52,501	66,167	66,306
178	1001018A	NATO JSTARS - TIARA	7	<u>10,147</u>	<u>2,980</u>	<u>0</u>	<u>0</u>
		Operational Systems Development		622,010	665,782	592,371	586,883
Total Research Development Test & Eval Army				5,023,313	5,032,198	4,426,194	4,750,578

UNCLASSIFIED

TABLE OF CONTENTS

	PE	PROGRAM ELEMENT TITLE	PAGE
#1 - BASIC RESEARCH			
1	0601101A	In-House Laboratory Independent Research	1
2	0601102A	Defense Research Sciences	11
3	0601104A	University and Industry Research Centers	85
#2 - APPLIED RESEARCH			
5	0602105A	Materials Technolog	105
6	0602120A	Sensors and Electronic Survivability	111
8	0602211A	Aviation Technolog	123
9	0602270A	Electronic Warfare (EW) Technolog	135
10	0602303A	Missile Technolog	143
11	0602308A	Advanced Concepts and Simulations	151
12	0602601A	Combat Vehicle and Automotive Technolog	159
13	0602618A	Ballistics Technolog	177
14	0602622A	Chemical, Smoke and Equipment Defeating Technolog	187
15	0602623A	Joint Service Small Arms Program	191
16	0602624A	Weapons and Munitions Technolog	195
17	0602705A	Electronics and Electronic Devices	207
18	0602709A	Night Vision Technolog	217
19	0602712A	Countermine Applied Research	223
20	0602716A	Human Factors Engineering Technolog	231
21	0602720A	Environmental Quality Technolog	237

TABLE OF CONTENTS

	PE	PROGRAM ELEMENT TITLE	PAGE
#2 - APPLIED RESEARCH - Continued			
22	0602782A	Command, Control, Communications Technolog	267
23	0602783A	Computer and Software Technolog	277
24	0602784A	Military Engineering Technolog	281
25	0602785A	Manpower/Personnel/Training Technolog	303
26	0602786A	Logistics Technolog	307
27	0602787A	Medical Technolog	319
28	0602789A	Army Artificial Intelligence Technolog	363
29	0602805A	Dual Use Applications Program	365
#3 - ADVANCED TECHNOLOGY DEVELOPMENT			
30	0603001A	Logistics Advanced Technolog	367
31	0603002A	Medical Advanced Technolog	381
32	0603003A	Aviation Advanced Technology	415
33	0603004A	Weapons and Munitions Advanced Technolog	431
34	0603005A	Combat Vehicle and Automotive Advanced Technolog	439
35	0603006A	Command, Control and Communications Advanced Technolog	457
36	0603007A	Manpower, Personnel and Training Advanced Technolog	471
41	0603105A	Military Human Immunodeficiency Virus (HIV) Research	475
43	0603238A	Air Defense/Precision Strike Technolog	479
44	0603270A	Electronic Warfare (EW) Technolog	487
45	0603313A	Missile and Rocket Advanced Technology	495

TABLE OF CONTENTS

PE	PROGRAM ELEMENT TITLE	PAGE
#3 - ADVANCED TECHNOLOGY DEVELOPMENT - Continued		
47	0603606A Landmine Warfare and Barrier Advanced Technolog	517
48	0603607A Joint Service Small Arms Program	527
49	0603654A Line-of-Sight Technology Demonstration	531
50	0603710A Night Vision Advanced Technolog	535
51	0603728A Environmental Quality Technology Developmen	545
52	0603734A Military Engineering Advanced Technolog	547
53	0603772A Advanced Tactical Computer Science and Sensor Technolog	553
54	0604280A Joint Tactical Radio	561
#4 - DEMONSTRATION AND VALIDATION		
55	0603308A Army Missile Defense Systems Integration	563
56	0603619A Landmine Warfare and Barrier - Advanced Developmen	577
57	0603639A Armament Enhancement Initiative	587
58	0603640A Artillery Propellant Developmen	597
59	0603645A Armored Systems Modernization - Advanced Developmen	599
60	0603653A Advanced Tank Armament System	601
61	0603713A Army Data Distribution System	607
62	0603747A Soldier Support and Survivability	617
63	0603766A Tactical Exploitation of National Capabilities (TENCAP) - Demonstration/Validation (TIARA	631
64	0603774A Night Vision Systems - Advanced Development	635
65	0603790A NATO Research & Developmen	641

TABLE OF CONTENTS

PE	PROGRAM ELEMENT TITLE	PAGE
#4 - DEMONSTRATION AND VALIDATION - Continued		
66	0603801A Aviation - Advanced Development	651
67	0603802A Weapons and Munitions - Advanced Developmen	665
68	0603804A Logistics and Engineering Equipment - Advanced Developmen	671
69	0603805A Combat Service Support Control Systems Evaluation and Analysis	701
70	0603807A Medical Systems - Advanced Developmen	709
72	0603854A Artillery Systems Advanced Developmen	727
73	0603856A SCAMP Block II (Space)	735
#5 - ENGINEERING AND MANUFACTURING DEVELOPMENT		
74	0604201A Aircraft Avionics	741
75	0604223A Comanche	747
76	0604270A Electronic Warfare (EW) Developmen	759
77	0604280A Joint Tactical Radio	785
78	0604321A All Source Analysis System (TIARA)	789
81	0604601A Infantry Support Weapons	801
82	0604604A Medium Tactical Vehicles	805
83	0604609A Smoke, Obscurant and Target Defeating System - Engineering Developmen	809
84	0604611A Javelin	813
85	0604619A Landmine Warfare	817
86	0604622A Family of Heavy Tactical Vehicles	821
87	0604633A Air Traffic Control	823

TABLE OF CONTENTS

PE	PROGRAM ELEMENT TITLE	PAGE
#5 - ENGINEERING AND MANUFACTURING DEVELOPMENT - Continued		
88	0604640A Advanced Command and Control Vehicle	829
89	0604641A Tactical Unmanned Ground Vehicle	831
90	0604642A Light Tactical Wheeled Vehicle	835
91	0604645A Armored Systems Modernization (ASM) - Engineering Developmen	843
92	0604649A Engineer Mobility Equipment Developmen	853
93	0604710A Night Vision Systems - Engineering Development	863
94	0604713A Combat Feeding, Clothing, and Equipmen	881
95	0604715A Non-System Training Devices - Engineering Development	907
96	0604716A Terrain Information - Engineering Development (TIARA)	921
97	0604726A Integrated Meteorological System (IMETS) (TIARA)	933
98	0604739A JTT/CIBS-M (TIARA)	939
99	0604741A Air Defense Command, Control, Intelligence - Engineering Developmen	945
100	0604746A Automatic Test Equipment Developmen	955
101	0604760A Distributive Interactive Simulations - Engineering Developmen	965
102	0604766A Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA)	981
103	0604768A Brilliant Anti-Armor (BAT) Submunition	987
104	0604770A Joint Surveillance/Target Attack Radar Syste	1007
105	0604778A Positioning Systems Development (SPACE)	1013
106	0604780A Combined Arms Tactical Trainer (CATT)	1015
107	0604801A Aviation - Engineering Development	1025
108	0604802A Weapons and Munitions - Engineering Development	1029
109	0604804A Logistics & Engineer Equipment - Engineering Developmen	1055

TABLE OF CONTENTS

PE	PROGRAM ELEMENT TITLE	PAGE	
#5 - ENGINEERING AND MANUFACTURING DEVELOPMENT - Continued			
110	0604805A	Command, Control, Communications Systems - Engineering Developmen	1087
111	0604807A	Medical Materiel - Engineering Developmen	1117
112	0604808A	Landmine Warfare/Barrier - Engineering Developmen	1133
113	0604814A	Sense and Destroy Armor Munition - Engineering Development	1145
114	0604817A	Combat Identification	1151
115	0604818A	Army Tactical Communications and Control Hardware & Software	1161
116	0604820A	Radar Developmen	1173
117	0604823A	Firefinder	1179
118	0604824A	Commercial Operating & Support Savings Initiative (COSSI)	1185
119	0604854A	Artillery Systems - Engineering Developmen	1187
#6 - MANAGEMENT AND SUPPORT			
120	0604256A	Threat Simulator Developmen	1199
121	0604258A	Target Systems Developmen	1203
122	0604759A	Major Test and Evaluation Investment	1211
123	0605103A	Rand Arroyo Center	1219
124	0605301A	Army Kwajalein Atoll	1223
125	0605326A	Concept Experimentation Program	1227
127	0605601A	Army Test Ranges and Facilities	1231
128	0605602A	Army Test Technology and Sustaining Instrumentation	1239
129	0605604A	Survivability/Lethality Analysis	1251

TABLE OF CONTENTS

PE	PROGRAM ELEMENT TITLE	PAGE
#6 - MANAGEMENT AND SUPPORT - Continued		
130	0605605A DOD High Energy Laser Systems Test Facility (HELSTF)	1269
131	0605606A Aircraft Certification	1271
132	0605702A Meteorological Support to Research, Development, Testing & Evaluation Activities	1273
133	0605706A Materiel Systems Analysis	1277
134	0605709A Exploitation of Foreign Items	1285
135	0605712A Support of Operational Testing	1289
136	0605716A Army Evaluation Center	1305
137	0605801A Programwide Activities	1309
138	0605803A Technical Information Activities	1315
139	0605805A Munitions Standardization Effectiveness and Safety	1333
140	0605853A Environmental Conservati	1347
141	0605854A Pollution Prevention	1353
142	0605856A Environmental Compliance - Research, Development, Testing & Evaluation	1361
143	0605876A Minor Construction - Research, Development, Testing & Evaluati	1369
144	0605878A Maintenance and Repair - Research, Development, Testing & Evaluation	1373
145	0605879A Real Property Services (RPS)	1379
146	0605896A Base Operations - Research, Development, Testing & Evaluation	1383
147	0605898A Management Headquarters (Research and Development)	1389
#7 - OPERATIONAL SYSTEM DEVELOPMENT		
150	0102419A Joint Land Attack Cruise Missile Defense (JLENS)	1393

TABLE OF CONTENTS

PE	PROGRAM ELEMENT TITLE	PAGE	
#7 - OPERATIONAL SYSTEM DEVELOPMENT - Continued			
151	0203610A	Emergency Preparedness Training	1399
152	0203726A	Advanced Field Artillery Tactical Data System	1401
153	0203735A	Combat Vehicle Improvement Program	1409
154	0203740A	Maneuver Control System	1427
155	0203744A	Aircraft Modifications/Product Improvement Program	1433
156	0203752A	Aircraft Engine Component Improvement Program	1449
157	0203758A	Digitization	1457
158	0203759A	Force XXI Battle Command, Brigade & Below (FBCB2)	1465
159	0203761A	Force XXI Initiatives - Warfighting Rapid Acquisition Program (WRAP)	1471
160	0203762A	Striker (Warfighting Rapid Acquisition Program)	1475
161	0203763A	Radio Frequency Technology (RF Tags)	1479
162	0203801A	Missile/Air Defense Product Improvement Program	1483
163	0203802A	Other Missile Product Improvement Programs	1493
166	0208010A	Joint Tactical Communications Program (TRI-TAC)	1505
167	0208053A	Joint Tactical Ground Station (TIARA)	1511
169	0303140A	Information Systems Security Program	1515
170	0303142A	Satellite Command (SATCOM) Ground Environment	1525
171	0303150A	Army Global Command and Control System (AGCCS)	1549
172	0305114A	Joint Precision Approach Landing System (JPALS)	1555
173	0305128A	Security and Intelligence Activities	1557
174	0305204A	Tactical Unmanned Aerial Vehicles	1559
175	0305206A	Tactical Reconnaissance Sensors	1565

TABLE OF CONTENTS

PE	PROGRAM ELEMENT TITLE	PAGE
#7 - OPERATIONAL SYSTEM DEVELOPMENT - Continued		
176	0305208A Common Imagery Ground/Surface System (CIG/SS)	1567
149	0603778A Multiple Launch Rocket System Product Improvement Program	1571
177	0708045A Army Industrial Preparedness Manufacturing Technolog	1585
178	1001018A NATO Joint STARS	1601

ALPHABETICAL LISTING

Program Element Title	PE	PAGE
Advanced Command and Control Vehicle	0604640A	829
Advanced Concepts and Simulations	0602308A	151
Advanced Field Artillery Tactical Data System	0203726A	1401
Advanced Tactical Computer Science and Sensor Technolog	0603772A	553
Advanced Tank Armament System	0603653A	601
Air Defense Command, Control, Intelligence - Engineering Developmen	0604741A	945
Air Defense/Precision Strike Technolog	0603238A	479
Air Traffic Control	0604633A	823
Aircraft Avionics	0604201A	741
Aircraft Certification	0605606A	1271
Aircraft Engine Component Improvement Program	0203752A	1449
Aircraft Modifications/Product Improvement Program	0203744A	1433
All Source Analysis System (TIARA)	0604321A	789
Armament Enhancement Initiative	0603639A	587
Armored Systems Modernization - Advanced Developmen	0603645A	599
Armored Systems Modernization (ASM) - Engineering Developmen	0604645A	843
Army Artificial Intelligence Technolog	0602789A	363
Army Data Distribution System	0603713A	607
Army Evaluation Center	0605716A	1305
Army Global Command and Control System (AGCCS)	0303150A	1549
Army Industrial Preparedness Manufacturing Technolog	0708045A	1585
Army Kwajalein Atoll	0605301A	1223
Army Missile Defense Systems Integration	0603308A	563
Army Tactical Communications and Control Hardware & Software	0604818A	1161
Army Test Ranges and Facilities	0605601A	1231

ALPHABETICAL LISTING

Program Element Title	PE	PAGE
Army Test Technology and Sustaining Instrumentation	0605602A	1239
Artillery Propellant Developmen	0603640A	597
Artillery Systems - Engineering Developmen	0604854A	1187
Artillery Systems Advanced Developmen	0603854A	727
Automatic Test Equipment Developmen	0604746A	955
Aviation - Advanced Development	0603801A	651
Aviation - Engineering Development	0604801A	1025
Aviation Advanced Technology	0603003A	415
Aviation Technolog	0602211A	123
Ballistics Technolog	0602618A	177
Base Operations - Research, Development, Testing & Evaluation	0605896A	1383
Brilliant Anti-Armor (BAT) Submunition	0604768A	987
Chemical, Smoke and Equipment Defeating Technolog	0602622A	187
Comanche	0604223A	747
Combat Feeding, Clothing, and Equipmen	0604713A	881
Combat Identification	0604817A	1151
Combat Service Support Control Systems Evaluation and Analysis	0603805A	701
Combat Vehicle and Automotive Advanced Technolog	0603005A	439
Combat Vehicle and Automotive Technolog	0602601A	159
Combat Vehicle Improvement Program	0203735A	1409
Combined Arms Tactical Trainer (CATT)	0604780A	1015
Command, Control and Communications Advanced Technolog	0603006A	457
Command, Control, Communications Systems - Engineering Developmen	0604805A	1087
Command, Control, Communications Technolog	0602782A	267
Commercial Operating & Support Savings Initiative (COSSI)	0604824A	1185

ALPHABETICAL LISTING

Program Element Title	PE	PAGE
Common Imagery Ground/Surface System (CIG/SS)	0305208A	1567
Computer and Software Technolog	0602783A	277
Concept Experimentation Program	0605326A	1227
Countermine Applied Research	0602712A	223
Defense Research Sciences	0601102A	11
Digitization	0203758A	1457
Distributive Interactive Simulations - Engineering Developmen	0604760A	965
DOD High Energy Laser Systems Test Facility (HELSTF)	0605605A	1269
Dual Use Applications Program	0602805A	365
Electronic Warfare (EW) Technolog	0603270A	487
Electronic Warfare (EW) Technolog	0602270A	135
Electronic Warfare (EW) Developmen	0604270A	759
Electronics and Electronic Devices	0602705A	207
Emergency Preparedness Training	0203610A	1399
Engineer Mobility Equipment Developmen	0604649A	853
Environmental Compliance - Research, Development, Testing & Evaluation	0605856A	1361
Environmental Conservati	0605853A	1347
Environmental Quality Technolog	0602720A	237
Environmental Quality Technology Developmen	0603728A	545
Exploitation of Foreign Items	0605709A	1285
Family of Heavy Tactical Vehicles	0604622A	821
Firefinder	0604823A	1179
Force XXI Battle Command, Brigade & Below (FBCB2)	0203759A	1465
Force XXI Initiatives - Warfighting Rapid Acquisition Program (WRAP)	0203761A	1471
Human Factors Engineering Technolog	0602716A	231

ALPHABETICAL LISTING

Program Element Title	PE	PAGE
In-House Laboratory Independent Research	0601101A	1
Infantry Support Weapons	0604601A	801
Information Systems Security Program	0303140A	1515
Integrated Meteorological System (IMETS) (TIARA)	0604726A	933
Javelin	0604611A	813
Joint Land Attack Cruise Missile Defense (JLENS)	0102419A	1393
Joint Precision Approach Landing System (JPALS)	0305114A	1555
Joint Service Small Arms Program	0603607A	527
Joint Service Small Arms Program	0602623A	191
Joint Surveillance/Target Attack Radar System	0604770A	1007
Joint Tactical Communications Program (TRI-TAC)	0208010A	1505
Joint Tactical Ground Station (TIARA)	0208053A	1511
Joint Tactical Radio	0604280A	785
Joint Tactical Radio	0604280A	561
JTT/CIBS-M (TIARA)	0604739A	939
Landmine Warfare	0604619A	817
Landmine Warfare and Barrier - Advanced Development	0603619A	577
Landmine Warfare and Barrier Advanced Technology	0603606A	517
Landmine Warfare/Barrier - Engineering Development	0604808A	1133
Light Tactical Wheeled Vehicle	0604642A	835
Line-of-Sight Technology Demonstration	0603654A	531
Logistics & Engineer Equipment - Engineering Development	0604804A	1055
Logistics and Engineering Equipment - Advanced Development	0603804A	671
Logistics Advanced Technology	0603001A	367
Logistics Technology	0602786A	307

ALPHABETICAL LISTING

Program Element Title	PE	PAGE
Maintenance and Repair - Research, Development, Testing & Evaluation	0605878A	1373
Major Test and Evaluation Investment	0604759A	1211
Management Headquarters (Research and Development)	0605898A	1389
Maneuver Control System	0203740A	1427
Manpower, Personnel and Training Advanced Technolog	0603007A	471
Manpower/Personnel/Training Technolog	0602785A	303
Materials Technolog	0602105A	105
Materiel Systems Analysis	0605706A	1277
Medical Advanced Technolog	0603002A	381
Medical Materiel - Engineering Developmen	0604807A	1117
Medical Systems - Advanced Developmen	0603807A	709
Medical Technolog	0602787A	319
Medium Tactical Vehicles	0604604A	805
Meteorological Support to Research, Development, Testing & Evaluation Activities	0605702A	1273
Military Engineering Advanced Technolog	0603734A	547
Military Engineering Technolog	0602784A	281
Military Human Immunodeficiency Virus (HIV) Research	0603105A	475
Minor Construction - Research, Development, Testing & Evaluati	0605876A	1369
Missile and Rocket Advanced Technology	0603313A	495
Missile Technology	0602303A	143
Missile/Air Defense Product Improvement Program	0203801A	1483
Multiple Launch Rocket System Product Improvement Program	0603778A	1571
Munitions Standardization Effectiveness and Safety	0605805A	1333
NATO Joint STARS	1001018A	1601
NATO Research & Developmen	0603790A	641

ALPHABETICAL LISTING

Program Element Title	PE	PAGE
Night Vision Advanced Technolog	0603710A	535
Night Vision Systems - Advanced Development	0603774A	635
Night Vision Systems - Engineering Development	0604710A	863
Night Vision Technolog	0602709A	217
Non-System Training Devices - Engineering Development	0604715A	907
Other Missile Product Improvement Programs	0203802A	1493
Pollution Prevention	0605854A	1353
Positioning Systems Development (SPACE)	0604778A	1013
Programwide Activities	0605801A	1309
Radar Developmen	0604820A	1173
Radio Frequency Technology (RF Tags)	0203763A	1479
Rand Arroyo Center	0605103A	1219
Real Property Services (RPS)	0605879A	1379
Satellite Command (SATCOM) Ground Environment	0303142A	1525
SCAMP Block II (Space)	0603856A	735
Security and Intelligence Activities	0305128A	1557
Sense and Destroy Armor Munition - Engineering Development	0604814A	1145
Sensors and Electronic Survivability	0602120A	111
Smoke, Obscurant and Target Defeating System - Engineering Developmen	0604609A	809
Soldier Support and Survivability	0603747A	617
Striker (Warfighting Rapid Acquisition Program)	0203762A	1475
Support of Operational Testing	0605712A	1289
Survivability/Lethality Analysis	0605604A	1251
Tactical Exploitation of National Capabilities (TENCAP) - Demonstration/Validation (TIARA)	0603766A	631
Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Developmen (TIARA)	0604766A	981

ALPHABETICAL LISTING

Program Element Title	PE	PAGE
Tactical Reconnaissance Sensors	0305206A	1565
Tactical Unmanned Aerial Vehicles	0305204A	1559
Tactical Unmanned Ground Vehicle	0604641A	831
Target Systems Developmen	0604258A	1203
Technical Information Activities	0605803A	1315
Terrain Information - Engineering Development (TIARA)	0604716A	921
Threat Simulator Developmen	0604256A	1199
University and Industry Research Centers	0601104A	85
Weapons and Munitions - Advanced Developmen	0603802A	665
Weapons and Munitions - Engineering Development	0604802A	1029
Weapons and Munitions Advanced Technolog	0603004A	431
Weapons and Munitions Technolog	0602624A	195

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603308A Army Missile Defense Systems Integration
--	--

COST (<i>In Thousands</i>)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
Total Program Element (PE) Cost	72009	38957	12353	12580	15823	16563	22271	22724	Continuing	Continuing
D979 Tactical Simulation Interface Unit (TSIU)	0	1490	0	0	0	0	0	0	0	1490
D988 Range Upgrades	0	4967	0	0	0	0	0	0	0	4967
D989 Nautilus/THEL	47738	12417	0	0	0	0	0	0	0	60155
D990 Space and Missile Defense (SMD) Integration	3664	2958	3203	3385	3566	3886	9282	9358	Continuing	Continuing
D997 Space and Missile Defense Battlelab (SMDBL)	20607	17125	9150	9195	12257	12677	12989	13366	Continuing	Continuing

A. Mission Description and Budget Item Justification: In an 18 April 1997 Memorandum of Agreement between the US Army Training and Doctrine Command (TRADOC) and the US Army Space and Strategic Defense Command (USASSDC), USASSDC was designated the specified proponent for space and National Missile Defense (NMD) and the overall integrator for Theater Missile Defense (TMD). In response to this designation, the Missile Defense Battle Integration Center (MDBIC) and other existing USASSDC elements were reorganized and merged to form the Space and Missile Defense Battle Lab (SMDBL). The SMDBL is chartered to develop warfighting concepts, focus military science and technology research, and conduct warfighting experiments. In addition, the Force Development and Integration Center (FDIC) was established to execute the specified proponent activities of SMDC. This program element funds the integration and synchronization of the functions, activities, events, and actions associated with space and NMD Doctrine, Training, Leader Development, Organization, Materiel Development and Soldiers (DTLOMS) development and implementation as well as the systems analysis, studies, and experimentation designed to validate and integrate the pillars of TMD: active defense, passive defense, attack operations, and battle management/command, control, communications, computers, and intelligence functions which are executed by the FDIC.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE February 1999

BUDGET ACTIVIT
4 - Demonstration and Validation

PE NUMBER AND TITLE
0603308A Army Missile Defense Systems
Integration

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	73304	12240	12226	12202
Appropriated Value	75638	39240		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-2334	-283		
b. SBIR / STT	-1838			
c. Omnibus or Other Above Threshold Reductions	-607			
d. Below Threshold Reprogramming	1150			
e. Rescissions				
Adjustments to Budget Years Since FY 1999 PB			127	378
Current Budget Submit (FY 2000 / 2001 PB)	72009	38957	12353	12580

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603308A Army Missile Defense Systems Integration				PROJECT D979		
COST <i>(In Thousands)</i>	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost t Complete	Total Cost
D979 Tactical Simulation Interface Unit (TSIU)	0	1490	0	0	0	0	0	0	0	1490
<p>A. <u>Mission Description and Budget Item Justification:</u> As the Army moves to digitization, Force XXI and beyond many command and control functions that were once done by grease pencil and map overlays have been replaced by automated, computer controlled workstations. Until only recently, training soldiers on their workstations with realistic simulations was not possible. The Tactical Simulation Interface Unit (TSIU) bridges the gap between the simulation environments and command and control systems by interfacing with simulations compliant with the Institute of Electrical and Electronic Engineers (IEEE) standards governing the use of Distributed Interactive Simulations. The TSIU is a computer "black box" which interfaces, processes, and routes computer generated simulations to the appropriate Command, Control, Communications, Computers, Intelligence (C4I) systems. The C4I operator then inputs orders from his workstation, causing the process to be reversed and the simulation to respond accordingly. It is the hardware to permit "human in the loop" training to take place using simulations on tactical workstations. The program was accepted as a WRAP initiative, permitting a rapid acquisition of the system to take place.</p> <p>FY 1998 Accomplishments: Project not funded in FY 1998</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 1451 Development and preparation of documentation, standards, qualifications, and other requirements taking the TSIU from the research laboratory to an acquisition program. Defining and documenting message protocols, linking simulations for aviation, artillery fires, Unmanned Aerial Vehicles, and air defense to tactical message formats, including: Variable Message Format; U.S. Messages Test Format; Moving Target Indicator and Position; Tactical Data Link-B (TADIL-B), Tactical Information Broadcast Services (TBIS), TRAP Data Dissemination (TDDS); Secure Comm Data Link (SCDL); and FAAD Data Link (FDL). • 39 SBIR/STTR Program <p>Total 1490</p> <p>FY 2000 Planned Program: Project not funded in FY 2000</p> <p>FY 2001 Planned Program: Project not funded in FY 2001</p> <p>B. <u>Other Program Funding Summary:</u> Not applicable</p>										
Project D979			Page 3 of 14 Pages				Exhibit R-2A (PE 0603308A)			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603308A Army Missile Defense Systems Integration	PROJECT D979
---	---	------------------------

C. Acquisition Strategy: Not applicable

D. Schedule Profile	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
All work complete in FY 99				2 nd -4 th Qtr						

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603308A Army Missile Defense Systems	PROJECT D988
		Integration

COST (In Thousands)	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost t Complete	Total Cost
D988 Range Upgrades	0	4967	0	0	0	0	0	0	0	4967

A. Mission Description and Budget Item Justification: These funds will complete range upgrades in support of Atmospheric Interceptor Technology flight tests beginning in August 1999. In late 1999, the U.S. Army Space and Missile Defense Command will participate in the second of two flights from Kodiak Island, Alaska, designed to provide an opportunity for demonstrating various elements potentially suitable for incorporation into a ballistic missile defense system. The flight is a follow-on to the successful missile defense risk reduction flight conducted from Vandenberg Air Force Base, California, on November 5, 1997, and the ballistic missile defense demonstration flight conducted from Kodiak Launch Complex, Alaska, on November 5, 1998.

FY 1998 Accomplishments: Project not funded in FY 1998

FY 1999 Planned Program:

- 4836 Funding will be used to support test infrastructure upgrades for flight tests involving Atmospheric Interceptor Technology (AIT) intercepto components at the Kodiak Launch Complex on Kodiak Island, AK.
 - 131 SBIR/STTR Programs
- Total 4967

FY 2000 Planned Program: Project not funded in FY 2000

FY 2001 Planned Program: Project not funded in FY 2001

C. Acquisition Strategy: Flight test program is continuous. Various performers will conduct planned upgrades.

D. Schedule Profile	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2004	FY 2005
Initiate long-lead and Fabrication		2 nd Qtr							
Complete Fabrication/Integration		4 th Qtr							

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603308A Army Missile Defense Systems Integration	PROJECT D989
--	--	-------------------------------

COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D989 Nautilus/THEL	47738	12417	0	0	0	0	0	0	0	60155

A. Mission Description and Justification: These funds will complete the Tactical High Energy Laser (THEL) Advanced Concept Technology Demonstration (ACTD) and field testing at the High Energy Laser Systems Test Facility (HELSTF). The THEL ACTD is a joint U.S./Israel program to design, fabricate, and test a tactical-sized THEL demonstrator to evaluate the effectiveness of high energy lasers (HELs) to defeat the threat posed by Katyusha and similar short range artillery rockets. The THEL ACTD is an integration effort that supports the active defense pillar of Theater Missile Defense.

FY 1998 Accomplishments:

- 7700 Completed the THEL demonstrator integration and testing at TRW.
 - 7848 Conducted system engineering, analysis, system integration activities, and field test support.
 - 29600 Initiated integration at HELSTF and began field testing.
 - 2590 Conducted program management.
- Total 47738

FY 1999 Planned Program:

- 12088 Complete integration and field testing at HELSTF.
 - 329 SBIR/STTR Programs.
- Total 12417

FY 2000 Planned Program: Project not funded in FY 2000

FY 2001 Planned Program: Project not funded in FY 2001

B. <u>Other Program Funding Summary</u>	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
THEL – Israel	14100									14100
THEL – HELSTF PE 0605605A/E97	9461									9461

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603308A Army Missile Defense Systems Integration	PROJECT D989
---	---	------------------------

C. **Acquisition Strategy:** The THEL ACTD has been assigned an urgent priority by the Secretary of Defense. A sole source letter contract was executed with TRW, Inc. to deliver the THEL demonstrator by 31 Mar 1998. The letter contract was definitized on 19 Jan 97. A change order to this contract was definitized on 1 Jul 98 to include field testing of the demonstrator at HELSTF, to be completed by 1 July 99.

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2004</u>	<u>FY 2005</u>
Initiate Long Leads & Fabrication									
Complete Fabrication/Integration	2 nd Qtr								
Complete TRW THEL ACTD Testing		2 nd Qtr							
Complete HELSTF Field Testing		4 th Qtr							

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999			
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603308A Army Missile Defense Systems Integration				PROJECT D990			
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost	
D990 Space and Missile Defense (SMD) Integration	3664	2958	3203	3385	3566	3886	9282	9358	Continuing	Continuing	
<p>A. <u>Mission Description and Justification:</u> In an 18 April 1997 Memorandum of Agreement between the US Army Training and Doctrine Command (TRADOC) and the US Army Space and Strategic Defense Command (USASSDC), USASSDC [now US Army Space and Missile Defense Command (USASMDC)] was designated the specified proponent for space and National Missile Defense (NMD) and the overall integrator for Theater Missile Defense (TMD). This project funds the Force Development and Integration Center, a major support element of USASMDC, created to execute the integration and synchronization of the functions associated with space and NMD Doctrine, Training, Leader Development, Organization, Materiel Development and Soldiers (DTLOMS) development and implementation. In addition, this project funds systems analysis, studies, and experimentation designed to validate and integrate the milestones, decisions and pillars of TMD (active defense, passive defense, attack operations, and battle management/command, control, communications, computers, and intelligence functions). These inter-pillar and intra-pilla products, required to accomplish the integrated TMD mission, exceed the scope of other programs. This project funds the production of hardware and software solutions, doctrinal and procedural solutions, interfaces, and architectures for TMD. This program also supports Aviation and Artillery attack operation systems and passive missile defense materiel solutions.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 2164 Integrated and synchronized the functions associated with space and NMD DTLOMS development and implementation and planed, developed, and conducted management oversight of testing and exercise prototypical hardware and software related to integrated TMD operations, enhancements to models and simulations, systems analysis and studies regarding TMD issues. • 1500 Conducted the Short-range missile defense with Optimized Radar Distribution (SWORD) System Concept risk mitigation study. <p>Total 3664</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 2953 Integrate and synchronize the functions associated with space and NMD DTLOMS development and implementation; and plan, develop, and conduct management oversight of testing and exercise prototypical hardware and software related to integrated TMD operations, enhancements to models and simulations, systems analysis and studies regarding TMD issues. • 5 SBIR/STTR Programs <p>Total 2958</p>											
Project D990			Page 8 of 14 Pages				Exhibit R-2A (PE 0603308A)				

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE February 1999
BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603308A Army Missile Defense Systems Integration	PROJECT D990

FY 2000 Planned Program:

- 3203 Integrate and synchronize the functions associated with space and NMD DTLOMS development and implementation; and plan, develop, and conduct management oversight of testing and exercise prototypical hardware and software related to integrated TMD operations, enhancements to models and simulations, systems analysis and studies regarding TMD, NMD and Space issues.
- Total 3203

FY 2001 Planned Program:

- 3385 Integrate and synchronize the functions associated with space and NMD DTLOMS development and implementation; and plan, develop, and conduct management oversight of testing and exercise prototypical hardware and software related to integrated TMD operations, enhancements to models and simulations, systems analysis and studies regarding TMD, NMD and Space issues.
- Total 3385

B. Other Program Funding Summary: There are no other related efforts.

C. Acquisition Strategy: Program is continuous.

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2004</u>	<u>FY 2005</u>
Continue Integration/Synchronization of space and NMD DTLOM support.	1 st -4 th Qtr	1 st -4 th Qtr	1 st -4 th Qtr	1 st -4 th Qtr	1 st -4 th Qtr	1 st -4 th Qtr	1 st -4 th Qtr	1 st -4 th Qtr	1 st -4 th Qtr

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603308A Army Missile Defense Systems Integration	PROJECT D990
---	---	------------------------

I. Product Development: Not applicable

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Govt Support and Support Contracts	MIPR CPFF	Various, VA	5350	2958		3203		3385		Cont	14896	
Subtotal Support Costs:			5350	2958		3203		3385			14896	

III. Test and Evaluation: Not applicable

IV. Management Services: Not applicable

Project Total Cost:			5350	2958		3203		3385			14896	
---------------------	--	--	------	------	--	------	--	------	--	--	-------	--

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603308A Army Missile Defense Systems Integration	PROJECT D997
--	--	-------------------------------

COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D997 Space and Missile Defense Battlelab (SMDBL)	20607	17125	9150	9195	12257	12677	12989	13366	Continuing	Continuing

A. Mission Description and Justification: This project funds the Space and Missile Defense Battlelab (SMDBL), (formerly the Missile Defense Battle Integration Center (SMDVIC). The SMDBL is chartered to develop warfighting concepts, focus military science and technology research, and conduct warfighting experiments. It will provide users and materiel developers a synthetic battlefield context for integrating missile defense and space assets; supporting requirement activities and providing distributed, netted computing resources, models and simulations efforts for warfighter exercises, analytical and virtual prototyping activities. To accomplish this, the SMDBL will concentrate on: experiments, exercises and training; modeling and simulation (M&S); concepts and initiatives; analysis; the Synthetic Battlefield Environment (SBE); the Extended Air Defense Testbed (EADTB); and the Extended Air Defense Simulation (EADSIM).

FY 1998 Accomplishments:

- 6600 Participated in/supported Army and joint exercises/training and warfighting experiments, including: Unified Endeavor (Provided ACOM Theate Ballistic Missile "TMD" engagement resolution); 11th ADA BDE Training (Provided full Tactical Operation Center "TOC" mission rehearsal training); 32nd AAMDC (provided critical home station training, required as a result of hand-over of the TMD TOC from ARSPACE to the AAMDC); Ulchi Focus Lens (provided tactical station stimulation real time to the 32nd AAMDC at Korea); DIV AWE (supported TRADOC Training, and provided "Leave Behind" capability at FT. Hood with associated training); Desert Thunder (provided tactical station stimulation real time to the 32nd AAMDC during U.S. Forces deployment to Kuwait); Canyon Radiance; Army After Next wargaming and technology analysis; Joint Project Optic Windmill-3 (Dutch National Joint and combined TMD exercise involving all four pillars of TMD with participation from most NATO allies). Experiments included Early Warning Pager; weather communications; deployable weather Satellite workstation; established a black/white integration team to develop a "Campaign Plan" for expanding the cooperation and integration between Army Space Program Office and SMDBL; developed initial experiment plans for the Discoverer II Program.
- 3100 Completed additional development of the SBE, to include various interfaces to enhance the realism and fidelity of missile defense training, exercises, and testing. Provided enhancements to the Synthetic Battlefield Center (SBC) to support both customer and internally funded exercises, and warfighter tactical work station stimulation testing.
- 4850 Conducted "stand alone: training and further enhanced After Action Review (AAR) capabilities for Experiments, Exercises, Training and Analysis. Stood up the Hardware/Software Integration Center (HSIC) for conducting experiments and operational analysis.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE
BUDGET ACTIVIT		February 1999
4 - Demonstration and Validation	PE NUMBER AND TITLE	PROJECT
	0603308A Army Missile Defense Systems Integration	D997
<ul style="list-style-type: none"> 5287 Performed missile defense studies and analyses, utilizing enhanced models and simulations, incorporating existing testbeds and migrating to the DoD's High-level Architecture (HLA). Provided modeling, simulation and advanced visualization capabilities for battle lab experiments, trainers, material developers and other decision makers via the infrastructure located in the Advanced Research Center (ARC), Simulation Center, and HSIC. <p>FY 1998 Accomplishments: (continued)</p> <p>Developed and fielded prototype simulation/training tools including: ARTIC (provides low cost connectivity between tactical networks and digital equipment); Tactical/Simulation Interface Unit (TSIU) (bridge between the DIS/CCSIL simulation and tactical system environment for interactive training) STALKER (integrates imagery, spatial features, elevation, terrain and intelligence information to provide information to tactical decision makers).</p> <ul style="list-style-type: none"> 770 Established the Modeling and Simulation Working Group and associated Integrated Product Teams for Space and Missile Defense. Developed and submitted three Warfighter Rapid Acquisition Program (WRAP) candidates with one being tentatively selected. <p>Total 20607</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> 4680 Plan develop, execute SMDBL experiments in coordination with TRADOC requirements and procedures. Experiments include ABCS Integration, Early Warning Exp., DOCCC Sys. Exp., HSIC Integr Dev/Ops. 3250 Plan, develop, execute SMDBL participation on Army/Joint Exercise and Training events, to include RS99, TMDI 98/99, III Corps WFX, JPOW. 32nd AAMDC Home Sta Training. 7100 Model and Simulation infrastructure to support experimentation, exercise and training, and analysis programs. Includes mgmt of M&S domains, V & V of multiple models and simulations; HLA conversion; visualization and geographic mapping simulations, interface with DOD "ONESAF" and "WARSIM", EADTB mods, development and maintenance of simulation and tactical interfaces, linking M&S with tactical workstations, maturation of TSIU to DIICOE stds. 1725 Operational analysis support to space and missile defense experiment programs and support to other SMDC and Army programs r3equiring operational analysis, including participation on TRADOC and DOD IPTs for CMD, development and review of WRAP, CEP, ACT II, STO, ATD, ACTD candidates and proposals. 370 SBIR/STTR Programs support. <p>Total 17125</p> <p>FY 2000 Planned Program:</p>		
Project D997	Page 12 of 14 Pages	Exhibit R-2A (PE 0603308A)

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE February 1999
BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603308A Army Missile Defense Systems Integration	PROJECT D997
<ul style="list-style-type: none"> • 5566 Conduct battle lab experiments and exercises focusing on space and missile defense operational and integration issues. Implement Discoverer II Program. • 1360 Continue development of virtual prototypes of potential battlefield systems and high fidelity synthetic battlefield environments. • 857 Implement and utilize long-haul, distributed after action review capabilities; maintain M&S infrastructure required for experimentation, exercise and analysis program using tools such as ARTIC and TSIU to increase exercise realism and reduce cost. <p>FY 2000 Planned Program: (continued)</p> <ul style="list-style-type: none"> • 1367 Conduct follow-on missile defense and space operation support studies and analyses. Continue to manage the Army Space Exploitation Demonstration Program. <p>Total 9150</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 5611 Conduct battle lab experiments and exercises focusing on space and missile defense operational and integration issues. • 1260 Continue development of virtual prototypes of potential and existing battlefield systems and high fidelity synthetic battlefield environments. • 960 Implement and utilize long-haul, distributed after action review capabilities; maintain modeling and simulation infrastructure required for experimentation, exercise, and analysis programs using appropriate tools to increase experiment and exercise realism and to reduce cost. • 1364 Conduct follow-on missile defense and space operation support studies and analyses. Continue to manage the Army Space Exploitation Demonstration Program. <p>Total 9195</p> <p>B. <u>Other Program Funding Summary:</u> There are no other related efforts.</p> <p>C. <u>Acquisition Strategy:</u> Program is continuous.</p> <p>D. <u>Schedule Profile:</u> Program is continuous.</p>		
Project D997	Page 13 of 14 Pages	Exhibit R-2A (PE 0603308A)

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603308A Army Missile Defense Systems Integration	PROJECT D997
--	--	-------------------------------

I. Product Development: Not applicable

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Experiments, Exercises, Enhancements, Maintenance, analysis	CPAF/CPFF	Various, AL & CO	16107	12625		4650		4695		Cont	38077	
b. Govt Support and Support Contracts	MIPR	Various, AL & CO	4500	4500		4500		4500		Cont	18000	
Subtotal Support Costs:			20607	17125		9150		9195			56077	

III. Test and Evaluation: Not applicable

IV. Management Services: Not applicable

Project Total Cost:			20607	17125		9150		9195			56077	
---------------------	--	--	-------	-------	--	------	--	------	--	--	-------	--

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE February 1999																																																				
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603619A Landmine Warfare and Barrier - Advanced Development																																																								
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost																																																		
Total Program Element (PE) Cost	14845	6707	4099	19832	19712	18443	35898	44243	Continuing	Continuing																																																		
D005 Landmine Advanced Development	685	3920	4099	12840	11466	9000	30121	37572	Continuing	Continuing																																																		
D606 Countermine/Barrier Advanced Development	14160	2787	0	6992	8246	9443	5777	6671	Continuing	Continuing																																																		
<p>A. <u>Mission Description and Budget Item Justification:</u> This program element provides for advanced development of new mine and countermine systems by prototyping modern munitions technology, advanced development sensors, logic networks, fuzes, power sources, warhead components and modules into complete systems. It provides for advanced development of the Intelligent Combat Outpost (Raptor) which will significantly enhance minefield effectiveness through coordinated attack/tactics and elimination of overwatch forces. It also provides for the initiation and/or continuation of advanced development of the Airborne Stand-off Minefield Detection System (ASTAMIDS), the Handheld Stand-off Minefield Detection System (HSTAMIDS), Ground Stand-off Minefield Detection System (GSTAMIDS) and for mine neutralization with the Explosive Stand-off Minefield Clearer (ESMC) , Mine Hunter/Killer (MHK), and Anti-personnel Obstacle Breaching System (APOBS).</p>																																																												
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">B. <u>Program Change Summary</u></th> <th style="text-align: center;"><u>FY 1998</u></th> <th style="text-align: center;"><u>FY 1999</u></th> <th style="text-align: center;"><u>FY 2000</u></th> <th style="text-align: center;"><u>FY 2001</u></th> </tr> </thead> <tbody> <tr> <td>Previous President's Budget (FY 1999 PB)</td> <td align="right">24299</td> <td align="right">6778</td> <td align="right">3877</td> <td align="right">6546</td> </tr> <tr> <td>Appropriated Value</td> <td align="right">18882</td> <td align="right">6778</td> <td></td> <td></td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>a. Congressional General Reductions</td> <td align="right">-583</td> <td align="right">-71</td> <td></td> <td></td> </tr> <tr> <td>b. SBIR/STT</td> <td align="right">-459</td> <td></td> <td></td> <td></td> </tr> <tr> <td>c. Omnibus or Other Above Threshold Reduction</td> <td align="right">-151</td> <td></td> <td></td> <td></td> </tr> <tr> <td>d. Below threshold reprogramming</td> <td align="right">-2844</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Adjustments to Budget Years Since FY 1999 PB</td> <td></td> <td></td> <td align="right">+222</td> <td align="right">+13286</td> </tr> <tr> <td>Current Budget Submit (FY 2000 / 2001 PB)</td> <td align="right">14845</td> <td align="right">6707</td> <td align="right">4099</td> <td align="right">19832</td> </tr> </tbody> </table>											B. <u>Program Change Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	Previous President's Budget (FY 1999 PB)	24299	6778	3877	6546	Appropriated Value	18882	6778			Adjustments to Appropriated Value					a. Congressional General Reductions	-583	-71			b. SBIR/STT	-459				c. Omnibus or Other Above Threshold Reduction	-151				d. Below threshold reprogramming	-2844				Adjustments to Budget Years Since FY 1999 PB			+222	+13286	Current Budget Submit (FY 2000 / 2001 PB)	14845	6707	4099	19832
B. <u>Program Change Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>																																																								
Previous President's Budget (FY 1999 PB)	24299	6778	3877	6546																																																								
Appropriated Value	18882	6778																																																										
Adjustments to Appropriated Value																																																												
a. Congressional General Reductions	-583	-71																																																										
b. SBIR/STT	-459																																																											
c. Omnibus or Other Above Threshold Reduction	-151																																																											
d. Below threshold reprogramming	-2844																																																											
Adjustments to Budget Years Since FY 1999 PB			+222	+13286																																																								
Current Budget Submit (FY 2000 / 2001 PB)	14845	6707	4099	19832																																																								
<p>Change Summary Explanation:</p> <p style="margin-left: 20px;">Funding: In FY98 \$2.8M reprogrammed to project D088 (WAM) in PE 064619A. In FY01 \$13.3M transferred from Raptor EMD (D016) in PE 064808A to continue PDRR phase.</p> <p style="margin-left: 20px;">Schedule: Raptor program restructured, PDRR phase completion extended from 4Q00 to 4Q02</p>																																																												

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE September 1998		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603619A Landmine Warfare and Barrier - Advanced Development					PROJECT D005	
COST (<i>In Thousands</i>)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D005 Landmine Advanced Development	685	3920	4099	12840	11466	9000	30121	37572	Continuing	Continuing
<p>A. <u>Mission Description and Justification:</u> Intelligent Combat Outpost (Raptor) will improve the capability of smart mines/munitions used by the United States Arm and will enhance the effectiveness of current and future mines/munitions by providing real time targeting data, increased situational awareness, and coordinated attack capabilities while eliminating the need for overwatch forces.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 435 Updated and improved Raptor simulato • 150 Conducted Analysis of alternatives to resolve systems and operational concept questions • 100 Participated in the Maneuver Control System IOT&E <p>Total 685</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 1100 Conduct Raptor interoperability study, trade off analysis and system integration analysis • 1416 Conduct MSII and initiate design and development of Rapto • 500 Initiate Raptor software algorithm development • 800 Continue Raptor Simulation development and participate in Army Simulation Experiments • 104 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 3920</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 1091 Continue Raptor design and development of gateway, sensor, and control station • 1062 Continue Raptor software algorithm development • 825 Fabricate Raptor components (5 sets) for test and Evaluation • 500 Conduct Raptor gateway, sensor, and control station testing • 621 Perform Raptor system integration and analysis <p>Total 4099</p>										
Project D005			Page 2 of 9 Pages				Exhibit R-2A (PE 0603619A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE September 1998
--	-------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603619A Landmine Warfare and Barrier - Advanced Development	PROJECT D005
--	---	-------------------------------

FY 2001 Planned Program:

- 5400 Continue Raptor design development
- 4000 Fabricate Raptor test hardware (25 systems)
- 2100 Conduct Raptor Engineering Development test
- 529 Conduct Raptor engineering user test and evaluation
- 811 Continue Raptor modeling and simulation efforts

Total 12840

B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
RDTE, A Budget Activity 5										
PE 0604808, Project D016, Mine Systems Engineering Development		25829	18363	12615	9007	22098	19357	9613	Cont	Cont

C. Acquisition Strategy: For Raptor, a Sole Source PDRR contract will be awarded to Textron Defense Systems (Wide Area Munition developer). Decision to continue sole source into EMD phase or initiate a competitive solicitation will be evaluated based on PDRR phase results.

D. Schedule Profile	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>
Raptor MS I			3Q							
Complete Eng. Dev. testing					3Q					
Complete Engineering user tests					3Q					
Milestone II						4Q				
Complete IOT&E								4Q		
Milestone III									4Q	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE **September 1998**

BUDGET ACTIVIT
4 - Demonstration and Validation

PE NUMBER AND TITLE
**0603619A Landmine Warfare and Barrier -
Advanced Development**

PROJECT
D005

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Raptor PDRR	CPIF	TBD	0	1736	TBD	1499	Oct 99	8100	Oct 00	8500	19835	
Subtotal Product Development				1736		1499		8100		8500	19835	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Eng. support (Raptor)		ARDEC	541	1100	Oct 98	1150	Oct 99	1300	Oct 00	1500	5591	
Raptor analysis/eng. support		Various, TBD	0	730	Oct 98	750	Oct 99	800	Oct 00	648	2928	
Subtotal Support Costs:			541	1830		1900		2100		2148	8519	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Test support (RAPTOR)		TECOM	0	100	Dec 98	500	Feb 00	2440	Feb 01	800	3840	
Subtotal Test and Evaluation				100		500		2440		800	3840	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Program management		PM-MCD	144	150	Oct 98	200	Oct 99	200	Oct 00	200	894	
SBIR/STTR				104							104	
Subtotal Management Services:			144	254		200		200		200	998	

Project Total Cost:			685	3920		4099		12840		11648	33192	
---------------------	--	--	-----	------	--	------	--	-------	--	-------	-------	--

DATE
September 1998

BUDGET ACTIVIT
4 - Demonstration and Validation

PE NUMBER AND TITLE
**0603619A Landmine Warfare and Barrier -
Advanced Development**

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE September 1998		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603619A Landmine Warfare and Barrier - Advanced Development					PROJECT D606	
COST <i>(In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D606 Countermine/Barrier Advanced Development	14160	2787	0	6992	8246	9443	5777	6671	Continuing	Continuing

A. Mission Description and Justification: This project provides for advanced development of new countermine systems by prototyping advanced sensors for evaluation of neutralizing, clearing, breaching and detection concepts which will enhance the U.S. capability in countermine warfare. The program includes the Airborne Stand-off Minefield Detection System (ASTAMIDS), the Handheld Stand-off Minefield Detection System (HSTAMIDS), Ground Stand-off Minefield Detection System (GSTAMIDS), Explosive Stand-off Minefield Clearer (ESMC), Mine Hunter/Killer (MHK), and Anti-personnel Obstacle Breaching System (APOBS). The program provides for proof-of-principle for these systems.

FY 1998 Accomplishments:

- 1200 Fabricated ESMC hardware and conduct Government/Contractor testing
 - 1000 Conducted Source Selection Board and evaluated GSTAMIDS
 - 3507 Fabricated two GSTAMIDS Prototype systems
 - 1032 Prepared GSTAMIDS MS II documentation and EMD contract solicitation
 - 5223 Completed HSTAMIDS PDRR design and contractor testing
 - 1393 Conducted HSTAMIDS DT/EUT&E
 - 805 Prepared HSTAMIDS MSII Documentation and EMD Contract solicitation
- Total 14160

FY 1999 Planned Program:

- 570 GSTAMIDS hardware/software growth studies
 - 200 Analyze HSTAMIDS DT/EUTE test results
 - 517 Conduct studies on HSTAMIDS hardware/software improvements
 - 1426 Correct HSTAMIDS performance shortfalls
 - 74 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 2787

FY 2000 Planned Program: Project not funded in FY 2000

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE September 1998
--	-------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603619A Landmine Warfare and Barrier - Advanced Development	PROJECT D606
--	---	-------------------------------

FY 2001 Planned Program:

- 800 Conduct Mine Hunter/Killer Source Selection
- 1100 Conduct Mine Hunter/Killer trade off analysis and system integration analysis
- 3692 Initiate PDRR design for Mine Hunter/Kille
- 1400 Initiate fabrication of two Mine Hunter/Killer test prototypes

Total 6992

B. <u>Other Program Funding Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To Compl</u>	<u>Total Cost</u>
RDTE, A Budget Activity 5										
PE 0604808A, Project D415, Mine Neutralization/ Detection	4040	26851	22553	26572	28794	20822	11848	11830	Cont	Cont
OPA 3, A Appropriation										
E72800, APOBS			5668	6580						12430
R68200, HSTAMIDS				9992	13000	13125	6883	6930		
R68100, GSTAMIDS					10285	16099	16663	19720		
M80100, IVMMD	12113	3765								
S11500, ASTAMIDS						6100				

C. Acquisition Strategy: : ASTAMIDS, and HSTAMIDS - competing contractors (2 for each project) competitively selected for PDRR phase which will lead to a down select for the EMD phase. GSTAMIDS will leverage the Vehicle Mounted Mine Detector ATD effort with two competitively selected contractors for a total of five competing contractors in PDRR. One contractor will continue into EMD. Successful EMD contractors will be awarded initial production contract (sole source) with multiple option year buys. ESMC competitively selected PDRR phase contractor will be awarded a sole source EMD contract upon completion of PDRR phase and MDA approval. Sole source Production contract with multiple options is anticipated for successful EMD contractor.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)							DATE September 1998
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603619A Landmine Warfare and Barrier - Advanced Development			PROJECT D606

D. Schedule Profile	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2004	FY 2005
MS II for ESMC		2Q*								
MS II for GSTAMIDS			1Q*							
GSTAMIDS Block I MS III					4Q					
GSTAMIDS Block II MS III							4Q			
HSTAMIDS MS II					1Q					
HSTAMIDS MS III							4Q			

*Indicates a completed effort

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE **September 1998**

BUDGET ACTIVIT
4 - Demonstration and Validation

PE NUMBER AND TITLE
**0603619A Landmine Warfare and Barrier -
Advanced Development**

PROJECT
D606

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
GSTAMIDS PDRR	CPIF	Coleman Research	764	124	Oct98	0		0		0	888	
GSTAMIDS PDRR	CPIF	Computer Devices of Canada	891	54	Oct 98	0		0		0	945	
GSTAMIDS PDRR	CPIF	GDE	0	138	Nov 98						138	
HSTAMIDS PDRR	CPIF	Coleman Research	4441	365	Nov 98						4806	
HSTAMIDS PDRR	CPIF	GDE	7895	292	Nov 98						8187	
HSTAMIDS PDRR	CPIF	Various	0	1140							1140	
MHK PDRR	CPIF	TBD	0	0		0		6192	Dec 00	Cont	6192	
Subtotal Product Development:			13991	2113				6192			22296	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
GSTAMIDS Eng. Support		NVESD/CECOM	760	100	Oct 98	0		0		0	860	
GSTAMIDS Eng. Support		OGA(Misc)	540								540	
HSTAMIDS Eng. Support		NVESD/CECOM	2618	100							2718	
HSTAMIDS Eng. Support		OGA (Misc)	79								79	
MHK Eng. Support		NVESD/CECOM	0	0		0		600	Dec 00	Cont	600	
Subtotal Support Costs:			3997	200				600			4797	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
.GSTAMIDS Test support		TECOM	1406	0		0		0		0	1406	
HSTAMIDS Test Support		TECOM	973	200							1173	
Subtotal Test and Evaluation			2379	200							2579	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE **September 1998**

BUDGET ACTIVIT
4 - Demonstration and Validation

PE NUMBER AND TITLE
**0603619A Landmine Warfare and Barrier -
Advanced Development**

PROJECT
D606

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Prog Mgmt GSTAMIDS		PM-MCD	250	100	Oct 98	0		0		0	350	
Prog Mgmt GSTAMIDS	CPIF	Various	662	0		0		0		0	662	
Prog Mgmt HSTAMIDS		PM-MCD	365	100							465	
Prog Mgmt HSTAMIDS	CPIF	Various	706								706	
Prog Mgmt MHK		PM-MCD	0	0		0		200	Oct 00	Cont	200	
SBIR/STTR				74							74	
Subtotal Management Services:			1983	274				200			2457	

Project Total Cost:			22350	2787				6992			32129	
---------------------	--	--	-------	------	--	--	--	------	--	--	-------	--

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603639A Armament Enhancement Initiative
--	---

COST (In Thousands)	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost t Complete	Total Cost
Total Program Element (PE) Cost	36036	35784	36937	42511	36843	49128	27612	30836	Continuing	Continuing
D643 Project 643	21988	18400	36937	42511	36843	49128	27612	30836	Continuing	Continuing
D656 XROD	14048	17384	0	0	0	0	0	0	0	172328

A. Mission Description and Budget Item Justification: The Armament Enhancement Initiative (AEI) is a comprehensive program to accelerate fielding of advanced tank ammunition and ensure the continued overmatch lethality of the U.S. tank fleet despite rapid worldwide development of armored vehicle protection technology. The AEI program identifies promising technology efforts and uses competitive developments and streamlined acquisition procedures to achieve this goal. Current developments are in the areas of kinetic energy, including training ammunition, and smart extended range rounds. Developmental efforts include paced initiatives leading to new developments or upgrades to existing and future weapons platforms. To date, four rounds of tank ammunition have completed development and entered production. All tank ammunition development funds are in this program element to facilitate transition between phases, avoid administrative delays, and allow realignment of funds from less to more promising areas.

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	37127	26526	37231	43000
Appropriated Value	38313	36026		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-1186	-242		
b. SBIR / STT	-911			
c. Omnibus or Other Above Threshold Reductions	-300			
d. Below Threshold Reprogramming	+120			
e. Rescissions				
Adjustments to Budget Years Since <u>FY 1999 PB</u>			-294	-489
Current Budget Submit (<u>FY 2000 / 2001 PB</u>)	36036	35784	36937	42511

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603639A Armament Enhancement Initiative				PROJECT D643		
COST (In Thousands)	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost t Complete	Total Cost
D643 Project 643	21988	18400	36937	42511	36843	49128	27612	30836	Continuing	Continuing
<p>A. <u>Mission Description and Justification:</u> This project provides for the development of all tank ammunition with the exception of the Tank Extended Range Munitions (TERM-KE). Providing lethal 120mm munitions is essential in maintaining the overmatch capabilities of the Abrams tank. This point is particularly important since the Army will proceed with limited improvements to the Abrams after the Systems Enhancement Program (SEP), and because the future tank (Future Combat System) is not expected to enter the fleet in quantity until after the 2020 timeframe. Therefore, the 120mm Abrams tank will likely make up the bulk of our tank inventory for at least the next 25 years. The focus of the AEI program is first on the development and production of the M829E3 Kinetic Energy (KE) cartridge. KE cartridges provide the primary anti-tank capability for the armor force and the M829E3 will defeat the growing advanced KE reactive armor threat. Additionally, the eventual production of the M829E3 will be critical in maintaining the Depleted Uranium (DU) industrial base. The Army is also developing trainers for the M829E3 and M830A1. The trainers are required since the current trainers, the M865 and M831A1 do not have the required range, flight or physical characteristics to adequately simulate the M829E3 or M830A1. The Army was developing Smart Target Activated Fire and Forget (STAFF) top attack smart munitions. However, for cost reasons the STAFF program was terminated in FY 98 with final close-out in FY00. The Army also has a requirement for an Objective Kinetic Energy (OKE) Cartridge for future targets. It is not expected to start until after FY01. The OKE will be designed to defeat advanced active protection systems at extended ranges and be substantially more accurate than current ammunition.</p> <p>FY 1998 Accomplishments:</p> <p><u>M829E3</u></p> <ul style="list-style-type: none"> • 4013 Initiated propellant optimization for velocity and vulnerability response • 4500 Improved penetrator testing • 250 Initiated concept studies for trainee • 1400 Downselected to a system contractor and awarded multiphase contract • 10852 Conducted cartridge integration and projectile optimization <p><u>STAFF</u></p> <ul style="list-style-type: none"> • 973 Program termination [tailored critical design review (CDR)] for close-out <p>Total 21988</p>										
Project D643			Page 2 of 10 Pages				Exhibit R-2A (PE 0603639A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603639A Armament Enhancement Initiative	PROJECT D643
---	--	------------------------

FY 1999 Planned Program:

- 5464 Finalize propellant optimization
 - 6790 Optimization of cartridge configuration
 - 5300 Finalize penetrator configuration
 - 380 Finalize concept studies for traine
 - 466 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 18400

FY 2000 Planned Program:

- 12066 Finalization of cartridge configuration
 - 5837 Test Optimized Design
 - 4862 Initiate Build of Production Qualification Hardware
 - 7172 Conduct Producibility Improvements
 - 6000 Fabrication and Test Long Range Trainer Hardware
 - 1000 STAFF Program Termination
- Total 36937

FY 2001 Planned Program:

- 14911 Complete Build of Production Qualification Test (PQT) Hardware
 - 9031 Initiate Testing of PQT Hardware
 - 7432 Finalize Producibility Improvements
 - 8607 Long Range Trainer Design Optimization
 - 2530 MPAT Trainer build and test
- Total 42511

B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To</u> <u>Compl</u>	<u>Total Cost</u>
Procurement Ammunition, Army 120MM Tank										
E73300-M831/M831A1	59684	60216	32623	49541	48000	47592	48510	49431	Cont	Cont
E73400-M865	114846	129548	86027	104642	102105	97200	94290	96007	Cont	Cont
E78001-M829A2/E3	75168	14691	0	0	41362	71764	71714	71641	Cont	Cont
E78007-M830A1	7698	9972	0	0	0	0	0	0	0	532496
E08210-M919	30000	20741	29585	23797	0	0	0	0	0	Cont

Project D643

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603639A Armament Enhancement Initiative	PROJECT D643
---	--	------------------------

C. Acquisition Strategy: M829E3, Long Range Trainers, OKE and STAFF These projects have used a streamlined acquisition strategy since inception. Keeping costs low is paramount while meeting schedule requirements. Integrated Product Teams (IPTs) are being used. A development system contractor, Alliant Techsystems, was selected to develop the M829E3 using a performance specification. Long Range Trainer will be developed using performance specifications and system contractors. Operational Requirements Documents (ORDs) have been approved for M829E3 Long Range Trainers and Objective Kinetic Energy (OKE). The STAFF close-out will occur in 1QFY00.

D. Schedule Profile	<u>FY1998</u>	<u>FY1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>		
M829E3										
Prototype mfg. & testing	1Q-4Q*									
Select Propellant for Velocity/Vulnerabilit Response	4Q*									
Cartridge Demonstration	3Q*									
Milestone II	3Q*									
Award contract to EMD Contractor	4Q*									
Select penetrato		4Q								
Optimize propellant configuration		1Q-4Q								

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999	
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603639A Armament Enhancement Initiative				PROJECT D643	
D. Schedule Profile	FY1998	FY1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	
Optimize Cartridge Integration			1Q-4Q						
Test Penetrator vs. Target Suite		2Q-4Q	1Q-2Q						
Design Freeze				1Q					
Build Production Qualification Hardware				1Q-4Q					
Begin Production Qualification Test (PQT)				3Q					
Low Rate Production IPR					1Q				
Complete PQT					3Q				
Conduct Operation Test					2Q-4Q				
Type Classification – Standard						1Q			
Initial Operational Capabilit						3Q			
STAFF									
Program close out	2Q*								
Negotiate/Settle Program Termination with Contractor			1Q						
LONG RANGE TRAINERS									
Long Range Kinetic Energy (LRKE) Trainer Concept Studies Complete		4Q							
LRKE Milestone II		4Q							
Award Engineering Manufacturing Development (EMD) Contract			1Q						
Optimize Configuration			1Q-4Q						
Design Freeze			4Q						
Build Production Qualification Testing (PQT) hardware				1Q-4Q					
LRKE PQT Start					1Q				
LRKE PQT Complete					4Q				
LRKE TC-Standard						1Q			

DATE
February 1999

BUDGET ACTIVIT
4 - Demonstration and Validation

PE NUMBER AND TITLE
0603639A Armament Enhancement Initiative

D. Schedule Profile	<u>FY1998</u>	<u>FY1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>		
Multi-Purpose Anti-Tank (MPAT) Trainee Concept Studies Complete				1Q						
Award MPAT Trainer EMD Contract				2Q						
Optimize Configuration				2Q-4Q						
Design Freeze				4Q						
Build PQT Hardware				4Q	1Q-2Q					
MPAT Trainer PQT Start					2Q					
MPAT Trainer PQT Complete						1Q				
MPAT Trainer Type Classification Standard						2Q				
OBJECTIVE KE										
OKE Milestone I				2Q						
OKE Award PDRR Contracts					1Q					
OKE Integrate various Tech Base Efforts					1Q-4Q	1Q-4Q				
OKE Demonstrate Integrated Design						2Q				
OKE Milestone II						4Q				
OKE Award EMD Contract							1Q			

*Completed milestone

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603639A Armament Enhancement Initiative	PROJECT D643
---	--	------------------------

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Alliant Techsystems	C-CPFF	Hopkins, MN	35985		Sep 90	1000				0	36985	
b. Alliant Techsystems	SS-CPFF	Hopkins, MN	12870	12307	Aug 98	13660	Aug 98	13100	Aug 98	Cont	51937	
c. ARDEC	MIPR	Picatinny Arsenal, NJ	18662	1200		3000		3000		Cont	25862	
d. Army Research Lab	MIPR	Aberdeen PG, MD	14653	2427		3500		2688		Cont	23268	
e. Batelle Northwest Lab	MIPR	Richmond, WA	2000	400		1773		1500		Cont	5673	
f. LRKE Trainer	C-CPFF	Unknown				6000		8854		Cont	14854	
g. MPAT Trainer	C-CPFF	Unknown						2530		Cont	2530	
Subtotal Product Development:			84170	16334		28933		31672			161109	

Remark: Army Research Lab and ARDEC Engineering include M829E3, LRKE Trainer and OKE

II. Support Costs: Not applicable

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. YPG, APG	MIPR	Yuma AZ/APG, MD	6947	625		3370		5264		Cont	Cont	
b. Army Research Lab	MIPR	Aberdeen PG, MD	2400	500		3514		4475		Cont	Cont	
c. Miscellaneous	MIPR	Multiple	10984	275								
Subtotal Test and Evaluation			20331	1400		6884		9739		Cont	Cont	

Remark: Testing includes all testing needed to support M829E3, LRKE Trainer and OKE

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PM-TMA	MIPR	Picatinny Arsenal, NJ	7120	200		1120		1100		Cont	Cont	
b. SBIR/STTR				466								
Subtotal Management Services:			7120	666		1120		1100		Cont	Cont	

Remark: - Management Services also includes data line costs to support Contractor Integrated Technical Information Services (CITIS).
 - Management is considered continuous from the earliest portions of the AEI Program until the Abrams Tank Fleet does not need further ammunition improvements.

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603639A Armament Enhancement Initiative	PROJECT D643
---	--	------------------------

	Total PYs Cost	<u>FY 1999</u> Cost		<u>FY 2000</u> Cost		<u>FY 2001</u> Cost		Cost To Complete	Total Cost	Target Value of Contract
Project Total Cost:	111621	18400		36937		42511		Cont	Cont	

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603639A Armament Enhancement Initiative					PROJECT D656	
COST (In Thousands)	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost t Complete	Total Cost
D656 XROD	14048	17384	0	0	0	0	0	0	0	172328
<p>A. <u>Mission Description and Budget Item Justification:</u> The X-Rod, now known as the Tank Extended Range Munitions – KE (TERM-KE) is a 120mm tank ammunition development effort which will use a standard kinetic energy penetrator boosted by a rocket motor and a dual mode semi-active laser/millimeter wave rada fire-and-forget guidance. The TERM-KE will provide greater hit probability at extended ranges, both line of sight and beyond line of sight, increasing overall kill probability and battle space.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 1048 Interior ballistics exit criteria • 4800 Lethality demonstrations • 3900 Unguided All Up Round (UAUR) exit criteria • 4300 System analysis and system design baseline for TERM <p>Total 14048</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 5297 System Analysis and System Design for TERM • 3650 Lethality Demonstration • 4457 Dual Mode Sensor Demonstration • 3520 UAUR Exit Criteria • 460 Small Business Innovative Research/Small Business Technology Transfer Program <p>Total 17384</p> <p>FY 2000 Planned Program: Project not funded in FY 2000</p> <p>FY 2001 Planned Program: Project not funded in FY 2001</p>										
Project D656			Page 8 of 10 Pages				Exhibit R-2A (PE 0603639A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603639A Armament Enhancement Initiative	PROJECT D656
---	--	------------------------

C. Acquisition Strategy: This program uses a streamlined acquisition strategy. The program is in the Proof of Principle phase. A unique system contracting strategy to prove out innovative component technologies was instituted at inception of the program. A modified Integrated Product Team is being used to leverage the expertise of both the Army and the contractor, Alliant Techsystems. In FY96 the Army terminated the X-Rod program for affordability reasons. The TERM-KE program has continued through congressional plus-ups. The current program is developing a possible future Tank Extended Range Munitions (TERM) candidate.

D. Schedule Profile	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Interior ballistics exit criteria met				3Q						
System Requirements Review			1Q*							
In-flight discard exit criteria met			1Q*							
Lethality demonstrations			3Q-4Q*	2Q-3Q						
System Functional Review				2Q						
Preliminary Design Revie				4Q						
Dual Mode Seeker Demo				3Q						

* Completed milestone

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603639A Armament Enhancement Initiative						PROJECT D656		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Alliant Techsystems	SS-CPFF	Clearwater, F	122253	12450	Sep 87						134703	
b. ARDEC	MIPR	Picatinny Arsenal, NJ	24777	1000							25777	
Subtotal Product Development:			147030	13450							160480	
II. Support Costs: Not Applicable.												
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. YPG,ATC	MIPR	Yuma AZ/APG, MD	1600	200							1800	
b. Army Research Lab	MIPR	Aberdeen PG, MD	2800	540							3340	
c. TECOM	MIPR	Huntsville, AL	0	200							200	
d. Miscellaneous	MIPR	Multiple	1536	1534							3070	
Subtotal Test and Evaluation			5936	2474							8410	
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PM/TMA	MIPR	Picatinny Arsenal, NJ	2143	1000							3143	
b. SBIR/STTR				460							460	
Subtotal Management Services:			2143	1460							3603	
Project Total Cost:			155109	17384							172493	
Project D656												

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603640A Artillery Propellant Development	PROJECT DB91
--	--	-------------------------------

COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DB91 Artillery Propellant Development	7983	0	0	0	0	0	0	0	0	115572

A. Mission Description and Budget Item Justification: This program element focuses on the development of the Modular Artillery Charge System (MACS), intended for use with fielded 155mm field artillery systems equipped with M199 and M284 39 caliber cannons and the XM297 cannon under development for use on Crusader. The MACS includes two different types of charge increments - the XM231 designed to achieve ranges in zones 1 and 2, and the XM232 designed to achieve ranges in zones 3-6. Each increment contains propellant, an ignition system, and performance enhancing additives that are loaded in a combustible case. Funding for this effort transitions to PE 0603854A, Project D505 in FY 1999.

FY 1998 Accomplishments:

- 5815 Continued development of MACS for type classification.
 - 368 Project management support and management engineering services.
 - 1800 Continued testing for type classification of XM231 MACS for 39 caliber.
- Total 7983

FY 1999 Planned Program: Project will transition to PE 0603854A, Artillery Systems Advanced Development, Project D505, Crusader - AD

FY 2000 Planned Program: Project not funded in FY 2000

FY 2001 Planned Program: Project not funded in FY 2001

B. <u>Program Change Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	8258	0	0	0
Appropriated Value	8521			
Adjustments to Appropriated Value				
a. Congressional General Reductions	-263			
b. SBIR/STT	-207			
c. Omnibus or Other Above Threshold Reduction	-68			
d. Below Threshold Reprogramming				
e. Rescissions				
Adjustments to Budget Years Since FY 1999 PB				

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE February 1999						
BUDGET ACTIVIT 4 - Demonstration and Validation					PE NUMBER AND TITLE 0603640A Artillery Propellant Development			PROJECT DB91						
B. Program Change Summary					<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>						
Current Budget Submit (FY 2000/2001 PB)					7983	0	0	0						
C. Other Program Funding Summary					<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To Comp</u>	<u>Total Cost</u>
Procurement, Ammo, Army, ER 8021							42938	55602	73182	93248	54184	78394	Cont	Cont
RDTE, BA4, Army, PE 0603854, D505					298012	311257	282937	120457					0	1241461
RDTE, BA5, Army, PE 0604854, D503							60577	315253	411143	258066	295415	23988	0	1364442
Procurement, WTCV, Army, G83500									41607	95543	382601	628003	9437130	10584884
Procurement, WTCV, Army, G83600									32967	80240	314331	499726	7633500	8560764
D. Acquisition Strategy: The current acquisition strategy for MACS entails component breakout of combustible case sets and propellants. Load, assemble and pack (LAP) will be achieved through competitive selection of a commercial contractor. Single year contracts will be pursued for FYs 00 and 01. Multi-year authority will be pursued for contracts awarded in FY03 and beyond.														
E. Schedule Profile					<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>		
Award XM232 L/A/P Contract					4 th Q*									
XM231 Test and Evaluation						4 th Q								
XM231 Milestone III						4 th Q								
M30 Propellant Mfg./ XM232						4 th Q								
XM232 Case Mfg.						4 th Q								
XM232 L/A/P						4 th Q								
XM232 Test and Evaluation							4 th Q							
XM232 Milestone III							4 th Q							
* Milestone completed														

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603645A Armored Systems Modernization - Advanced Development	PROJECT D018
--	--	-------------------------------

COST <i>(In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D018 Future Scout Vehicle (FSV) - Advanced Development	1130	0	0	0	0	0	0	0	0	1130

A. Mission Description and Budget Item Justification: Project D018, Future Scout Vehicle, funded a portion of the Future Scout and Cavalry System (FSCS) advanced technology demonstration. The majority of the program funding is in PE 0603005A, Project D440, which has a more detailed program description. FSCS will provide Division and below reconnaissance elements a platform with significant improvements in vehicle mobility, survivability, lethality, target acquisition and communication capabilities through integration of advanced technologies.

FY 1998 Accomplishments:

- 1130 Initiated Project Management (PM); Integrated Product Team Studies, In-house Concept Design Work for AOA
- Total 1130

FY 1999 Planned Program: Project not funded in FY 1999

FY 2000 Planned Program: Project not funded in FY 2000

FY 2001 Planned Program: Project not funded in FY 2001

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (<u>FY 1999</u> PB)	1945	0	5274	31439
Appropriated Value	2007	0		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-62			
b. SBIR/STT	-49			
c. Omnibus or Other Above Threshold Reductions	-16			
d. Below Threshold Reprogramming	-750			
e. Rescissions				
Adjustments to Budget Years Since <u>FY 1999</u> PB		0	-5274	-31439
Current Budget Submit (<u>FY 2000 / 2001</u> PB)	1130	0	0	0

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603645A Armored Systems Modernization - Advanced Development	PROJECT D018
--	--	-------------------------------

Change Summary Explanation: FY 1998 reprogrammed to higher priority requirements (-750).
FY 2000/2001 funds realigned to establish FSCS ATD.

C. <u>Other Program Funding Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To Complete</u>	<u>Total Cost</u>
PE 604645A, D022 - Future Scout Vehicle				3907	53392	122956	120800	162400	Continuing	Continuing
PE 603005A, D440 – Advanced Combat Vehicle Technolog	2371	24283	55470	65487	10897	0				157309

D. Acquisition Strategy: Plans call for the competitive award of contracts to two US/UK consortia who will be given responsibility for development of an FSCS design concept and fabrication of a demonstration vehicle. Extensive modeling and simulation will be used to meet, verify, validate and finalize system requirements, and establish a design definition baseline. The baseline will support follow-on Engineering and Manufacturing Development (EMD). During the building of the Program Objective Memorandum, this project was restructured, transferring funds to support the FSCS Advanced Technology Demonstration (PE 0603005A) and to fund FSCS EMD (PE 0604645A).

E. <u>Schedule Profile</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2004</u>	<u>FY 2005</u>
Release solicitation for First Phase of Fast Track Acquisition		4Q								

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)									DATE February 1999	
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603653A Advanced Tank Armament System					PROJECT DB99	
COST (In Thousands)	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
DB99 Advanced Tank Armament System	8485	8867	1937	8870	8860	8856	8843	8830	Continuing	Continuing

A. Mission Description and Budget Item Justification: The goal of the Advanced Tank Armament System (ATAS) program is to assure lethality superiority over increasingly more capable future enemy tanks. ATAS is developing and demonstrating key gun and fire control technologies. When combined with on-going ammunition developments, ATAS will provide leap-ahead lethality improvements for the current tank fleet, the Future Scout and Cavalry System, the next upgrade to the M1A2 Abrams tank, and other weapon system platforms.

The ATAS Program has two main phases. Phase I develops and demonstrates, in FY99, autotarget tracking technology that is applicable to the current M1 Abrams series of tanks. Phase I is a requirements oriented, Combat Developer [User] directed program that increases the tank crew's ability to quickly kill enemy battlefield targets. Phase I technology, when applied to tank training devices, will also reduce tank crew training costs by reducing the amount of training necessary for new gunners to perform proficiently. Phase II demonstrates a longer 120mm tank main gun that is more lethal and can kill advanced enemy tanks at extended ranges. It also develops advanced fire control components to consistently and accurately hit longer range targets. This gun and fire control system technology is now being applied in medium caliber to the Future Scout and Cavalry System to reduce the overall cost of Army weapon system development. It can also be applied to the Future Combat System in both large and medium gun calibers to reduce overall cost of Army weapon system development. An Electronic Muzzle Reference Sensor (EMRS) being developed in this phase eliminates a radioactive tritium light source from the Abrams MRS (Muzzle Reference Sensor). The Army is evaluating the L55 German gun, which was recently developed for an upgrade to the German main battle tank - the LEO2A5. Due to the cannon design commonality of the German LEO2A5 and the Abrams M1A2, the L55 gun tube can be mounted on the Abrams with minimum hardware and software changes. The L55 is fully developed and tested. US adaptation of this German gun should significantly reduce US RDT&E and procurement costs for the development and fielding of a long barrel 120mm gun. The US version of the L55 gun will be called the M256E1. Fire control technology developed under this program will be adapted to insure that the performance of the German L55 meets US requirements. The L55/M256E1 gun tube evaluation will begin in FY99. An M1A2 demonstration (L55/M256E1 gun barrel in an M1A2 tank) in FY01 will evaluate the overall system performance and assess integration costs.

In FY02 and beyond, the ATAS Program will demonstrate and test in an Abrams tank emerging gun and fire control system technology which promise life cycle cost reduction. This technology includes tantalum coatings, modern servo-control systems, and an improved MRS. Life cycle cost reduction will be achieved through the techniques of Modernization Through Spares, Value Engineering Change Proposals, and O&S cost reductions.

FY 1998 Accomplishments:

- 200 Phase I - completed laboratory testing
- 82 Phase II - completed coating development
- 2422 Phase II - fabricated long gun prototype hardware & subsystem testing
- 2781 Phase II - began design & fabrication of the stabilization/Fire Control System
- 3000 Phase II - began turret modification design

Total 8485

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603653A Advanced Tank Armament System	PROJECT DB99
---	--	------------------------

FY 1999 Planned Program:

- 2600 Phase II - complete long gun hardware fabrication & testing
 - 2500 Phase II - complete stabilization/fire control system component fabrication & test
 - 2000 Phase II - continue turret integration
 - 1540 Phase II - demonstration & test
 - 227 Small Business Innovative Research/Small Business Technology Transfer Program
- Total 8867

FY 2000 Planned Program:

- 775 Phase II - begin L55/ M256E1 gun barrels & mounting hardware testing
 - 503 Phase II - begin L55/M256E1 hardware & software modifications testing
 - 659 Phase II - begin L55/ M25E1 tank integration
- Total 1937

FY 2001 Planned Program:

- 2200 Phase II - complete L55/M256E1 gun barrel testing
 - 3400 Phase II - complete L55/M256E1 hardware & software integration
 - 3270 Phase II - complete L55/M256E1 M1A2 demonstration
- Total 8870

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	8704	8928	0	0
Appropriated Value	8982	8928		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-278	-61		
b. SBIR / STTR	-165			
c. Omnibus or Other Above Threshold Reductions	-54			
d. Below Threshold Reprogramming				
e. Rescissions				
Adjustments to Budget Years Since <u>FY 1999</u> PB			+1937	+8870
Current Budget Submit (FY 2000 / 2001 PB)	8485	8867	1937	8870

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603653A Advanced Tank Armament System	PROJECT DB99
--	---	-------------------------------

Change Summary Explanation: FY 2000/2001 funding increase to support continued demonstration efforts to improve the cannon and associated fire control (particularly the German L55 Cannon) for potential implementation either through Engineering Change Proposal (ECP), Modernization Through Spares (MTS) and/or Operation and Support Cost Reduction (OSCR).

C. Other Program Funding Summary: Not applicable

D. Acquisition Strategy: The technologies in ATAS will be demonstrated then transferred to PM Abrams, PM-FSCS and other weapon platform PMs for further technological development. Technologies in ATAS may flow into the next major upgrade or Engineering Change Proposal (ECP) to the current Abrams tank. Several contractors and government agencies are used to develop or integrate existing technologies.

E. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Complete Gun Tube Coating Effor	4Q*							
Complete Autotracker Demonstration	4Q	2Q						
Begin 120mm Long Gun hardware Fab	2Q*							
Begin design/fabricate Stabilization/Fire Control	2Q*							
Begin turret modification design	4Q*							
Complete gun/fire control system fabrication								
Continue turret modification design		1Q*						
Component demonstration & test		4Q						
Procure L55 gun barrels		3Q						
Fabricate M256E1 gun barrels		4Q						
Begin L55/M256E1 gun barrel testing			1Q					
Begin L55/M256E1 hardware & software testing			2Q					
Begin L55/M256E1 tank integration			3Q					
Complete L55/M256E1 gun barrel testing				1Q				
Complete L55/M256E1 hardware and software testing				1Q				
Complete L55/M256E1 tank integration				2Q				
Begin L55/M256E1 tank testing				3Q				
Complete L55/M256E1 tank testing				4Q				
Begin coating & straightening application					1Q			
Complete coating & straightening application					4Q			
Begin coating & straightening test						2Q		
Complete coating & straightening test						4Q		

Project DB99

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603653A Advanced Tank Armament System	PROJECT DB99
---	--	------------------------

E. Schedule Profile	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Begin MRS & modern servo application							1Q	
Complete MRS & modern servo application								2Q
Begin vehicle test								3Q
Complete vehicle test								4Q

*Completed milestone

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE **February 1999**

BUDGET ACTIVIT
4 - Demonstration and Validation

PE NUMBER AND TITLE
0603653A Advanced Tank Armament System

PROJECT
DB99

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. M256E1	MIPR	Benet Labs, Watervliet, NY Gov	5686	1600		500		1725		Cont	Cont	
b. L55 Gun Tubes	SS & FP	Rheinmetall, Ratingen, GE		750	DEC1998			475		Cont	Cont	
c. M1A2 Integration	SS & CPFF	GDLS, Sterling Heights, MI	1970	2000		500				Cont	Cont	
d. Fire Control Development	CPFF	Raytheon (TI) Systems, Dallas, Texas	16826	2500				2250		Cont	Cont	
e. Fire Control Development	MIPR	ARDEC, Picatinny Arsenal, NJ		335		337		120		Cont	Cont	
f. EMRS	MIPR	ARDEC, Picatinny Arsenal, NJ	457	200								
g. ATT	MIPR		271									
h. Misc	MIPR		652	197								
Subtotal Product Development:			25862	7582		1337		4570		Cont	Cont	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. ATT	MIPR	ATC, APG, MD	200	200								
b. M256E1 & L55 Testing				500		400		3500				
Subtotal Support Costs:			200	700		400		3500		Cont	Cont	

III. Test and Evaluation: Not applicable

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603653A Advanced Tank Armament System	PROJECT DB99
---	--	------------------------

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Management	MIPR	PM-TMA	535	358		200		800		Cont	Cont	
b. SBIR/STTR				227								
Subtotal Management Services:			535	585		200		800		Cont	Cont	
Project Total Cost:			26597	8867		1937		8870		Cont	Cont	

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603713A Army Data Distribution System
--	---

COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
Total Program Element (PE) Cost	19785	15162	10	17	24	33	41	50	6000	41122
D370 PJH-PLRS/JTIDS Hybrid	19785	8903	10	17	24	33	41	50	6000	34863
D385 JTIDS (LINK 16)	0	6259	0	0	0	0	0	0	0	6259

A. Mission Description and Budget Item Justification The Army Data Distribution System (ADDS) consists of the Near-Term Digital Radio System (NTDRS) and the Joint Tactical Information Distribution System (JTIDS)/Multifunctional Information Distribution System (MIDS) programs. The NTDRS program is a Research and Development (R&D) Program that maximizes the use of non-development item (NDI) and commercial off-the-shelf (COTS) hardware and software. The program provides an interim solution to the long term Army need for greatly enhanced data capacities at Tactical Operation Centers. NTDRS will provide the Army's Tactical Internet Tactical Operation Center to Tactical Operation Center (TOC-to-TOC) data distribution from Battalion to Brigade and for critical moving platforms from Brigade to Division in the First Digitized Division and may serve as proof of concept leading to the integration of the NTDRS waveform/ network into the JTRS program. The Joint Tactical Information Distribution System (JTIDS) / Multifunctional Information Distribution System (MIDS), LINK-16 program is a joint/international program representing all services and allied force requirements with the purpose of complying with the ASD/C3I policy establishing Link-16 as the DOD primary tactical datalink for C2I and to acquire a digital information system for tactical interoperability and situation awareness. Currently the Army uses LINK-16 terminals in Air Defense platforms to control air and missile defense weapon engagement operations.

B. Program Change Summary	FY 1998	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 1999 PB)	20526	17281	4638	13156
Appropriated Value	21214	15281		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-688	-119		
b. SBIR / STT	-482			
c. Omnibus or Other Above Threshold Reductions	-159			
d. Below Threshold Reprogramming	-100			
e. Rescissions				
Adjustments to Budget Years Since FY 1999 PB			-4628	-13139
Current Budget Submit (FY 2000 / 2001 PB)	19785	15162	10	17

Change Summary Explanation: FY 2000/2001 funds were moved to PE 0604280, D615.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999			
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603713A Army Data Distribution System					PROJECT D370		
COST (In Thousands)		FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D370	PJH-PLRS/JTIDS Hybrid	19785	8903	10	17	24	33	41	50	6000	34863
<p>A. <u>Mission Description and Budget Item Justification</u> : The Near-Term Digital Radio System(NTDRS) is a Research and Development program to provide systems for test and experimentation. It will provide the Army's Tactical Internet TOC-to-TOC communication function for the First Digitized Division. In order to allow the NTDRS to evolve and make maximum use of technology insertion, NTDRS is based on an open architecture. The project will provide reliable, real time, secure, jam-resistant data communications and position location capabilities to the soldier and to his unit commander and may serve as the proof of concept leading to the integration of the NTDRS waveform/ network into the JTRS program. This project provides data distribution support to the Army's air defense, fire support, maneuver control, intelligence and combat service support automated systems, and is capable of "digitizing data messages" that must be transmitted on the battlefield. The Joint Tactical Information Distribution System (JTIDS)/ Multifunctional Information Distribution System (MIDS)/LINK-16 portion of the ADDS program is a joint program representing all services and allied force requirements with the purpose of acquiring a digital information system for tactical interoperability and awareness which complies with the ASD/C3I policy establishing LINK-16 as the DoD Defense Control Centers, and to control air and missile defense weapon engagement operations.</p> <p>FY 1998 Accomplishments Program:</p> <ul style="list-style-type: none"> • 1586 Continued MIDS Development/Engineering Program Management Support • 800 MIDS Testing • 1337 Program Management/PMO Activities for NTDRS • 2006 NTDRS Option Exercised for 174 radios and ancillary items. • 2238 Test Activities (NTDRS) • 11695 Continued NTDRS Program Hardware/Software Development • 123 Purchased four Network Management Terminals/ Antenna Adapters <p>Total 19785</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 230 NTDR System Integration into Platforms • 1002 Program Management/PMO Activities for NTDRS • 1400 Test Activities (NTDRS) • 5533 Continue NTDRS Development/FFP Efforts • 510 NTDRS T&M Effort • 228 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs 											
Project D370				Page 2 of 10 Pages				Exhibit R-2A (PE 0603713A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603713A Army Data Distribution System	PROJECT D370
---	--	------------------------

Total 8903

FY 2000 Planned Program:

- 10 NTDRS Maintenance
The balance of FY2000 NTDRS efforts are funded under PE 0604805A, Project D615.

Total 10

FY 2001 Planned Program:

- 17 NTDRS Maintenance

Total 17

B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
RDTE, 0604805A, D615*			4904	5183	3581	6001	12281	9810	0	41760

* The last year of D615 funding for the NTDRS program is FY2000. Beginning in FY2001 all D615 funding is in support of the Army Unique JTRS program.

C. Acquisition Strategy: The NTDRS program maximizes the use of non-developmental item (NDI) and commercial off-the-shelf (COTS) hardware and software. An RDT&E contract was awarded competitively in January 1996. The NTDRS was successfully tested at the Division XXI AWE in November 1997, Electronic Proving Ground (EPG) (Field Test I) in February 1998, and FBCB2 LUT in August 1998. In FY99 the NTDRS will participate in the FBCB2 FDTE and IOT&E to provide the Army's Tactical Internet TOC-TOC data communications. In FY 1999/2000 NTDRS will continue design and testing efforts before planned deployment of the NTDRS into the FDD in mid-FY 2000 for continued experimentation purposes, and may serve as the proof of concept leading to the integration of the JTRS waveform/ network into the NTDRS program. The Multifunctional Information Distribution System (MIDS) program is a Navy managed joint services development program currently viewed as an eventual low cost replacement for parts of the Joint Tactical Information Distribution Systems (JTIDS) family of high speed data terminals. In FY99 MIDS will continue developmental and operational testing to support a projected FY2000 Milestone III decision.

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
NTDRS Division XXI Participation	1Q							
NTDRS EPG Field Test I	2Q							
NTDRS TOC to TOC In Process Review Approval	3Q							
NTDRS Option Award	4Q							
NTDRS EPG Field Test II		2Q						
NTDR FBCB2 FDT&E		4Q						
JTIDS Class 2M LRIP Delivery	2Q							

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603713A Army Data Distribution System	PROJECT D370
---	--	------------------------

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Start Fielding JTIDS LRIP Terminals	2Q							
JTIDS Class 2M FRP Delivery		2Q						
MIDS Development Test Completion*		3Q						
MIDS OT/Multiservice Test Completion*		4Q						

* FY99 efforts funded in PE0603713A, D385

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE **February 1999**

BUDGET ACTIVIT
4 - Demonstration and Validation

PE NUMBER AND TITLE
0603713A Army Data Distribution System

PROJECT
D370

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. MIDS IPO Development	MIPR	MIDSCO, CA	135								135	
b. MIDS, Army Thruput	MIPR	MIDSCO, CA	700								700	
c. LINK16 Training Device	MIPR	AMCOM	190								190	
d. NTDRS Engineering Development*	C/CPIF/FFP /TM	ITT, Ft. Wayne	31362	5533	2Q						36895	36895
e. NTDRS/NMT/Antenna	MISC	MISC	423								423	
f. NTDRS T&M Efforts (Projected)	C/T&M	ITT Ft. Wayne	0	510	2Q						510	510
Subtotal Product Development:			32810	6043							38853	

Remark: *Does not include \$4.48M FY96/FY97 ADO funding, which is not part of D370 funding.

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. MIDS Engineering Support, MITRE	MIPR	CECOM, Ft. Monmouth	356								356	
b. MIDS Engineering Support (Logicon)	MIPR	CECOM, Ft. Monmouth	390								390	
c. NTDRS Frequenc Network	MISC	MISC	245								245	
d. System Integration NDTRS	MIPR	TBD	0	230	TBD						230	
e. NTDRS Maintenance	TBD	TBD				10	TBD	17	TBD		27	
Subtotal Support Costs:			991	230		10		17			1248	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. MIDS Operational Test	MIPR	Ft. Bliss	500								500	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603713A Army Data Distribution System						PROJECT D370		
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
b. MIDS Test Witnessing	MIPR	TECOM	100								100	
c. MIDS RAM Testing	MIPR	CECOM-C2SID	200								200	
d. NTDRS Field Testing	MIPR	EPG, Ft. Huachuca	3423	1400	Jan 99						4823	
e. Misc NTDRS Test Support	MIPR	TEXCOM	20								20	
f. Misc NTDRS Test Support	MIPR	NTC	8								8	
Subtotal Test and Evaluation			4251	1400							5651	
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. MIDS Program Support	MIPR	CECOM, Ft. Monmouth	379								379	
b. NTDRS Program Support	MIPR	Ft. Monmouth, NJ	3054	1230	2Q						4284	
c. NTDRS Contractor Program Support	MIPR	VITRO	144								144	144
Subtotal Management Services:			3577	1230							4807	
Project Total Cost:			41629	8903		10		17			50559	

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603713A Army Data Distribution System					PROJECT D385	
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D385 JTIDS (LINK 16)	0	6259	0	0	0	0	0	0	0	6259
<p>A. <u>Mission Description and Budget Item Justification:</u> The Joint Tactical Information Distribution (JTIDS)/Multifunctional Information Distribution System (MIDS)/LINK-16 portion of the ADDS program provides a joint and allied interoperable LINK-16 tactical digital data and voice comm link among air, ground surface and subsurface platforms. LINK-16 is the DoD directed standard for tactical communications of all processed data and is DoD's primary tactical data link for C2I. Link-16 supports the Army's Theater Air and Missile Defense Engagement Operations. The Army intends to migrate to the Multifunctional Information Distribution System (MIDS) through investment in an Army variant of that multi-national terminal.</p> <p>FY 1998 Planned Program: Project not funded in FY 1998, MIDS development was funded under D370.</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 1386 Interoperability/Qualification/User Requirements International Program Office • 804 Program Management Support for MIDS • 2633 MIDS Testing • 1271 MIDS Development • 165 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 6259</p> <p>FY 2000 Planned Program: Project not funded in FY 2000</p> <p>FY 2001 Planned Program: Project not funded in FY 2001</p> <p>B. <u>Other Program Funding Summary:</u> Procurement funding resides at platform level.</p> <p>C. <u>Acquisition Strategy:</u> The Multifunctional Information Distribution System (MIDS) program is a Navy managed joint services development program current viewed as an eventual low cost replacement for parts of the Joint Tactical Information Distribution System (MIDS) family of high speed data terminals. In FY99 MIDS will continue developmental and operational testing to support a projected FY2000 Milestone III Decision.</p>										
Project D385			Page 7 of 10 Pages				Exhibit R-2A (PE 0603713A)			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603713A Army Data Distribution System	PROJECT D385
---	--	------------------------

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Class 2M LRIP Delivery	2Q							
Class 2M FRP Delivery		2Q						
Start Fielding LRIP Terminals	2Q							
MIDS Development Test Completion		3Q						
MIDS OT/Multiservice Test Completion		4Q						

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation					PE NUMBER AND TITLE 0603713A Army Data Distribution System					PROJECT D385		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. JTC & Host Integration	MIPR	TBD		200	3Q						200	
Subtotal Product Development:				200							200	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Software Support	C/TBD	LOGICON, NJ		315	3Q						315	
b. Software Support	C/FP	MITRE		443	1Q						443	
c. Computer Based Training/Log/Tech Spt	C/FP	TRACOR, NJ		313	2Q						313	
Subtotal Support Costs:				1071							1071	
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Operational Testing	MIPR	OPTEC		2633	2Q					0	2633	
b. Interoperability/Qual	MIPR	IPO		1386	3Q						1386	
Subtotal Test and Evaluation				4019							4019	
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Support	MIPR	CECOM Ft.Monmouth		841	2Q						841	
b. Miscellaneous (TVL)	Various	PM TRCS		128	1-3Q						128	
Subtotal Management Services:				969							969	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603713A Army Data Distribution System	PROJECT D385
---	--	------------------------

				Total PYs Cost	<u>FY 1999</u> Cost		<u>FY 2000</u> Cost		<u>FY 2001</u> Cost		Cost To Complete	Total Cost	Target Value of Contract
Project Total Cost:					6259							6259	

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603747A Soldier Support and Survivability
--	---

COST (<i>In Thousands</i>)	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	6196	7522	12804	13642	17538	20572	22651	22583	Continuing	Continuing
DC09 Soldier Support Equipment	1831	1598	5606	6745	8949	11960	13164	13341	Continuing	Continuing
D610 Food Advanced Development	2120	2560	3110	3387	3745	3722	3930	3956	Continuing	Continuing
D669 Clothing and Equipment	2245	3364	4088	3510	4844	4890	5557	5286	Continuing	Continuing

A. Mission Description and Budget Item Justification: Provide advanced development for unit/organizational equipment, improved individual clothing and equipment, airdrop equipment, rigid wall and fabric shelters, food and field service equipment which will enhance soldier battlefield effectiveness, survivability, sustainment and quality of life. Program element supports advanced development of a new generation of field service support items and shelters, including collective protection and shelter heaters for unit/organizational use to enhance the quality of life of field soldiers and the ability to project forces to Spartan environments. Program Element also supports advanced development of individual clothing and equipment items to lighten the soldier's load and incorporate protection against chemical and biological agents, thermal nuclear flash, ballistic threats, visual and electronic detection and environmental hazards. Program Element also supports advanced development of food, packaging, and food service equipment systems to reduce food service logistics for all four services, lighten the warfighter's load, increase fuel efficiency and to improve or replace existing systems. PE also supports the development of Air Delivery Equipment (personal and cargo) to improve Army force projection capabilities, increase warfighter safety and support national security objectives.

B. <u>Program Change Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	7324	7581	9140	9348
Appropriated Value	7557	7581		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-233	-59		
b. SBIR / STTR	-178			
c. Omnibus or Other Above Threshold Reductions	-59			
d. Below Threshold Reprogramming	-891			
e. Rescissions				
Adjustments to Budget Years Since FY 1999 PB			+3664	+4294
Current Budget Submit (FY 2000/ 2001 PB)	6196	7522	12804	13642

Change Summary Explanation: FY 2000 (+3664) and FY 2001 (+4294) increases are due to the Army consolidating project elements and projects: 064804/D279, 064804/D249 and 064713/DC40 to form the Soldier Support Equipment Project (DC09) in this program element.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603747A Soldier Support and Survivability				PROJECT DC09		
COST (In Thousands)	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
DC09 Soldier Support Equipment	1831	1598	5606	6745	8949	11960	13164	13341	Continuing	Continuing
<p>A. Mission Description and Justification: Develop and field soft shelters, showers, latrines, heaters, mortuary affairs, organizational equipment and other combat service support equipment to improve unit sustainability and combat effectiveness. Conduct demonstration and validation of aerial delivery systems for equipment and personnel, with emphasis on reduced incidence of injuries, improved safety and accuracy, and increased survivability of aircraft, equipment, and personnel. Develop a family of tactical rigid wall shelters which enhances soldier survivability and sustainability of command, control, communications and intelligence. Shelters provide highly mobile, joint service platforms for the digitization of the battlefield, housing many critical vehicle-mounted battlefield systems, medical critical care in a Chemical/Biological (C/B) environment and high tech maintenance.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 396 Conducted additional developmental testing for Laundry Advanced System (LADS). Developed additional performance capabilities for ne requirements added to development contract for LADS. • 138 Conducted shelter/heater habitability study to validate applications for the distribution of the Space Heater Arctic and Space Heater Small. • 260 Conducted market survey of alternative Initial Deployment Latrine candidates. Conducted limited Technical Testing of prototypes of the Maturing Theater Latrine (MTL). Developed Statement of Work for MTL production contract. • 122 Conducted Verification Testing of Ammo Solar Cover • 256 Completed market investigation and draft performance specifications for Aviation Maintenance Shelter (AMS). • 659 Completed First Article Inspection/Production Verification Testing (PVT) for Lightweight Maintenance Enclosure (LME). Completed conditional Milestone (MS)III decision and transition to procurement. <p>Total 1831</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 241 Prepare production contract solicitation, conduct test and evaluation of the Maturing Theater Latrines (MTL) candidates, downselect and award contract. Type Classify MTL. Type Classify Follow-On Latrine (FOL) based on Force Provider Containerized Latrine. • 892 Complete Milestone I/II for Aviation Maintenance Shelter (AMS)/P3I program: Procure AMS flooring system. Award R&D contract for Rapid Inflation System, and fabricate test prototypes. • 288 Modular Deck System (MDS) program: Complete market investigation, procure commercial deck system for testing/user evaluation. • 135 Conduct Market Investigation for candidate Advanced Mortuary Affairs Kit equipment. • 42 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 1598</p>										
Project DC09			Page 2 of 13 Pages				Exhibit R-2A (PE 0603747A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603747A Soldier Support and Survivability	PROJECT DC09
--	---	-------------------------------

FY 2000 Planned Program:

- 400 Procure prototypes and conduct technical testing of Mortuary Affairs Remains Kit (MARK).
 - 1037 Conduct testing of Rapid Inflation System and flooring prototypes for Aviation Maintenance Shelter (AMS). Procure AMS (airbeam) prototype for testing.
 - 400 Conduct testing/user evaluation of Modular Deck System test items and award production contract.
 - 633 Initiate Operational Testing for Ejection Parachute Jettison Device.
 - 2092 Complete Developmental Testing for Advanced Tactical Parachute System.
 - 100 Begin concept exploration and conduct market investigation for Enhanced Containerized Delivery System.
 - 944 Complete production verification testing for 2.5 Ton truck/LMTV (Type III) and 5 Ton Truck/MTV (Type IV) Cargo Bed Cover variants, build LRIP items, and initiate field evaluation.
- Total 5606

FY 2001 Planned Program:

- 1630 Conduct Testing of Aviation Maintenance Shelter P3I (Airbeam). Procure 2nd AMS (Airbeam) prototype.
 - 704 Conduct User Evaluation of Mortuary Affairs Remains Kit
 - 125 Conduct and complete Operational Tests of Enhanced Parachute Jettison Device
 - 1500 Conduct Army Developmental Test and Operational Test of C-17 Dual Row Airdrop Capability
 - 609 Develop Enhanced Container Delivery System Prototypes
 - 2177 Complete field evaluation and complete Milestone III for 2.5 Ton Truck/LMTV (Type III) and 5 Ton Truck/MTV (Type IV) CBC variants and transition into full production. Award LRIP contract for CBC High Mobility Trailer Variants.
- Total 6745

B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
RDTE, 0604713.DC40, Unit/Organizational Equipment	1683	1705	4516	5872	9238	12601	14152	14558	Cont	Cont
M82701, Laundry Advance System		7206	7914	12671	13350	9101	9745	22565	Cont	Cont
M82702, 12 Head Shower				587		586	584	589		
M82703, Containerized Self-Service Laundry			980							
M82704, Containerized Shower			950	1245	1270	1171				
M82705, Maturing Theater Latrine				441						
M82706, Follow-On Latrine				880	914	671				
MA7801, Advanced Tactical Parachute System					24368	28189				
MA7802, Extraction Parachute Jettison Device			2391							

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)									DATE February 1999	
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603747A Soldier Support and Survivability					PROJECT DC09	
B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Compl	Total Cost
MA7805, Universal Static Line			980							
MA8050, Items Less Than \$5.0M (CSS-EQ)	4242	4956	2553	2261	9401	10286	21814	33836		
MA8061, Lightweight Maintenance Enclosur			2128	2013	2931	6379				
C. Acquisition Strategy: Accelerated product developments and testing which transition to Engineering and Manufacturing Development and/or Production.										
D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>			
AMS market investigation	3Q*									
Complete LRIP testing of LME	3Q*									
Type Classify FOFL (FOL)		4Q								
Complete FOSH Habitability Stud	2Q*									
Conduct test and Evaluation on MTL prototypes		3Q								
Award AMS Flooring System Contract		3Q								
Award Rapid Inflation System Contract for AMS P3I		1Q*								
Conduct MDS Market Investigation, build prototypes		2Q								
Type Classify FOFL (MTL)		4Q								
Test MARK component prototypes			4Q							
Complete MDS user evaluation			1Q							
Initiate EPJD Operational Testing			1Q							
Conduct market survey for ECDS			2Q							
Complete DT for ATPS			4Q							
Complete PVT for Type III and IV CBC variant			3Q							
Conduct Test of Aviation Maintenance Shelter Airbeam Prototype				3Q						
Complete OT of EPJD				3Q						
Conduct DT/OT of C-17 Dual Row				3Q						
Complete field evaluation and Milestone III fo Type III and Type IV CBC variants				1Q						
Award LRIP contract for CBC High Mobilit Trailer Variant				2Q						
*Denotes a completed milestone										
Project DC09										

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE **February 1999**

BUDGET ACTIVIT
4 - Demonstration and Validation

PE NUMBER AND TITLE
0603747A Soldier Support and Survivability

PROJECT
DC09

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. SSCOM	In-House	NRDEC	12501	571		373		651		Cont.	14096	Cont.
b. Contracts	Various	Various	7358	720	Various	870	Various	1519	Various	Cont.	10467	Cont.
Subtotal Product Development:			19859	1291		1243		2170			24563	

II. Support Costs: There are no efforts associated with the delivery of any of a fully integrated system that are in direct support of this project and essential to the development, training, operation, and maintenance of systems in this project.

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TECOM/OEC	MIPR	Various	2509	241	Various	4123	Various	4300	Various	Cont.	11173	Cont.
Subtotal Test and Evaluation			2509	241		4123		4300			11173	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Various	In-House	PM-Soldier Support,	1555	66		240		275		Cont.	2136	Cont.
b. Various	In-House	SSCOM	192								192	
Subtotal Management Services:			1747	66		240		275			2328	

Project Total Cost:			24115	1598		5606		6745			38064	
---------------------	--	--	-------	------	--	------	--	------	--	--	-------	--

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603747A Soldier Support and Survivability				PROJECT D610		
COST (In Thousands)	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
D610 Food Advanced Development	2120	2560	3110	3387	3745	3722	3930	3956	Continuing	Continuing
<p>A. Mission Description and Justification: The project funds the development of Joint Service Food/Food Service Equipment to improve individual combat effectiveness and reduce logistics burden and operation & support (O&S) costs of subsistence support for service personnel. Enhance rations by increasing quality, acceptability and variety. Develop multi-fuel, rapidly deployable field food service equipment to support combat, humanitarian missions and operations-other-than-war. Improve equipment to enhance safety in food service, utilize battlefield fuel and decrease fuel and water requirements. Program is reviewed and validated twice annually by the Department of Defense (DoD) Food and Nutrition Research and Engineering Board as part of the Joint Service Food Program. Additionally, the project will, conduct advanced development of improved subsistence and subsistence support items to enhance soldier effectiveness and quality of life in all four Services as part of an integrated DoD Food Research, Development, Test, Evaluation and Engineering (RDTE&E) program.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 320 Fabricated and evaluated the New Enhanced Field Rations prototypes to assess different technical applications. • 405 Completed design, initiated fabrication, and conducted component testing of Marine Corps Rapid Deployment Kitchen. • 240 Completed test and evaluation of future shipboard galley concept incorporating new food service equipment technologies. • 370 Identified and conducted user testing of improvements for individual and group ration systems to improve acceptability and enhance combat effectiveness. Transitioned selected heat and serve ration components and Meals Ready to Eat (MRE) improvements increasing menu variety. Updated B-ration menu for Marine Corps. • 335 Field tested MERC to quantify warfighter acceptability / mobility enhancement. • 230 Field tested nutrient optimized MRE ration prototypes to minimize weight/cube/cost and conducted user field test to determine effect on level of acceptance and consumption. Transitioned two performance enhancing ration components to procurement. • 110 Procured and conducted evaluation of steam generator and thermal powered washer to upgrade Field Sanitation Center Systems. • 110 Evaluated polymeric tray compatibility with USMC Tray Ration Heating System, tested field sink, and developed roof vent configuration for fielded MKTs. <p>Total 2120</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 205 Prepare design concept and procure long lead items for Air Force all electric field kitchen system to meet specific deployment requirements of the Air Expeditionary Force. • 392 Evaluate emerging food service equipment technologies and processes for direct shipboard application to reduce life cycle costs. • 120 Develop, fabricate, and evaluate improvements to field feeding systems as required by the services and incorporate changes to support ongoing and future procurements. 										
Project D610	Page 6 of 13 Pages					Exhibit R-2A (PE 0603747A)				

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE February 1999
BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603747A Soldier Support and Survivability	PROJECT D610
FY 1999 Planned Program: (continued)		
•	222 Complete storage studies/demonstrations of glass coated polymeric tray with easy open lid to refine concepts, ensure high acceptability and optimize functionality and affordability.	
•	608 Continue to identify and conduct user testing of improvements for individual and group ration systems. Transition selected heat and serve ration components and MRE improvements, increasing menu variety and acceptance. Develop prototype lightweight minimal "B" ration system to meet specific Air Force requirements.	
•	296 Complete field tests in different environments to establish effectiveness of selected performance enhancing ration components (PERCs) and supplements, demonstrate overall producibility and suitability of PERCs-based rations and transition to procurement.	
•	267 Complete Phase II of MRE ration redesign for nutritional optimization and logistical parameters and conduct follow-up field testing to demonstrate improved acceptance/consumption and reduced logistic burden.	
•	416 Develop a baseline on which to design future "on demand" feeding systems to reduce logistical burden.	
•	34 Small Business Innovative Research/Small Business Technology Transfer Programs.	
Total	2560	
FY 2000 Planned Program:		
•	345 Integrate design for centralized thermal heating process and nonelectric refrigeration into Containerized Kitchen.	
•	209 Develop, fabricate, and evaluate improvements to field feeding systems as required by the services and incorporate changes to support ongoing and future procurements.	
•	397 Develop shipboard applications for state-of-the-art food service equipment technologies and pre-prepared foods.	
•	271 Design and fabricate a HMMWV trailer based kitchen to increase mobility and deployability of company level kitchens.	
•	226 Design and fabricate a Marine Corps expeditionary field feeding delivery system.	
•	369 Conduct design review and initiate a fabrication of Air Force all electric field kitchen system.	
•	135 Complete design and field testing of lightweight minimal "B" ration for the Air Force.	
•	454 Continue advanced development of ration components and conduct user testing of improvements for individual and group ration systems. Transition selected heat and serve ration components and MRE items.	
•	283 Complete MRE redesign effort and transition to fielded individual ration improvement program.	
•	421 Develop ration delivery prototype which incorporates on demand feeding concepts.	
Total	3110	
FY 2001 Planned Program:		
•	381 Complete fabrication and initiate technical testing of Containerized Kitchen with centralized thermal heating process and nonelectric refrigeration.	
•	275 Develop, fabricate and evaluate improvements to field feeding systems as required by the services and incorporate changes to support ongoing and future procurements	
•	341 Complete fabrication and conduct DT/OT of Marine Corps expeditionary field feeding delivery system	
Project D610	<i>Page 7 of 13 Pages</i>	Exhibit R-2A (PE 0603747A)

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603747A Soldier Support and Survivability	PROJECT D610
--	---	-------------------------------

FY 2001 Planned Program: (continued)

- 411 Continue assessment of new food and food service equipment technologies and complete shipboard evaluations.
 - 418 Complete fabrication and conduct DT/OT of Air Force all electric field kitchen system.
 - 284 Develop a Marine Corps 8x8x10 refrigerated ISO container to improve efficiency and reduce weight to cube ratio and maintenance requirements.
 - 866 Continue improvement of individual and group rations and conduct field test of transitioning technologies to include irradiated foods, high frequency processed items, and innovative packaging systems.
 - 411 Conduct field demonstration of the efficiency of an alternative ration delivery prototype
- Total 3387

B. Other Program Funding Summary:	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Compl	Total Cost
RDTE, 0604713.D548, Military Subsistence System	829	1290	1625	1753	1867	1880	2006	2012	Cont	Cont
OPA3, M65803, Kitchen, Containerized, Field		7425	7062	7087	5663	6581	8358	8649	Cont	Cont
OPA 3, M65802, Sanitation Center, Field Feeding			661	1843	1817	6481	5895	5838	Cont	Cont
M65801, Refrigeration Equipment		1914	931	924	931	2384	2533	2551		

C. Acquisition Strategy: Developments transition to Engineering and Manufacturing Development and procurement.

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Field tested Mobility Enhancing Ration Components (MER)	2Q*							
Conducted user testing of improvements for individual and group ration systems	2Q*							
Conducted component testing of Marine Corps Rapid Deployment Kitchen	2Q*							
Evaluated polymeric tray compatibility with USMC Tray Ration Heating System	3Q*							
Completed evaluation of NEFR prototypes	4Q*							
Transition selected heat and serve ration components and MRE improvements.		3Q						
Complete field tests of selected performance enhancing ration components (PERCs).		3Q						

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603747A Soldier Support and Survivability	PROJECT D610
---	--	------------------------

D. Schedule Profile	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Complete storage studies/demonstrations of glass coated polymeric tra		3Q						
Complete MRE ration redesign for nutritional optimization and logistical parameters.		3Q						
Integrate design for heating process and NEFR into CK			1Q					
Develop shipboard applications for state-of-the-art food service equipment.			3Q					
Design and fabricate a HMMWV trailer based kitchen.			3Q					
Design and fabricate a Marine Corps expeditionary field feeding delivery system.			3Q					
Complete design and field testing of lightweight minimal "B" ration.			3Q					
Conduct DT/OT of Marine Corps expeditionary field feeding delivery system				3Q				
Conduct DT/OT of Air Force all electric field kitchen system				3Q				

*Denotes a completed milestone

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE **February 1999**

BUDGET ACTIVIT
4 - Demonstration and Validation

PE NUMBER AND TITLE
0603747A Soldier Support and Survivability

PROJECT
D610

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. SSCOM	In-House		13366	1516		1449		1567		Cont.	17898	Cont.
b. Contracts	Various		3662	466	Various	980	Various	1084	Various	Cont.	6192	Cont.
Subtotal Product Development:			17028	1982		2429		2651			24090	

II. Support Costs: There are no efforts associated with the delivery of any of a fully integrated system that are in direct support of this project and essential to the development, training, operation, and maintenance of systems in this project.

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TECOM/OEC	MIPR	Various	1246	450		526		569		Cont.	2791	Cont.
Subtotal Test and Evaluation			1246	450		526		569			2791	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Project Ofc Management	In-House	SSCOM	987	128		155		167		Cont.	1437	Cont.
Subtotal Management Services:			987	128		155		167			1437	

Project Total Cost:			19261	2560		3110		3387			28318	
---------------------	--	--	-------	------	--	------	--	------	--	--	-------	--

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603747A Soldier Support and Survivability				PROJECT D669		
COST (<i>In Thousands</i>)	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
D669 Clothing and Equipment	2245	3364	4088	3510	4844	4890	5557	5286	Continuing	Continuing
<p>A. <u>Mission Description and Justification</u> Use state-of-the-art technology to develop improved tactical and non-tactical clothing and individual equipment to enhance th lethality, survivability, sustainability, and mobility of the individual soldier.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 603 Conducted early user evaluation, freeze design, fabricate test prototypes, and initiated DT/OT of the Advanced Bomb Suit and Cold Weather Canteen. • 267 Developed initial design concepts with ballistic protective characteristics, conducted technical and early evaluations and downselected design/materials for test for test prototypes for Military Eye Protection System (MEPS), formerly Advance Laser Protection System(ALPS). • 435 Revised initial design concepts. Completed Market Survey. . • 245 Conducted early user evaluation of materials and designs for a Combat Clothing Pre-Planned Product Improvement (Permethrin Treated Battledress Uniform.. • 609 Released performance specification and Statement of Work for Military Eye Protection System and conducted lab evaluation/fit analysis of frame design. • 86 Conducted final chemical test on the Improved Toxicological Agent Protective (ITAP) Ensemble <p>Total 2245</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 250 Obtain MS I/II approval and award contract for test Items for the Advanced Bomb Suit.. • 2383 Award contract(s) for the Military Eye Protection System, integrate laser protective capabilities into configuration, and begin conduct user testing fo MEPS. • 203 Complete evaluations and approval of Concealable Body Armor for transitions. • 260 Initiate MSI/II for Modular Glove, Interim Combat Boot. • 209 Initiate market surveys, operational requirements documentation for programs identified for transition from Advance Technology Concept /Advance Technology Concept Demonstration. • 59 Small Business Innovative Research/Small Business Technology Transfer Programs. <p>Total 3364</p>										
Project D669			Page 11 of 13 Pages				Exhibit R-2A (PE 0603747A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603747A Soldier Support and Survivability	PROJECT D669
--	---	-------------------------------

FY 2000 Planned Program:

- 1487 Continue evaluation and obtain MSI/II for Advanced Bomb Suit, Modular Glove Program, Microclimate Cooling System, Environmental Protective Clothing, Modular Sleep System, Enhanced Combat Boot Program
 - 495 Initiate development of Advanced Integrated Fire Fighters Ensemble to provide for fire fighters.
 - 1859 Further improve the MEPS to take advantage of improvements in state-of-the-art Laser technologies.
 - 247 Initiate market surveys, operational requirements documentation for programs identified for transition from Advance Technology Concept /Advance Technology Concept Demonstration.
- Total 4088

FY 2001 Planned Program:

- 400 Obtain test units, test and obtain MS III approval and transition Lightweight Microclimate Cooling system.
 - 1027 Complete testing, Obtain MS III and TC MEPS to production.
 - 800 Initiate development of an Advanced Countermine/EOD system; Advanced Protective Footwear.
 - 754 Initiate Market Survey, evaluations for new items proposed for FY2001
 - 529 Initiate market surveys, operational requirements documentation for programs identified for transition from Advance Technology Concept /Advance Technology Concept Demonstration.
- Total 3510

B. Other Program Funding Summary:	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Compl	Total Cost
RDTE, 0604713.DL40, Clothing & Equipment	3955	4320	3517	4287	4572	4597	5183	5187	Cont	Cont
OMA, 114092000, Central Funding & Fielding	51500	48130	94738	85780	94127	77456	77456	77456	Cont	Cont

C. Acquisition Strategy: Developments transition to engineering and manufacturing development (EMD) followed by initial fielding and sustainment.

D. Schedule Profile	<u>FY1998</u>	<u>FY1999</u>	<u>FY 2000</u>	<u>FY2001</u>	<u>FY2002</u>	<u>FY2003</u>	<u>FY2004</u>	<u>FY2005</u>
Request for Program FY99-05	3Q*	2Q	2Q	2Q	2Q	2Q	2&4Q	2Q
Life Cycle Systems Review	4Q*	2&4Q	2&4Q	2&4Q	2&4Q	2&4Q	2&4Q	2&4Q

*Denotes a completed milestone

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation					PE NUMBER AND TITLE 0603747A Soldier Support and Survivability					PROJECT D669		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Various	In-House	SSCOM NRDEC	846	1864	TBD	1947	TBD	994	TBD		5651	
b. Various	Various	Various Contractors	1068	1000	TBD	1300	TBD	1500	TBD		4868	
Subtotal Product Development:			1914	2864		3247		2494			10519	
Remark:												
II. Support Costs: Support costs vary annually depending on the types of items we are evaluating. RDEC's support to evaluate items also varies annually depending on number and types of items.												
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Various	In-House	TECOM	86	165		591		485			1327	
Subtotal Test and Evaluation			86	165		591		485			1327	
Remark: Testing costs vary annually by item.												
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Management	In-House	PM Soldier	245	335		250		531			1361	
Subtotal Management Services:			245	335		250		531			1361	
Remark: Costs vary annually depending on number and type of items being evaluated.												
Project Total Cost:			2245	3364		4088		3510			13207	

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603766A Tactical Exploitation of National Capabilities (TENCAP) - Demonstration/Validation (TIARA)				PROJECT D907		
<i>COST (In Thousands)</i>	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
D907 Tactical Exploitation of National Capabilities - Demonstration/Validation (TIARA)	18957	0	0	0	0	0	0	0	0	18957
<p>A. <u>Mission Description and Budget Item Justification:</u> Supports the tactical commander's intelligence requirements for contingency force development and deep battl targeting as stated in Field Manual 100-5. Specific developments are managed within the Army's Tactical Exploitation of National Capabilities (TENCAP) program. The scope of the program is to leverage specific data and capabilities available from existing and emerging National and selected theater capabilities that meet stated Arm tactical intelligence information and targeting needs to correct deficiencies, and develop concepts, techniques and prototype processors to exploit critical data for near-real time integration into the appropriate tactical echelon. This project supports the advanced development/enhancement of the Mobile Integrated Tactical Terminal (MITT), Forward Area Support Terminal (FAST), Tactical Exploitation System (TES), and Advanced Electronic Processing and Dissemination System (AEPDS). The Army's emerging TES will incorporate the standards and protocols dictated by the Common Imagery Ground Surface System (CIGSS) program. TES brings all of the existing and emerging Army TENCAP capabilities [AEPDS, Modernized Imagery Exploitation System (MIES), and Enhanced Tactical Radar Correlator (ETRAC)] into an integrated common baseline; downsized modular and scaleable to meet a wide range of contingency requirements. TENCAP Common Baseline addresses common subsystems, planned improvements, key activities and ongoing/planned initiatives determined to have potential application to multiple TENCAP systems, including MIES and ETRAC that are funded under PE 0305208A. Specific details are provided in the Tactical Intelligence and Related Activities (TIARA) Congressional Budget Justification Book, Volume II, and in the Army TENCAP Master Plan.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 4654 Continued to pursue technology for the refinement of the TENCAP common baseline for fully exploiting national capabilities to meet emerging worldwide contingency scenarios. In addition to staying current with national and theater capabilities, included integration of Defense Switched Network (DSN) and migration of Defense Message System (DMS) into TENCAP systems. • 9690 Continued advanced development of TES program. • 3244 Continued support to TENCAP program management with administrative activities (e.g., FFRDC (Aerospace), ASPO, and TEC.) • 1369 Continued support to efforts being developed under PE 0305208D (DARP) Project PD8Z (e.g., FFRDC (Aerospace), ASPO, and TEC.) <p>Total 18957</p> <p>FY 1999 Planned Program: Program not funded in FY 1999.</p> <p>FY 2000 Planned Program: Program not funded in FY 2000.</p>										
Project D907			Page 1 of 3 Pages				Exhibit R-2 (PE 0603766A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603766A Tactical Exploitation of National Capabilities (TENCAP) - Demonstration/Validation (TIARA)	PROJECT D907
---	---	------------------------

FY 2001 Planned Program: Program not funded in FY 2001.

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	19566	0	0	0
Appropriated Value	20920			
Adjustments to Appropriated Value				
a. Congressional General Reductions	-1354			
b. SBIR / STTR	-458			
c. Omnibus or Other Above Threshold Reductions	-151			
d. Below Threshold Reprogramming				
e. Rescissions				
Adjustments to Budget Years Since FY 1999 PB				
Current Budget Submit (FY 2000/ 2001 PB)	18957	0	0	0

C. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To Compl</u>	<u>Total Cost</u>
RDTE, Budget Activity 5										
PE 0604766	17221	43950	70940	57008	88953	71418	65472	61538	Cont	Cont
RDTE, Budget Activity 7										
PE 0305208A		8853	8066	7943	8276	8360	8525	8767	Cont	Cont
RDTE, Budget Activity 7										
PE 0305208D Project PD8Z DARP	29062								0	29062
Other Procurement Army, OPA-2										
BZ7315 TENCAP	1618	6073	4370	12946	13876	15713	3897	2943	Cont	Cont
BZ7316 CIGSS		2501	2791	2853	2624	2637	2683	2751	Cont	Cont
Procurement, Defense Wide										
PE 0305208D Project PD8Z DARP	91824								0	91824

D. Acquisition Strategy: As pioneers in rapid acquisition, ASPO's success in delivering systems as those described above to warfighters can be directly attributed to an environment emphasizing stable funding, low density acquisition, minimal use of MILSPECS, and managed competition. By tailoring existing technology, leveraging the best commercial practices and using commercial and government off the shelf software, the Army Space Program Office (ASPO) minimizes risk while maximizing

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603766A Tactical Exploitation of National Capabilities (TENCAP) - Demonstration/Validation (TIARA)	PROJECT D907
---	---	------------------------

efficiency. Strong user involvement, a robust operations and maintenance program and a vigorous technology insertion effort ensure programmatic success. Finally, dedicated cradle to grave Integrated Logistics Support (ILS) for TENCAP systems is accomplished through a coordinated effort by government and contractor personnel and facilities.

E. <u>Schedule Profile</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2004</u>	<u>FY 2005</u>
Complete Advance Development of Demand Assigned Multiple Access applique into TENCA Common Baseline SUCCESS Radios		4 th QTR								
Initiate integration of DSN and migration of DMS into TENCAP systems		2 nd QTR								

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603774A Night Vision Systems - Advanced Development				PROJECT D131		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D131 Night Vision Systems Advanced Development	2152	2664	3188	4036	4790	4773	5424	5395	Continuing	Continuing
<p>A. <u>Mission Description and Justification:</u> This project encompasses the advanced development phase of the Army acquisition cycle for Night Vision and Electro-Optic (NVEO) devices/systems and prepares them for engineering development. The key objective of this program is to provide NVEO devices/systems for acquisition and engagement of enemy targets at maximum weapon system ranges under degraded battlefield/weather conditions and in countermeasure environments. This project provides the funding necessary to implement advances for product improvement or horizontal technology integration (HTI) to upgrade current capabilities in the future. The efforts are centered around development of countermeasure and electro-optic sensors improved capabilities for the individual soldiers and combat vehicles to meet stated Army deficiencies such as fratricide reduction.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 405 Developed additional Laser Protection for HTI SGF ground "B" Kit to be integrated into M2A3, M3A3, M1A2 SEP, and LRAS3. • 231 Integrated and demonstrated sight level ground "B" kit advanced capabilities for the HTI SGF. • 758 Prepared, demonstrated and improved FLIR capability for aviation systems. • 308 Evaluated lightweight multispectral sensor package at White Sands Missile Range. • 450 Developed Sensor Risk Reduction Project (SR2P) Testbed <p>Total 2152</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 510 Complete development of laser protection for HTI SGF ground "B" Kit to be integrated into M2A3, M3A3, M1A2 SEP, and LRAS3. • 100 Demonstrate existing Automatic Target Recognition/Automatic Target Cueing (ATR/ATC) interface capability with "B" kit. • 1337 Prepare and initiate sight level demonstration of improved FLIR capabilities (one test unit). • 300 Develop A & B Kit HTI Laser designs to include solid models. • 346 Complete development and demonstrate Sensor Risk Reduction Project (SR2P) Testbed (one test unit) • 71 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 2664</p>										
Project D131			Page 1 of 6 Pages				Exhibit R-2 (PE 0603774A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)		DATE February 1999
BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603774A Night Vision Systems - Advanced Development	PROJECT D131

FY 2000 Planned Program:

- 988 Develop Laser protection for high performance detectors
 - 793 Complete sight level demonstration of improved FLIR capabilities (one test unit)
 - 1107 Develop sensor fusion for targeting and surveillance
 - 300 Continue demonstration of Sensor Risk Reduction Project (SR2P) Testbed (one test unit)
- Total 3188

FY 2001 Planned Program:

- 1456 Develop advanced system level optical improvements
 - 1326 Demonstrate sensor fusion in a combat vehicle (two test units)
 - 1254 Develop advanced processing capability for "B" Kit (improve low contrast)
- Total 4036

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	2848	2681	3015	3779
Appropriated Value	2939	2681		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-91	-17		
b. SBIR / STT	-64			
c. Omnibus or Other Above Threshold Reduction	-21			
d. Below Threshold Reprogramming	-611			
e. Rescissions				
Adjustments to Budget Years Since FY 1999 PB			+173	+257
Current Budget Submit (FY 2000/2001 PB)	2152	2664	3188	4036

Changes Summary Explanation: Funding: FY 1998 – Funds reprogrammed to a higher priority requirement (-611).

C. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
PE 0602709A/Night Vision and Electro-Optical Technology RDTE, A Budget Activity 2	16563	19008	20111	20966	21624	20527	21870	23436	Continue	Continue

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603774A Night Vision Systems - Advanced Development	PROJECT D131
--	---	-------------------------------

C. <u>Other Program Funding Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Compl	Total Cost
PE 0603710A/Night Vision Advanced Development RDTE, A Budget Activity 3	17628	27273	36628	37035	41416	37726	34348	32756	Continue	Continue
PE 0604710A/Night Vision Devices Engineering Development RDTE, A Budget Activity 5	33338	21167	30644	31270	32577	23440	18348	130844	Continue	Continue
PE 0203735A/Abrams and Bradley A-Kit Development RDTE, A Budget Activity 7	71604	67473	3221	0	0	0	9508	9761	Continue	Continue

D. Acquisition Strategy: The advances and improvements for Second Generation FLIR (SGF) utilize various cost reimbursement development contracts that were competitively awarded using best value source selection procedures.

E. <u>Schedule Profile</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Prepare/Demonstrate Ground B Kit Advanced Capabilities (Test)	1Q-4Q							
Develop advanced optical assembl	1Q-4Q							
Evaluate Light Weight Multispectral Senso package	2Q-4Q							
Develop laser protection for vehicles	1Q-4Q	1Q-4Q						
Demonstrate ATR/ATC capability/interface with Aviation and Ground B Kit		2Q-4Q						
Prepare/Demonstrate improved FLIR capabilities (Test)		1Q-4Q						
Develop HTI Laser design		1Q-4Q						
Develop and Demo Laser Protection for high performance detectors			1Q-4Q					
Demonstrate improved FLIR Capabilities			1Q-2Q					
Develop Sensor Fusion			1Q-4Q					
Develop & demonstrate SR2P Testbed	1Q-4Q	1Q-4Q	1Q-2Q					
Develop advanced system level optical improvements				1Q-4Q	1Q-4Q			
Demonstrate Sensor Fusion				1Q-3Q				

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)							DATE February 1999	
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603774A Night Vision Systems - Advanced Development			PROJECT D131	
E. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Develop Advanced processing capabilit				1Q-4Q	1Q-4Q			
Develop & Demonstrate Advanced capabilities fo Staring Arrays						1Q-4Q	1Q-4Q	1Q-4Q
Develop & Demonstrate Laser Protection for Advanced Staring Arrays						1Q-4Q	1Q-4Q	1Q-4Q

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE **February 1999**

BUDGET ACTIVIT
4 - Demonstration and Validation

PE NUMBER AND TITLE
0603774A Night Vision Systems - Advanced Development

PROJECT
D131

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Laser Protection	Various	Various	405			988	2Q	1326	1Q-2Q	Continue	2719	
b. SR2P	C/CP	Westinghouse, Linthicum, MD	450	346	1Q	300	1Q				1096	
c. FLIR Develop/Integrate	Various	Various	541	1397	1Q	466	1Q				2404	
d. HTI Laser Design	C/CP	Raytheon, Dallas, TX		300	2Q						300	
e. Sensor Fusion Activities	C/CP	To Be Selected				892	2Q	734	1Q	Continue	1626	
f. Advanced Processing Activities	C/CP	To Be Selected						1115	2Q	Continue	1115	
g. SBIR/STTR	Various	To Be Selected		71							71	
Subtotal Product Development:			1396	2114		2646		3175			9331	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Matrix Support	MIPR	Various	139	174	1Q	232	1Q	301	1Q	Continue	846	
Subtotal Support Costs:			139	174		232		301			846	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Multispectral Eval	MIPR	WSMR	308								308	
b. FLIR Evals	MIPR	Various	275	352	1Q	284	1Q				911	
c. Sensor Fusion Evals	MIPR	To Be Selected						533	1Q	Continue	533	
Subtotal Test and Evaluation			583	352		284		533			1752	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation					PE NUMBER AND TITLE 0603774A Night Vision Systems - Advanced Development					PROJECT D131		
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Management		PM-NV/RSTA, Ft. Belvoir, V	34	24	1Q	26	1Q	27	1Q	Continue	111	
Subtotal Management Services:			34	24		26		27			111	
Project Total Cost:			2152	2664		3188		4036			12040	

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE February 1999			
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603790A NATO Research & Development					PROJECT D691		
COST (In Thousands)		FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D691 NATO Research and Development		7885	4132	1872	1971	8676	8848	9083	9325	Continuing	Continuing
<p>A. <u>Mission Description and Budget Item Justification:</u> This program implements the provisions of Title 10 U.S. Code, Section 2350a, Cooperative Research and Development (R&D) Projects: Allied Countries. The objective is to improve, through the application of emerging technologies, the conventional defense capabilities of the United States, the North Atlantic Treaty Organization (NATO), and U.S. major non-NATO allies. This program element only funds the U.S. equitable share of the cooperative R&D project spent in the U.S. Projects are implemented with the allied partners through international agreements which define the scope, cost and work sharing arrangements, management, contracting, security, data protection and third party transfers. By technology sharing the program jointly develops equipment with our allies to improve operational efforts by achieving multi-national force compatibility through the use of similar equipment and improved interfaces. Funds support all the R&D costs including the identification of cooperative opportunities and administration of the program. All funds are used to pay for the U.S. work share in the United States at U.S. Government and U.S. contractor's facilities. This program focuses on international cooperative technology demonstration, validation, and interoperability of the Battlefield Combat Identification System, Force XXI Battle Command Brigade & Below (FBCB2)/Appliqué Systems, Adaptive Digital Beamforming for THAAD radars, helicopter helmet mounted displays, military network switching , Patriot Tactical Operations Center, improved combat vehicle propulsion, missile seeker electronic countermeasures, eyesafe laser radar, artillery command and control, standoff chemical detectors, kinetic energy penetrators, and signal jamming subsystems. The final program will be reported separately as required by 10 USC 2350a(f).</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 1917 Battlefield Command and Control (C2) Systems Interoperability (Partner: Germany): Continued to test and evaluate message exchange through the Intelligent Translation Gateway, over the Defense Simulation Internet and the Digital Interface Lab in a simulated Operational Environment. • 528 Adaptive Beamforming Technology (ABFT) for Wide Band Phased Array Radars (Partner: United Kingdom): Continued improvement of detection in severe Electronic CM environments. Defined ABFT technology insertion program for THAAD Radar objective system, to include beamforming algorithms and required hardware and software modifications. Published final point design. • 933 Covert Night/Day Operations in Rotorcraft (CONDOR) (Partner: United Kingdom): Continued to improve helicopter helmet mount displa and flight controls. Fabricated Advanced Visionics System (AVS) and Advanced Flight Control System (AFCS) prototypes, system integration and tests. • 371 High Technology Switch (Partner: France): Continued development of advance interoperable Asynchronous Transfer Mode (ATM) switches fo ATM communication field tests, military networks and test beds, Digital Interoperability Lab (DIL) and Battlefield Info Transition System (BITS). • 47 Extended Air Defense (AD) Command and Control Interoperability (Partner: Germany): Continued the development of system specification to achieve interoperability between US and GE air defense tactical operations centers. Analyzed interoperability elements and prepared final specification. 											
Project D691			Page 1 of 10 Pages				Exhibit R-2 (PE 0603790A)				

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)		DATE February 1999
BUDGET ACTIVIT	PE NUMBER AND TITLE	PROJECT
4 - Demonstration and Validation	0603790A NATO Research & Development	D691
<ul style="list-style-type: none"> • 1740 Fighting Vehicle Propulsion Technology using Ceramic Materials (Partner: Japan): Continued to develop, test and characterize advance materials including ceramics, high temperature combustion optimization, low heat rejection technology, and advanced friction and wear phenomena. <p>FY 1998 Accomplishments: (continued)</p> <ul style="list-style-type: none"> • 669 Focal Plane Array Countermeasures (FPACM) (Partner: United Kingdom): Characterized and assessed advanced focal plane array missile seekers and developed electronic countermeasures (ECM) to defeat them through simulation, modeling and lab testing. • 670 Cooperative Eyesafe Laser Project (CELRAP) (Partner: Japan): Developed a joint performance specification for a multifunctional eyesafe lase radar for range finding, target profiling, obstacle avoidance, range and terrain mapping. Started brassboard design and subsystem development. • 124 Artillery System Cooperation Activities (ASCA) (Partners: France, Germany, United Kingdom): Developed common interface requirements for Allied Field Artillery Command and Control Systems and conducted field demonstration(s) for interoperability between AFATDS and Allies' systems. • 85 Laser Standoff Chemical Detector (LSCD) (Partner: France): Developed detection technology for incorporation in a lightweight, vehicle mountable contamination monitoring system that can detect and quantify in a standoff mode all known types of chemical agent contamination. • 135 Advanced Penetrator Development In Tank Munitions (Partner: United Kingdom): Developed an advanced kinetic energy penetrator to defeat upgraded tanks being equipped with Kinetic Energy/Explosively Reactive Armor (KE/ERA). Evaluated technologies and determined design capability. • 198 Low Level Air Picture Interface (LLAPI) (Partners: Canada, Germany, France, Netherlands, United Kingdom): Developed automated interfaces between US and Allied short range air defenses for radar data exchange and demonstrated systems interoperability. • 236 TACJAM-A Electronic Support Subsystem Upgrades (Partner: United Kingdom): Developed and integrated technology enhancements to current jamming subsystems used on vehicles and aircraft that detect modern signal transmissions. • 132 Next- Generation Autonomous Vehicle Navigation Control System (AUTOVAV) (Partner: Germany): Initiated design and development of an advanced autonomous vehicle navigation control system. Initiated sub-system tests of obstacle detection, classification, and avoidance technologies. • 100 Report To Congress: Pursuant to 10 USC 2350a, prepared and provided to USD(A&T) the Army section of the 1998 Report to Congress on the International Cooperative Research and Development Program <p>Total 7885</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 2182 Fighting Vehicle Propulsion Technology using Ceramic Materials (Partner: Japan): Continue to develop, test and characterize advance materials including ceramics, high temperature combustion optimization, low heat rejection technology, and advanced friction and wear phenomena. • 500 Focal Plane Array Countermeasures (FPACM) (Partner: United Kingdom): Characterize and assess advanced focal plane array missile seekers and develop electronic countermeasures (ECM) to defeat them through simulation, modeling and lab testing. 		
Project D691	Page 2 of 10 Pages	Exhibit R-2 (PE 0603790A)

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)		DATE
BUDGET ACTIVIT		February 1999
4 - Demonstration and Validation	PE NUMBER AND TITLE	PROJECT
	0603790A NATO Research & Development	D691
• 500	Cooperative Eyesafe Laser Project (CELRAP) (Partner: Japan): Continue to develop a joint performance specification for a multifunctional, eyesafe laser radar for range finding, target profiling, obstacle avoidance, range and terrain mapping. Continue fabricating subsystems and brassboard.	
• 500	Combat Identification (CI) Interoperability Demonstration (Partners: France, Germany, United Kingdom): Develop a NATO STANAG fo CI based upon the Battlefield Combat Identification System (BCIS) and the completed interoperability trials of prototype systems in Munster, GE.	
• 250	Adaptive Beamforming Technology (ABFT) for Wide Band Phased Array Radars (Partner: United Kingdom): Complete ABFT technolog insertion program for THAAD Radar objective system, beamforming algorithms, hardware and software modifications. Publish final point design.	
FY 1999 Planned Program: (continued)		
• 91	Report to Congress: Pursuant to 10 USC 2350a, prepare and provide to USD(A&T) the Army section of the 1999 Report to Congress on the International Cooperative Research and Development Program	
• 109	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs	
Total	4132	
FY 2000 Planned Program:		
• 1000	Command and Control (C2) Systems Interoperability Program (C2SIP) (Partners: Germany, France, United Kingdom): Continue integration work from Battlefield Interoperability Program (BIP), Quadrilateral Interoperability Program (QIP), and the Army Tactical Command & Control Information System (ATCCIS) into an Advance Technology Demonstration (ATD) to achieve NATO levels four (messaging) & five (database) interoperability.	
• 800	Laser Stand-off Chemical Detector (LSCD) (Partner: France): Continue development of technology that will allow U.S. troops to detect, identify, and quantify chemical agents from a distance by employment of the preferred doctrine of contamination avoidance.	
• 72	Report to Congress: Pursuant to 10 USC 2350a, prepare and provide to USD(A&T) the Army section of the 2000 Report to Congress on the International Cooperative Research and Development Program.	
Total	1872	
FY 2001 Planned Program:		
• 1000	Laser Stand-off Chemical Detector (LSCD) (Partner: France): Continue developing technology that will allow U.S. troops to detect, identify, and quantify chemical agents from a distance by employment of the preferred doctrine of contamination avoidance.	
• 900	Command and Control (C2) Systems Interoperability Program (C2SIP) (Partners: Germany, France, United Kingdom): Continue integration work from Battlefield Interoperability Program (BIP), Quadrilateral Interoperability Program (QIP), and the Army Tactical Command & Control Information System (ATCCIS) into an Advance Technology Demonstration (ATD) to achieve NATO levels four (messaging) & five (database) interoperability.	
• 71	Report to Congress: Pursuant to 10 USC 2350a, prepare and provide to USD(A&T) the Army section of the 2001 Report to Congress on the International Cooperative Research and Development Program.	
Project D691	Page 3 of 10 Pages	Exhibit R-2 (PE 0603790A)

DATE
February 1999

BUDGET ACTIVIT
4 - Demonstration and Validation

PE NUMBER AND TITLE
0603790A NATO Research & Development

Total 1971

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE **February 1999**

BUDGET ACTIVIT
4 - Demonstration and Validation

PE NUMBER AND TITLE
0603790A NATO Research & Development PROJECT
D691

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (<u>FY 1999 PB</u>)	8866	11161	11300	11900
Appropriated Value	9168	4161		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-302	-29		
b. SBIR / STT	-223			
c. Omnibus or Other Above Threshold Reduction	-73			
d. Below Threshold Reprogramming	-685			
e. Rescissions				
Adjustments to Budget Years Since <u>FY 1999PB</u>			-9428	-9929
Current Budget Submit (<u>FY 2000/2001 PB</u>)	7885	4132	1872	1971

Change Summary Explanation: Funding: FY 2000 - Funds realigned to higher priority requirements (-3233); funds realigned to PEs containing the national project (-6195).
 Funding: FY 2001 – Funds realigned to higher priority requirements (-2425); funds realigned to PEs containing the national project (-7504).

C. Other Program Funding Summary: None

E. Schedule Profile	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Combat Identification Interoperability									
Complete Trials and Demonstration	3QTR								
Complete Data Evaluation & Reports		2QTR							
Conclude MOU Amendment			1QTR						
Complete NATO STANAG for CI				4QTR					
Complete NATO Staff Requirement					4QTR				
Command & Control Interoperability									
Complete Hardware/Software Installation	3QTR								
Complete Lab Demo/Tests & Simulations		4QTR							
Complete Field Demonstration			4QTR						
Complete C2SIP ATCD				3QTR					
Complete Integration into MCS					3QTR				

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)							DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603790A NATO Research & Development			PROJECT D691		
E. Schedule Profile	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Fighting Vehicle Propulsion Technology									
Contract Awards	1QTR								
Preliminary Engine Analysis Complete		4QTR							
Materials Characterization/Test Complete			4QTR						
Combustion Test and Analysis Complete				4QTR					
Complete Tests of Japanese Ceramic Components					3QTR				
Focal Plane Array Countermeasures									
Complete Missile Seeker Characterization	3QTR								
Mathematical Model Development		3QTR							
Complete Software Simulations			3QTR						
Develop Advanced CM Model				3QTR					
Complete Testing of Advanced CM Model					3QTR				
Cooperative Eyesafe Laser Project									
Complete Performance Specification	2QTR								
Complete Subsystem Development		4QTR							
Complete Brassboard Integration			4QTR						
Complete Development Testing				4QTR					
Complete Early Operational Testing					3QTR				
Artillery Systems Cooperation Activity									
MOU Negotiations Complete	4QTR								
Complete Interface Requirements		4QTR							
Complete Phase I Technical Test			3QTR						
Complete Phase I Operational Tests				2QTR					
Complete Phase II Tests					3QTR				
AUTONAV									
MOU Project Arrangement Concluded	2QTR								
Complete Prototype Design		3QTR							
Complete Fabrication & Integration			2QTR						
Complete Phase I Development Testing				4QTR					
Complete Early Operational Testing					3QTR				

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603790A NATO Research & Development	PROJECT D691
---	--	------------------------

E. Schedule Profile	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
TACJAM-A									
MOU Concluded	1QTR								
Complete Prototype Hardware Upgrades		2QTR							
Complete Systems Integration			3QTR						
Complete Development Testing				4QTR					
Complete Operational Testing					3QTR				
Laser Standoff Chemical Detector									
MOU Project Arrangement Concluded		2QTR							
Complete Analysis of Spectral Properties			3QTR						
Begin Laser Prototype Development				2QTR					
Complete Development Testing					3QTR				

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603790A NATO Research & Development						PROJECT D691		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Helmet Mounted Display	CPIF	Hughes Training Herdon, VA	4868	0		0		0		0	4868	4868
b. Systems Integration	CPIF	McDonnell Douglas Mesa, AZ	2500	0		0		0		0	2500	2500
c. Sensors	FFP	Quantum Research Huntsville, AL	1550	0		0		0		0	1550	1550
d. Command & Control Systems	CPFF	CSC Ft Washington, PA	15050	800		572		671		880	17973	18028
e. Combat Identification SystemsJ	CPAF	TRW Redondo Bch, CA	3893	100		0		0		0	3993	3993
f. Command & Control Systems	CPFF	Madentech Shrewsbury, NJ	1600	100		100		100		150	2050	2050
g. Algorithm Development	CPFF	Georgia Tech Atlanta, G	7820	100		100		100		0	8120	8120
h. Sensors	CPFF	Dynetics Huntsville, AL	450	100		100		100		100	850	850
i. Software	FFRDC	Mitre Boston, MA	300	100		100		100		400	1000	1000
j. High Temperature Lubricant Research	CPFF	Wayne State Univ Detroit, M	1600	200		0		0		0	1800	1800
k. Combustion Research	CPFF	Rutgers Univ Brunswick, NJ	900	200		0		0		0	1100	1100
l. Software Development	CPFF	SRI Menlo Park , CA	1350	100		100		100		400	2050	2050
m. Diesel Engine Research	CPFF	Detroit Diesel Allison Detroit, M	1000	1000		0		0		0	2000	2000
n. Software Development	CPFF	Nichols Research Huntsville, AL	700	132		100		100		200	1232	1232
o. Ordnance Research	CPFF	Nuclear Metals Inc. Concord, MA	1200	0		0		0		0	1200	1200

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603790A NATO Research & Development						PROJECT D691		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
p. Ammunition	CPFF	Aerojet Ordnance Jonesboro, TN	1200	0		0		0		0	1200	1200
q. Ammunition	CPFF	Olin Ordnance St. Petersburg, FL	300	0		0		0		0	300	300
Subtotal Product Development:			46281	2932		1172		1271		2130	53786	53841
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Engineering	MIPR	AMCOM Ft. Eustis, V	200	50		0		0		0	250	
b. Engineering	MIPR	CECOM Ft. Monmouth, NJ	400	100		150		150		400	1200	
c. Engineering	MIPR	TACOM Warren, M	400	100		0		0		0	500	
d. Logistics	MIPR	ICPA APG, MD	481	100		100		100		400	1181	
e. Logistics	MIPR	LOGS Huntsville, AL	150	50		50		50		600	900	
f. Engineering	MIPR	AMCOM Huntsville, AL	130	100		0		0		0	230	
Subtotal Support Costs:			1761	500		300		300		1400	4261	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation					PE NUMBER AND TITLE 0603790A NATO Research & Development					PROJECT D691		
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Independent Evaluations	MIPR	AMSAA APG, MD	400	100		50		50		300	900	
b. Software Validation	MIPR	CECOM Ft Monmouth, NJ	300	100		50		50		300	800	
c. System Testing	MIPR	Army Research Lab, APG, MD	300	0		0		0		0	300	
d. System Testing	MIPR	TECOM APG, MD	500	100		50		50		1760	2460	
Subtotal Test and Evaluation			1500	300		150		150		2360	4460	
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Project Management	MIPR	PEO C3S Ft. Monmouth, NJ	600	50		100		100		600	1450	
b. Project Management	MIPR	TACOM Warren, M	400	100		0		0		0	500	
c. Project Management	MIPR	PEO IEW Ft. Monmouth, NJ	500	100		0		0		0	600	
d. Project Management	MIPR	PEO GCSS Warren, M	400	0		0		0		0	400	
e. Project Management	MIPR	CBDCOM Edgewood Ars, MD	300	50		100		100		330	880	
f. Project Management	MIPR	Army Research Lab, APG, MD	200	0		0		0		0	200	
g. Project Management	MIPR	Army Research Lab, WSMR, NM	400	50		0		0		0	450	
h. Project Management	MIPR	CECOM Ft. Belvoir, V	500	50		50		50		380	1030	
i. Project Management	MIPR	AMCOM Redstone Ars, AL	550	0		0		0		0	550	
Subtotal Management Services:			3850	400		250		250		1310	6060	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603790A NATO Research & Development	PROJECT D691
---	--	------------------------

	Total PYs Cost	<u>FY 1999</u> Cost		<u>FY 2000</u> Cost		<u>FY 2001</u> Cost		Cost To Complete	Total Cost	Target Value of Contract
Project Total Cost:	53392	4132		1872		1971		7200	68567	53841

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603801A Aviation - Advanced Development
--	---

COST <i>(In Thousands)</i>	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	14869	11404	5746	5870	9130	9485	10324	10448	Continuing	Continuing
DB32 Advanced Maintenance Concepts and Equipment	3606	2592	2990	3046	3441	3573	3836	3949	Continuing	Continuing
DB33 Cargo Handling and Mission Support Equipment	1810	2384	2756	2824	3003	3219	3541	3556	Continuing	Continuing
DB45 Aircrew Integrated Systems - Advanced Development	9453	6428	0	0	2686	2693	2947	2943	Continuing	Continuing

A. Mission Description and Budget Item Justification: This PE provides advanced development aviation support of tactical programs associated with air mobility, advanced maintenance concepts and equipment, and Aircrew Integrated Systems (ACIS).

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	13696	7487	5872	5993
Appropriated Value	14132	11487		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-436	-83		
b. SBIR / STTR	-331			
c. Omnibus or Other Above Threshold Reductions	-109			
d. Below Threshold Reprogramming	+1613			
e. Rescissions				
Adjustments to Budget Years Since FY 1999 PB			-126	-123
Current Budget Submit (FY 2000/ 2001 PB)	14869	11404	5746	5870

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)									DATE February 1999	
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603801A Aviation - Advanced Development					PROJECT DB32	
COST (In Thousands)	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
DB32 Advanced Maintenance Concepts and Equipment	3606	2592	2990	3046	3441	3573	3836	3949	Continuing	Continuing
<p>A. Mission Description and Budget Item Justification: This project enhances utilization of current and future aircraft by improving the efficiency of maintenance (primarily in the area of diagnostics/prognostics) and servicing operations by validating new maintenance concepts to improve man machine interface, enhancing aircraft maintenance procedures and reducing operating and support costs. Included in the project are Digitized Aviation Logistics (DAL) elements such as: Portable Maintenance Aids (PMA), database management software, on-board diagnostics, digital source collector, health/usage monitoring system, trending analysis, and support infrastructure.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 617 Completed the critical design review, prototype build and demonstration of advanced maintenance software tools to be hosted on a Portable Maintenance Aid. These tools include the application of digitized drawings, flexible maintenance scheduling and integration of aircrew information into the diagnostic process. • 150 Conducted engineering assessment of MH-47D flight loads data as integrity test of Structural Usage Monitoring System (SUMS) for the MH-47E. This was a limited proof of concept activity for infrastructure implementation of on-board data recording and use. • 175 Analyzed system needs and developed technology insertion road maps for on-board diagnostics and monitoring functions for the modernized fleet • 2664 Completed an analysis and detailed planning effort for a prototype program to implement an enterprise infrastructure for digitized aviation logistics (DALP), concentrating on unit maintenance and engineering sustainment needs. Performed a cost/benefit analysis as part of the prioritization and tradeoff process. Identified and coordinated technical and programmatic interfaces with numerous critical DoD and industry efforts to include the Global Combat Support System – Army (GCSS-Army). The prototype includes elements of the Aviation Logistics Concept for Force XXI at each level of activity; on-aircraft, at-aircraft, at-unit, above-unit, and the sustainment base. <p>Total 3606</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 900 Design, develop, select, and/or integrate on-aircraft technologies and capabilities necessary to support the front-end information requirements of the DALP. This includes supplemental diagnostics, rotor track and balance, usage monitors, exceedance monitors, automatic identification technology, and digital data/information collection and on-board processing capability necessary to achieve the DALP goals. • 636 Expand at-aircraft software tools to provide data download, transport, and integration of on-board information with diagnostic, repair, and replace technical reference information to enable single point access for the maintainer. • 675 Integrate at-unit maintenance management and decision support software with the on-board system and at-aircraft maintenance action data to enable higher levels of planning, diagnosis, and decisions. Interface aviation specific functions with the GCSS-Army information management infrastructure. 										
Project DB32	Page 2 of 13 Pages					Exhibit R-2A (PE 0603801A)				

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE February 1999
BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603801A Aviation - Advanced Development	PROJECT DB32
<p>FY 1999 Planned Program: (continued)</p> <ul style="list-style-type: none"> • 330 Support above-unit and sustainment base data distribution, analysis and decision support for maintenance inspection, procedure, and criteria improvements. • 51 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) programs. <p>Total 2592</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 800 Initiate implementation of on-aircraft technologies and begin field data collection and distribution • 740 Develop and integrate software components of prototype portable maintenance aid sufficient to enable field data transport and limited database integration. • 1020 Develop and integrate software components of prototype at-unit maintenance management system capable of performing usage tracking, trending, scheduled and unscheduled inspection and repair planning, and configuration management. System will also provide limited interface with GCSS-Army functionality. • 430 Evaluate engineering change decision impact on real-time unit maintenance actions and implement streamlined support process to advance toward on-condition maintenance. <p>Total 2990</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 1459 Conduct company/battalion field operations using prototype digital logistics infrastructure. Collect, analyze, and use data to make changes in the decisions we make and actions we take in operating and supporting the aircraft. • 871 Provide single point access for the maintainer for information needs. Integrate software and promote automatic information exchange between databases. • 716 Evaluate functionality for configuration management, flexible maintenance inspection and repair scheduling, on-condition maintenance, and integrated information management systems. <p>Total 3046</p> <p>B. <u>Other Program Funding Summary:</u> None</p> <p>C. <u>Acquisition Strategy:</u> This project is an aggregate of advanced maintenance concepts-related projects. While the detailed acquisition strategy varies from project to project, the general strategy for each individual project is to complete the development effort through Government test (developmental and operational). Program documentation for milestone decision is prepared, as appropriate, concurrently with the development effort in preparation for program transition to the organization responsible for production and fielding.</p>		
Project DB32	Page 3 of 13 Pages	Exhibit R-2A (PE 0603801A)

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603801A Aviation - Advanced Development	PROJECT DB32
---	--	------------------------

D. Schedule Profile	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Digital Aviation Logistics Prototype									
Define digital aviation logistics vision	4Qtr								
Conduct cost/benefit tradeoffs		4Qt							
Developed detailed prototype plan		4Qtr							
Select Specific On-Board Technologies			4Qtr						
Initiate On-Aircraft integration			4Qtr						
Prototype Portable Maintenance Aid				4Qtr					
Automate integrated database transfer				4Qtr					
Interface information management systems			4Qtr	4Qtr					
Begin field data collection				4Qtr					
Evaluate on-condition maintenance structure					4Qtr				
Conduct company/battalion operations					4Qt				
Evaluate results and adjust infrastructure					4Qtr				

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603801A Aviation - Advanced Development	PROJECT DB32
---	--	------------------------

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. On-Board Systems	SS/CPFF	TBD		950	3 rd Qtr	800					1750	1350
b. At-aircraft Systems	C/CPFF	TBD		637	2 nd Qtr	740		871			2248	1500
c. At-Unit Systems	C/CPFF	TBD		675	3 rd Qtr	1020		716			2411	1700
d. Above-Unit Systems	C/CPFF	TBD		330	4 th Qtr	430					760	350
e. DALP Demo	C/CPFF	TBD		0		0		1459			1459	1459
Subtotal Product Development:				2592		2990		3046			8628	

II. Support Costs: None

III. Test and Evaluation: None

IV. Management Services: None

Project Total Cost:				2592		2990		3046			8628	
---------------------	--	--	--	------	--	------	--	------	--	--	------	--

--	--	--	--	--	--	--	--	--	--	--	--	--

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603801A Aviation - Advanced Development				PROJECT DB33		
COST (In Thousands)	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
DB33 Cargo Handling and Mission Support Equipment	1810	2384	2756	2824	3003	3219	3541	3556	Continuing	Continuing
<p>A. Mission Description and Budget Item Justification: This project develops equipment, practices, and procedures for the operational improvement of planning, loading, transport, and off-loading of helicopter cargo in all-weather, around the clock combat scenarios. It also replaces obsolete and insupportable ground support equipment with new and standardized multi-output equipment compatible with all Army aircraft models; develops rapid battle repair procedures and tools to speed the return of aircraft to combat ready status; and develops new equipment for aerial recovery of damaged aircraft.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 165 Developed vehicle generator and initiated development of power electronics for multi-mode electric power source for aviation contact maintenance operations (contact maintenance electrical power (CMEP)). • 933 Initiated definition of engine/aircraft-interface, expert diagnostic logic for the force modernization aviation fleet engines and auxiliary power units to support FY99 development of aviation turbine engine diagnostic system (ATEDS) • 185 Completed non-developmental item competition and selection and began fabrication of objective aircraft cleaning and deicing system (ACDS) that is intended to provide aviation with a mobile, environmentally compliant cleaning and deicing capability • 225 Building on highly successful prototype effort, initiated development of field hardened computer aided nondestructive inspection and disposition (CANDID) system to meet joint service (Army/Navy) nondestructive inspection requirements for both metal and composite aircraft structures • 75 Investigated alternative environmentally friendly aircraft deicing technologies for future deicing system applications • 227 Developed and tested structural changes to accommodate tie-down of internal fuel tanks in the advanced cargo handling system (ACHS I) (composite floor, flip over rollers, pallet/vehicle guides and locks). Installing the modified ACHS in a National Guard aircraft for further evaluation. <p>Total 1810</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 784 Complete the expert engine/aircraft-interface diagnostic databases, and initiate development of ATEDS for the force modernized fleet • 584 Identify performance requirements and initiate design of replacement for Aviation Ground Power Unit (AGPU) to meet the needs of the force modernized fleet • 260 Complete preliminary design of objective CANDID system, identifying hardware, software, and packaging requirements • 216 Complete installation of ACHS in National Guard aircraft. Resolve interface issues with ACHS and internal fuel tanks. Perform system upgrades to a production configuration. Conduct qualification testing of ACHS subsystems. • 243 Initiate effort to detect, characterize, treat, and prevent hidden corrosion in aircraft structures; building on detection capability being developed under the CANDID effort and the Navy's ongoing treatment and prevention activities 										
Project DB33	Page 6 of 13 Pages					Exhibit R-2A (PE 0603801A)				

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE February 1999
BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603801A Aviation - Advanced Development	PROJECT DB33
<p>FY 1999 Planned Program: (continued)</p> <ul style="list-style-type: none"> • 201 Fabricate 4 objective ACDS prototypes and conduct laboratory and field tests • 50 Complete CMEP power electronics, complete vehicle installation kit, install in prototype vehicle, and field test • 46 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) programs. <p>Total 2384</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 100 Complete field testing of ACDS prototype units in joint service field environments • 450 Complete detail design of CANDID hardware and software, and fabricate 5 prototype systems • 500 Complete detail design of AGPU replacement prototype system and initiate fabrication of prototype • 316 Expand ACHS I efforts to meet identified deficiencies through initiation of additional technology development (ACHS II) in the areas of remote external cargo monitoring, high capacity external cargo winches, and automated weight and balance subsystems • 579 Complete detail design of ATEDS hardware and software and initiate fabrication of prototype hardware • 519 Identify most promising corrosion treatment and prevention technologies, concentrating on field application and initiate detail design efforts. Characterize structural degradation as function of hidden corrosion detection. • 292 Building on prior combat maintenance/battle damage repair efforts, initiate development of low observable component battle damage repair (LOBDR) kit(s). <p>Total 2756</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 195 Complete field testing of prototype CANDID systems and develop product/performance specification for follow on procurement • 585 Fabricate 2 AGPU replacement prototypes and initiate field test • 325 Complete detail design of ACHS II subsystems and fabrication of prototype hardware. Install in testbed aircraft for field evaluation • 585 Complete fabrication of ATEDS prototypes and complete field evaluation • 684 Complete detail design efforts, fabrication, and application of corrosion technologies, as necessary, and conduct field evaluation. Modify maintenance inspection and repair criteria in accordance with structural degradation characterization • 450 Complete detail design of LOBDR kit(s) and initiate fabrication of kit(s) <p>Total 2824</p> <p>B. <u>Other Program Funding Summary:</u> Non</p>		
Project DB33	Page 7 of 13 Pages	Exhibit R-2A (PE 0603801A)

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603801A Aviation - Advanced Development	PROJECT DB33
---	--	------------------------

C. Acquisition Strategy: This project is an aggregate of advanced mission support and cargo handling concepts-related projects. While the detailed acquisition strategy varies from project to project, the general strategy for each individual project is to complete the development effort through Government test (developmental and operational). Program documentation for milestone decisions is prepared, as appropriate, concurrently with the development effort in preparation for program transition to the organization responsible for production and fielding.

D. Schedule Profile	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Contact Maintenance Electrical Power (CMEP)								
Preliminary Design Review	4Qtr							
Detailed Design Review		2Qtr						
Fabrication (1)		3Qtr						
Test		4Qtr						
Aviation Turbine Engine Diagnostic Sys (ATEDS)								
Complete database development		2 Qtr						
Preliminary Design Review		3 Qtr						
Detailed Design Review			3Qtr					
Fabrication (3)			4 Qtr					
Test				4Qtr				
Aircraft Cleaning and Deicing System (ACDS)								
Preliminary Design Review	4Qtr							
Fabrication (4)		3Qtr						
Test			1Qtr					
Computer Aided Non-Destructive Inspection and Disposition (CANDID) System								
Preliminary Design Review		3Qtr						
Detailed Design Review			1Qt					
Fabrication (5)			3Qtr					
Test				4Qt				
AGPU Replacement								
Preliminary Design Review		4Qt						
Detailed Design Review			1Qtr					
Fabrication (2)				1Qtr				

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603801A Aviation - Advanced Development	PROJECT DB33
---	--	------------------------

D. Schedule Profile	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Advanced Cargo Handling System (ACHS)								
Phase I Test								
Phase 2 Preliminary Design Review				4 Qtr				
Phase 2 Detailed Design					4 Qtr			
Fabrication (I)						4 Qtr		
Test						r	4 Qtr	
Corrosion Detection, Characterization, Prevention, & Treatment								
Preliminary Design Review			4Qtr					
Detailed Design Review			4Qtr					
Fabrication				4Qtr				
Test				4Qtr				
Low Observable Battle Damage Repair (LOBDR)								
Preliminary Design Review			4Qtr					
Detailed Design Review				4Qt				
Fabrication					4Qtr			
Test						4Qtr		

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603801A Aviation - Advanced Development	PROJECT DB33
---	--	------------------------

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. CMEP	PO		165	50						0	215	
b. ATEDS	C/CPFF		1256	765	31Mar99	579		585		0	3185	1754
c. ACDS	C/CPFF	Centech, Arlington VA	254	266		100				0	620	220
d. CANDID	SS/CPFF	Boeing, Mesa AZ	628	260		450		195		0	1533	750
e. AGPU Replacement	C/CPFF			584	31Mar99	500		585		0	1669	1500
f. ACHS	C/CPFF		911	216	31Mar99	316		325		0	1768	700
g. Corrosion Technologies	C/CPFF			243	31Mar99	519		684		1150	2596	2081
h. LOBDR	C/CPFF					292	31Mar00	450		1000	1742	1342
Subtotal Product Development:			3214	2384		2756		2824		2150	13328	8347

II. Support Costs: None

III. Test and Evaluation: None

IV. Management Services: None

Project Total Cost:			3214	2384		2756		2824		2150	13328	
---------------------	--	--	------	------	--	------	--	------	--	------	-------	--

Project DB33

Page 10 of 13 Pages

Exhibit R-3 (PE 0603801A)

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603801A Aviation - Advanced Development	PROJECT DB45
--	---	-------------------------------

COST (<i>In Thousands</i>)	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
DB45 Aircrew Integrated Systems - Advanced Development	9453	6428	0	0	2686	2693	2947	2943	Continuing	Continuing

A. Mission Description and Budget Item Justification: Project DB45 – Aircrew Integrated Systems (ACIS) Advanced Development: This project provides advanced development for those systems and items of equipment that are unique and necessary to the sustainment, survivability, and performance of Army aircrews and troops on the future integrated battlefield and related training missions. Advanced development programs will focus on the development and evaluation of emerging technologies and the adaptation of commercial and nondevelopmental items (NDI) to military requirements. The Air Warrior (AW) program will provide the aircrew with a systems approach to chemical and biological (CB) protection, noise protection, microclimatic conditioning, crash and post-crash survivability, concealment and environmental protection, ballistic protection, night vision capability, heads-up displays, nuclear flash protection, directed energy eye protection, and flame/heat protection. The AW design will improve overall aircrew mission performance, aircrew comfort, aircrew and aircrew station interface, safety, and survivability. The Aircrew Integrated Common Helmet (AICH) program (an Air Warrior program component) is the major information management, control, and aircraft interface for the aviator. The AIC incorporates a helmet mounted display, utilizing Comanche compatible optics and electronics with the advanced HGU-56/P helmet. The Virtual Retinal Display (VRD) development effort evaluates VRD technology for incorporation into helmet mounted displays of Army aircrews. The Virtual Cockpit Optimization Program (VCOP) demonstrates an integrated system providing pilots with improved intuitiveness, sense of awareness, overall aircrew mission performance, aircrew and aircrew station interface, safety, and survivability by providing the pilot with augmented visionics, three-dimensional audio improvements, and visual data regarding aircraft systems status and operation, threat warnings, and improved transition and training of pilots who must operate a number of different aircraft platforms during different missions. This project in this Program Element does not duplicate any aircraft platform program efforts. Both joint and service independent efforts continue to be pursued under the scope of this project.

FY 1998 Accomplishments:

- 9453 Continued Air Warrior Program Definition and Risk Reduction (PDRR) and incorporation of helmet mounted display technologies

Total 9453

FY 1999 Planned Program:

- 2472 Complete basic Air Warrior PDRR effort, and begin studies of emerging technologies for insertion into the basic Air Warrior ensemble
- 3797 Begin Virtual Cockpit Optimization Program (VCOP) PDRR effort
- 159 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) programs.

Total 6428

FY 2000 Planned Program: Project not funded in FY 2000

FY 2001 Planned Program: Project not funded in FY 2001
Project DB45

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)									DATE February 1999	
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603801A Aviation - Advanced Development					PROJECT DB45	
B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Compl	Total Cost
RDTE, A Budget Activity 5 PE 0604801A Project DC45 (Aircrew Integrated Systems – EMD)	5402	11519	6312	9264	3687	2293	2587	2610	Cont	Cont
Aircraft Procurement, Army (APA) SSN AZ3110 Aircrew Integrated Systems which represents the Entire APA program for ACIS	7950	9024	4394	1419	21063	34511	57377	65637	Cont	Cont
<p>C. Acquisition Strategy: DB45 – An Air Warrior Program Definition and Risk Reduction development contract was awarded in FY 97 to perform a functional requirements analysis and consider user requirements and available technologies to optimize recommended alternatives within the constraints of cost as an independent variable. A combined government and contractor team will then develop the Air Warrior systems and integrate those systems with the force modernization aircraft. Prototypes will be developed that represent the basic Air Warrior ensemble for test and evaluation. Through a combined government and contractor team, the Virtual Cockpit Optimization Program Definition and Risk Reduction effort will investigate and demonstrate how a future rotary wing crewstation could be crafted to deal effectively with information overload on the digital battlefield.</p>										
D. Schedule Profile	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Air Warrior Functional Analysis Review and Preferred Alternative selected			4Qtr							
Air Warrior Milestone II approved				1Qtr						
EMD for Air Warrior basic ensemble				4Qtr	4Qtr	4Qtr	2Qtr			
Development of Technical Insertion Plan				4Qtr						
Air Warrior Preliminary Design Review					1Qtr					
Critical Design Review and initial Prototype Development					3Qtr					
Air Warrior System Test (Development/Qualification)						1Qtr				
Initial Air Warrior Operation Test & Evaluation Complete						4Qtr				
Continuous evaluation, test and insertion of new technologies as Air Warrior product improvements						4Qtr	4Qtr	4Qtr	4Qtr	4Qtr
Air Warrior basic ensemble Milestone III							2Qtr			
Production of the basic Air Warrior ensemble during FY2002 through FY2008 for basic Air Warrior ensemble							4Qtr	4Qtr	4Qtr	4Qtr
<p>Project DB45 Page 12 of 13 Pages Exhibit R-2A (PE 0603801A)</p>										

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603801A Aviation - Advanced Development	PROJECT DB45
---	--	------------------------

D. Schedule Profile	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Air Warrior basic ensemble IOC								3Qtr		
Production of Air Warrior ensemble product improvements as emerging technologies can be inserted during FY 2003 through FY2012								4Qtr	4Qtr	4Qtr
Virtual Cockpit Optimization Program (VCOP) components demonstration in (APEX) simulator				4Qtr						

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603802A Weapons and Munitions - Advanced Development	PROJECT DAS2
--	--	-------------------------------

COST (In Thousands)	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
DAS2 Small Arms Improvements	0	0	1751	2810	1436	1049	0	0	0	7046

A. Mission Description and Budget Item Justification: This project element addresses the modernization of existing Small Arms Weapon systems. This program provides funds to develop existing and emerging technology to enhance lethality, target acquisition, fire control, training effectiveness and reliability for small arms weapon systems and munitions. Current small arms include a variety of personal defense weapons (.38 caliber, .45 caliber; 9mm), individual weapons (5.56mm), crew-served weapons (5.56mm-40mm) and related equipment such as fire control, training devices, hand grenades and ammunition. Current efforts focus on improvements to the M249 Squad Automatic Weapon, M16/M4 Rifle, M203 Grenade Launcher, MK19 Grenade Machine Gun and M240B Medium Machine Gun and hand grenades.

FY 1998 Accomplishments: Project not funded in FY 1998

FY 1999 Planned Program: Project not funded in FY 1999

FY 2000 Planned Program:

M249 MG Barrel Life Extension Program

- 50 Concept Definition/Market Survey/Concept Evaluation
- 40 Requirements Definition and Specification
- 160 Feasibility Stud
- 50 Evaluation of Stud

M203 Upgrade

- 88 Technical Assessments
- 97 Trade-off Analysis
- 107 Formulate/Refine Designs
- 134 Formulate/Refine Designs/Competitive Contractor Selection

MK19 Self Destruct Cartridge

- 50 Market Survey
- 75 Prepare RFP
- 75 Technical Evaluation
- 250 Contract Awar

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)		DATE
BUDGET ACTIVIT 4 - Demonstration and Validation		February 1999
PE NUMBER AND TITLE 0603802A Weapons and Munitions - Advanced Development		PROJECT DAS2
<p>FY 2000 Planned Program: (continued)</p> <p><u>M240 Weight Reduction</u></p> <ul style="list-style-type: none"> • 59 Establish Parameters • 73 Survey Materials • 136 Award R&D Contract • 77 Trade Off Analysis <p><u>Family Of Light Weight Hand Grenades</u></p> <ul style="list-style-type: none"> • 100 Market Survey • 100 Performance Specification • 30 Procurement Package <p>Total 1751</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • <u>M203 Upgrade</u> • 455 Contract Awar • 126 Fabricate Hardware • 289 Test and Evaluate Hardware • <u>MK19 Self Destruct Cartridge</u> • 250 Design and Fabricate Prototype • 300 Testing • 50 Final Report • <u>M240 Weight Reduction</u> • 521 Fabricate Prototypes • 99 Test and Evaluate • <u>Family Of Light Weight Hand Grenades</u> • 110 Procurement Package • 500 Contract Awar • 110 Build Prototypes <p>Total 2810</p>		
Project DAS2	Page 2 of 6 Pages	Exhibit R-2 (PE 0603802A)

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603802A Weapons and Munitions - Advanced Development	PROJECT DAS2
--	--	-------------------------------

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (<u>FY 1999</u> PB)	0	0	1656	2630
Appropriated Value	0	0		
Adjustments to Appropriated Value				
a. Congressional General Reductions				
b. SBIR/STT				
c. Omnibus or Other Above Threshold Reductions				
d. Below Threshold Reprogramming				
e. Rescissions				
Adjustments to Budget Years Since <u>FY 1999</u> PB			+95	+180
Current Budget Submit (<u>FY 2000/2001</u> PB)	0	0	1751	2810

C. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To</u> <u>Compl</u>	<u>Total</u> <u>Cost</u>
RDTE 0604802A, Project DAS1			410	966	3942	9910	5715	5275	26218	

Remarks: Funding here reflects only those programs starting in project DAS2 and continuing into project DAS1. It does not include projects starting in DAS1.

D. Acquisition Strategy: Primary strategy is to make technical assessments, trade-off analysis, formulate and refine designs, test and evaluate items, and make determinations as to whether the item should be transitioned into Engineering Development.

Schedule Profile	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
M249 MG Barrel Life Extension Program										
Concept Definition					1Q					
Market Survey					1-2Q					
Concept Evaluation					2-3Q					
Requirement Definition & specification					3Q					
Feasibility Stud					3-4Q					
Evaluation of Study (Use of FY2000 c/o)						1Q				
M203 Upgrade										
Technical Assessments					1Q					
Trade-off Analysis					1-2Q					
Formulate/Refine Designs					3-4Q					

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)							DATE February 1999				
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603802A Weapons and Munitions - Advanced Development				PROJECT DAS2			
<u>Schedule Profile</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	
Competitive Contractor Selection					3-4Q						
Contract Award (s)						1Q					
Fabricate Hardware						1-3Q					
Test & Evaluate						2-4Q					
Finalize Prototype							1-2Q				
System Demo							3Q				
Formulate 6.4 Program							3Q				
Prepare/Staff IPR Package							4Q				
<u>MK19 Self Destruct Cartridge</u>											
Market Survey					1Q						
Prepare RFP					1-2Q						
Technical Evaluation					3Q						
Contract Awar					4Q						
Design/Fabrication Prototype						1Q					
Testing						2-3Q					
Final Report						4Q					
<u>M240 Weight Reduction</u>											
Establish Parameters					1-2Q						
Survey Materials					2Q						
Award Contract					2Q						
Trade Off Analysis					3Q						
Fabricate Prototypes						3Q					
Preliminary Test						4Q					
Fabricate New Prototypes							2Q				
Test							3Q				
Rebuild							4Q				
Demo/Report							4Q				
<u>Family Of Light Weight Hand Grenade</u>											
Market Survey					1-2Q						
Performance Specification					3Q						
Procurement Package					4Q	1Q					
Contract Awar						2Q					

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603802A Weapons and Munitions - Advanced Development	PROJECT DAS2
--	--	-------------------------------

Schedule Profile	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Build Prototypes						3-4Q				
Performance Validation							1Q			
Testing							2-3Q			
Design Modification							4Q	1Q		
Additional Testing								2-3Q		
Final Report								4Q		

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603802A Weapons and Munitions - Advanced Development						PROJECT DAS2		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Hardware Development	FP	TBD				285	Multi	1275	Multi	750	2310	2310
Subtotal Product Development:						285		1275		750	2310	2310
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Development Support	MIPR	ARDEC				1230	Multi	1037	Multi	1202	3469	3469
b. ILS Support	MIPR	ACALA				4	Multi	4	Multi	4	12	12
Subtotal Support Costs:						1234		1041		1206	3481	3481
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. DT	MIPR	TECOM/ARDEC				30	Multi	264	Multi	345	639	639
b. Human Factors	MIPR	ARL-HEL				10	Multi	10	Multi	10	30	30
Subtotal Test and Evaluation						40		274		355	669	669
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Mgt	ALLOT					164	Multi	196	Multi	153	513	513
b. TDY	ALLOT					28	Multi	24	Multi	21	73	73
Subtotal Management Services:						192		220		174	586	586
Project Total Cost:						1751		2810		2485	7046	7046

Project DAS2

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development
--	--

COST <i>(In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
Total Program Element (PE) Cost	6570	18845	6514	6265	6455	6678	9139	9227	Continuing	Continuing
DG10 Advanced Tactical Power Sources - Advanced Development	131	178	199	218	471	470	540	540	Continuing	Continuing
DG11 Advanced Electrical Energy Concepts Advanced Development	202	1366	995	730	610	1048	649	650	Continuing	Continuing
DG14 Logistics Support Equipment Advanced Development	92	98	105	103	106	103	98	98	Continuing	Continuing
DK39 General Support Equipment Advanced Development	1782	3255	1922	2040	2344	2347	3006	3004	Continuing	Continuing
DK41 Petroleum, Oil and Lubricant (POL) Distribution Equipment Advanced Development	813	824	869	858	904	904	983	981	Continuing	Continuing
D266 Airdrop Equipment Advanced Development	1273	1347	0	0	0	0	0	0	0	2632
D428 Rigidwall Shelter Advanced Development	2277	867	0	0	0	0	0	0	0	3152
D526 Marine Oriented Logistics Equipment Advanced Development	0	10910	2424	2316	2020	1806	3863	3954	Continuing	Continuing

A. Mission Description and Justification: This program supports advanced development of new and improved technologies for combat support and combat service support equipment essential to sustaining combat operations. Advancements in airdrop, rigid wall shelters, marine craft, bridging, electric power generators and batteries, potable water, environmental control and petroleum equipment are necessary to improve safety and increase the tactical mobility, operational capability, lethality and survivability on the digital battlefield of the first to fight; and to provide for greater sustainment of all combat forces while reducing the logistics support burden.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE **February 1999**

BUDGET ACTIVIT
4 - Demonstration and Validation

PE NUMBER AND TITLE
**0603804A Logistics and Engineering Equipment -
 Advanced Development**

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	6574	17478	8886	11191
Appropriated Value	6783	18978		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-209	-133		
b. SBIR / STT	-158			
c. Omnibus or Other Above Threshold Reductions	-47			
d. Below Threshold Reprogramming	+201			
e. Rescissions				
Adjustments to Budget Years Since FY 1999 P			-2372	-4926
Current Budget Submit (FY 2000/2001 PB)	6570	18845	6514	6265

Change Summary Explanation: FY 00 and FY01 funding for D526, Marine Oriented Logistics Equipment Advanced Development, reduced due to funding increase received in FY99 to support the JLOTS effort with the Navy. Therefore, the Army recosted out year funding.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development					PROJECT DG10	
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DG10 Advanced Tactical Power Sources - Advanced Development	131	178	199	218	471	470	540	540	Continuing	Continuing
<p>A. <u>Mission Description and Justification</u> This program develops advanced tactical power sources to improve soldier mobility, sustainability, and survivability. This is the only project that bridges the gap between science and technology and full scale production of new higher energy density, lower cost, all-weather batteries/energ conversion systems to satisfy the unique tactical and logistical requirements of portable electronic battlefield equipment. This effort also includes state-of-art measuring and indicating circuitry as well as safety protection circuitry. Superior battery charging and analyzing equipment required to meet unique requirements are also included.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 104 Developed cost effective, lightweight lithium ion rechargeable polymer BB-2847 battery for Force XXI Soldier demo. • 27 Evaluated proof of principle prototype polymer cells and batteries. <p>Total 131</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 137 Design and develop conformal battery packaging for Standard Family of Rechargeable Lithium Batteries. • 40 Conduct field tests and prepare specifications for thin, conformal rechargeable battery family. • 1 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 178</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 156 Design and develop fast-charge rechargeable lithium ion polymer batteries. • 43 Demonstrate proof of principle prototype higher power polymer batteries. <p>Total 199</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 171 Develop and test hybrid lithium ion polymer batteries for pulse C4I2W applications. • 47 Test proof of principle batteries using forward field chargers. <p>Total 218</p>										
Project DG10			Page 3 of 30 Pages				Exhibit R-2A (PE 0603804A)			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development	PROJECT DG10
--	--	-------------------------------

B. Other Program Funding Summary: No other related funding lines.

C. Acquisition Strategy: Transition to production

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Developed and completed field testing of high energy high power next generation primary lithium batteries for Force XXI soldier.	4Q*							
Initiated studies on non-toxic battery materials.								
Developed lithium ion rechargeable polymer BB-2847 battery for Force XXI Soldier demo.	3Q*							
Evaluated proof of principle prototype polyme cells and batteries.	4Q*							
Design and develop conformal battery packaging for Standard Family of Rechargeable Lithium Batteries.		3Q						
Conduct field tests and prepare specifications for thin, conformal rechargeable battery family.		4Q						
Demonstrate proof of principle prototype higher power polymer batteries.			4Q					
Demonstrate hybrid lithium ion polymer batteries for pulse C4I2W applications.				3Q				
Test proof of principle hybrid lithium ion polyme batteries using forward field chargers.				4Q				
Demonstrate advanced high power solid polyme electrolytes in prototype cells.					4Q			
Develop lightweight, low temperature capable, high power rechargeable lithium solid polyme cells and batteries.						4Q		

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)							DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development				PROJECT DG10	
D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	
Develop and demonstrate very low temperature rechargeable lithium solid polymer cells and batteries.							4Q		
Develop and test ultra lightweight, high energy density all plastic lithium cells and batteries.								4Q	
*Milestones Completed									
Project DG10			Page 5 of 30 Pages			Exhibit R-2A (PE 0603804A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development				PROJECT DG11		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DG11 Advanced Electrical Energy Concepts Advanced Development	202	1366	995	730	610	1048	649	650	Continuing	Continuing
<p>A. <u>Mission Description and Justification:</u> Provides advanced development for electrical energy devices to improve soldier mobility, readiness and survivability. This project supports initiatives which will lead to tactical electric power procurements in diesel powered generators and power units/power plants rated at 3-920 kilowatts (kW) with higher efficiency, lighter weight, easier maintainability and higher reliability.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 202 Initiated evaluation of lightweight designs for 5, 10 and 15kW generator sets <p>Total 202</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 677 Procure and evaluate permanent magnet generators, associated electronics and other subsystems for 5-60kW generator sets • 656 Initiate testing of components and subsystems for 5-60kW generator sets • 33 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 1366</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 400 Complete test and evaluation of commercial components/subsystems • 539 Complete system designs for fabrication of proof of concept systems • 56 Initiate fabrication of prototypes per system designs <p>Total 995</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 176 Complete prototypes • 554 Test and evaluate prototype systems <p>Total 730</p>										
Project DG11			Page 6 of 30 Pages				Exhibit R-2A (PE 0603804A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development	PROJECT DG11
---	---	------------------------

B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Compl	Total Cost
RDT&E:PE0604804AA/(D194) Engine Driven Generators Engineering Development	7071	8998	7949	5151	2228	2504	1535	1545	Cont.	Cont.
OPA Generators & Assoc. Equip (MA9800)	9644	68863	79125	90854	52048	79950	58464	54801	Cont.	Cont.

C. Acquisition Strategy: Complete advanced development and transition to engineering development

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Initiate evaluation of lightweight engine designs	2Q*							
Complete subsystem fabrication		3Q						
Initiate component and subsystem testing		4Q						
Complete component and subsystem testing			2Q					
Design proof of concept systems			4Q					
Complete system prototypes				2Q				
Test system prototypes				4Q				

* Complete

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE **February 1999**

BUDGET ACTIVIT
4 - Demonstration and Validation

PE NUMBER AND TITLE
0603804A Logistics and Engineering Equipment -
Advanced Development

PROJECT
DG11

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Generator components		CECOM – Belvoir		600	Jan 99					0	600	
b. Generator design & fabricate		CECOM – Belvoir				539	Nov 99			0	539	
c. Generator prototypes		CECOM – Belvoir						106	Nov 00	200	306	
Subtotal Product Development:				600		539		106		200	1445	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Generator components		CECOM - In-house		233	Oct 98	76	Oct 99				309	
b. Prototypes		CECOM – In-house						70	Oct 00	75	145	
Subtotal Support Costs:				233		76		70		75	454	
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Generator components	Small Purchase		100	483	Nov 98						583	
b. Component/Subsystem		CECOM – Belvoir	102			300	Jan 00				402	
c. Prototypes	TBD	TBD						454	Jan 01	750	1204	
Subtotal Test and Evaluation			202	483		300		454		750	2189	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development	PROJECT DG11
---	---	------------------------

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Generator components		CECOM – In-house		50	Oct 98	80	Oct 99				130	
b. Prototypes		CECOM – In-house						100	Oct 00	100	200	
Subtotal Management Services:				50		80		100		100	330	

Project Total Cost:			202	1366		995		730		1125	4418	
---------------------	--	--	-----	------	--	-----	--	-----	--	------	------	--

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development				PROJECT DG14		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DG14 Logistics Support Equipment Advanced Development	92	98	105	103	106	103	98	98	Continuing	Continuing
<p>A. <u>Mission Description and Justification:</u> Working with both the user and industry, this program stays abreast of current needs and available technologies to be integrated into military Materials Handling Equipment (MHE). Categories of MHE include warehouse forklifts, cranes and tow tractors, rough terrain forklifts, containe handlers and cranes as well as ancillary equipment. This program develops selected technologies and transitions to procurement a series of Material Handling Equipment items.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 45 Conducted specification conversions for updating to performance specifications. • 20 Initiated efforts to identify candidate MHE fielded items and sources of supply for possible SLEP • 27 Prepared of RTCC program documentation for MS I/III IPR. <p>Total 92</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 33 Conduct market investigation for general MHE • 32 Preparation of program documentation for MS I/III IP • 31 Development of performance specifications for MHE buys. • 2 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 98</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 33 Initiate preparation of acquisition package for Lightweight Container Handlers. • 33 Conduct market investigations for Container Handling Equipment. • 39 Investigate productivity enhancements to existing military variable reach forklifts. <p>Total 105</p>										
Project DG14			Page 10 of 30 Pages				Exhibit R-2A (PE 0603804A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development	PROJECT DG14
--	--	-------------------------------

FY 2001 Planned Program:

- 34 Market Investigation to assist in defining the performance characteristics of Container Handling Equipment and Materials Handling Equipment.
- 34 Development of Performance Specifications to support MHE acquisitions
- 35 Development of program documentation to reflect data obtained during Market Investigation Efforts

Total 103

B. <u>Other Program Funding Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Compl	Total Cost
RDTE, 0604804.DH14, Logistics Support Equipment	1062	93	102	99	226	247	98	98	Cont.	Cont.
OPA 3, M41200, Truck Fork Lift, DE, PT, RT		20532	0	34008	43494	55705	16183	15975	Cont.	Cont.
OPA 3, M41800, All Terrain Lifting Articulated System	3265	15188	23569	27858	20997	31466	31887	30338	Cont.	Cont.
OPA 3, X00900, RTCC		8592	10930	8383					Cont.	Cont.
OPA 3, ML5365, Items Less Than \$5.0M (MHE)	1644	1667	1763	1740	1863	1857	1949	1953	Cont.	Cont.

C. Acquisition Strategy: Rough Terrain Container Handler (RTCH) – Competitive procurement of integrated NDI, Rough Terrain Container Crane (RTCC) – Competitive procurement of integrated NDI or sole source to original manufacturer for standardization purposes, Warehouse MHE- Competitive procurements fo miscellaneous MHE.

D. <u>Schedule Profile</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Market Investigation	1Q-3Q*	1Q-3Q	1Q-3Q	1Q-3Q	1Q-3Q	1Q-3Q	1Q-3Q	1Q-3Q
Performance Specs	2Q-4Q*	2Q-4Q	4Q-4Q	2Q-4Q	1Q-3Q	1Q-3Q	1Q-3Q	1Q-3Q
Pre-award contract efforts		1Q-2Q		2Q-3Q	1Q-3Q	1Q-3Q	1Q-3Q	1Q-3Q

*Milestone completed

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development				PROJECT DK39		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DK39 General Support Equipment Advanced Development	1782	3255	1922	2040	2344	2347	3006	3004	Continuing	Continuing
<p>A. <u>Mission Description and Justification:</u> Develop and demonstrate the potential of prototype equipment to satisfy water purification, maintenance, and environmental control requirements.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 148 Completed Large Capacity Field Heater technology investigation • 200 Developed R-410A Air Conditioner prototypes • 271 Conducted source selection for the Lightweight Water Purifier (LWP) prototype contract. • 683 Awarded contract for design and fabrication of LWP prototypes. • 294 Prepared test plans for LWP Production Qualification Testing (PQT) and Early User Testing (EUT). • 23 Evaluated the FORSCOM Packaged Water System (PWS). • 40 Conducted abbreviated market investigation of packaging machines. • 83 Awarded task order contract for Analysis of Alternatives (AOA). • 40 Conducted Milestone 0 for PWS. <p>Total 1782</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 150 Development effort for large heate • 300 Award development contract for 18,000 BTUH vertical air conditioner • 94 Evaluate CO2 components for air conditioners. • 100 Investigate commercial technology applicable to Small Diesel Heaters (60K-100K BTUH). • 800 Conduct Production Qualification Test /Early User Test on the LWP prototypes. • 100 Conduct a Milestone III (TC Generic) In-Process Review on the LWP. • 50 Conduct AOA. • 150 Prepare LWP Production Contract Solicitation • 250 Award LWP EMD Contract Increment 										
Project DK39			Page 12 of 30 Pages				Exhibit R-2A (PE 0603804A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE February 1999
BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development	
<ul style="list-style-type: none"> • 450 Conduct Reverse Osmosis removal studies for industrial and NBC contaminants. 		
<p>FY 1999 Planned Program: (continued)</p>		
<ul style="list-style-type: none"> • 412 Evaluate commercial water treatment components for use in the 600 Reverse Osmosis Water Purification Unit (ROWPU) rebuild and 3000 ROWP rebuy programs. • 50 Prepare PWS contract solicitation and performance specification. • 266 Fabricate prototype PWS. • 83 Small Business Innovative Research/Small Business Technology Transfer Program (SBIR/STTR) 		
Total	3255	
<p>FY 2000 Planned Program:</p>		
<ul style="list-style-type: none"> • 330 Award development contract for 9,000 BTUH Environmental Control Unit (ECU) • 304 Award development contract for prototype automotive CO2 EC • 372 Conduct source selection for the LWP production contract package. • 150 Develop a test plan and an economic analysis model to evaluate the technical applicability and the return on investment for the water and wastewater treatment equipment identified for potential incorporation into military water purifiers. • 250 Perform a technical and economic evaluation of a commercially available water or wastewater treatment component to gather data to validate the test plan and cost model developed under the Water Purification Components program. • 50 PWS Source Selection Evaluation Board • 375 Award first increment for PWS EMD prototype. • 91 Perform market investigation for digitized water quality and quantity surveillance. 		
Total	1922	
<p>FY 2001 Planned Program:</p>		
<ul style="list-style-type: none"> • 350 Award development contract for prototype absorption ECU • 350 Award development contract for prototype shelter CO2 EC • 150 Perform market research on commercially available water and wastewater treatment equipment that can be used to reduce the wastewater disposal costs associated with the operation of Quartermaster laundry, shower and water treatment systems. • 100 Complete validation of the test plan and cost model developed under the Water Purification Components program. • 300 Perform in-house testing on water and wastewater treatment systems identified in the market research on state-of-the-art water and wastewater treatment equipment that may be able to increase the capability of existing military water purifiers. • 400 PWS production qualification and logistics demonstration. 		
Project DK39	Page 13 of 30 Pages	Exhibit R-2A (PE 0603804A)

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development	PROJECT DK39
--	--	-------------------------------

- 390 Test and evaluate digitized water quality and surveillance prototypes.
- Total 2040

B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Compl	Total Cost
OPA3, MF9301/M19600, Army Space Heate 120K BTU (ASH)	855	1051	912	935	932	5867	3898	5886	Cont.	Cont.
OPA3, MF9302, Large Capacity Field Heate 400K BTU			1312	1657		1953			Cont.	Cont.
OPA3, MF9303/MF9300, Air Conditioners			3756	3801	1350	6893	10523	22681	Cont.	Cont.
RDTE, 0604804.DL39, General Support Equipment Engineering Development	1778	2494	2127	2028	4422	3979	4634	4063	Cont.	Cont.
OPA 3, ML5335, Items Less Than \$5.0M (Water Equipment)	2628	1251	1737	1597	859	628	4795	7026	Cont.	Cont.
OPA 3, RO5100 Water Purification Systems			10396	35370	34887	39574	12371	6568	Cont.	Cont.

C. Acquisition Strategy: ECU: Develop ECU/Heater Performance Descriptions based on development technology investigations and transfer to Procurement for competitive production contract awards. Petroleum and Water Systems (PAWS): Transition to development of engineering prototypes or select Non-Developmental Item based on market survey and proposals from industry.

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Develop R-410A ECU prototypes	2Q*							
Develop Large Capacity Field Heater Prototype	2Q*							
Develop 18K Vertical ECU prototypes		2Q						
Develop 9K ECU prototype			2Q					
Investigate Automotive CO2 technolog			1Q					
Investigate absorption ECU technolog				1Q				
Develop tactical shelter CO2 ECU prototype				2Q				
Award EMD Contract for prototype LWPs.	4Q*							
Design and fabricate prototype LWPs.		1Q-2Q						
Initiate PQT and EUT for the LWP.		3Q						
Complete the LWP PQT/EUT.		4Q						

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)							DATE February 1999	
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development			PROJECT DK39	
D. Schedule Profile	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Prepare LWP production contract package.		1Q-4Q						
LWP MS III Decision Revie		1Q						
LWP MS III TC Generic		1Q						
Evaluate FORSCOM Packaged water System (PWS)	4Q*							
PWS MS 0 IP	1Q*							
Prepare PWS program documentation		1Q-4Q						
Prepare PWS contract solicitation.		1Q-4Q						
Conduct PWS MS II (TC Generic)					1Q			
Water Purification Components program.			1Q-4Q	1Q-4Q	1Q-4Q			
Digitized Water Quality and Quantit Surveillance.			2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q		
Future Water Recovery and Reuse.					3Q	1Q-4Q	1Q-4Q	1Q-4Q
PWS PQT & Logistics Demonstration				2Q-3Q				
Evaluate RO removal of industrial/NBC contaminants		2Q-4Q						
Perform wastewater treatment system market investigations		2Q-4Q						
Conduct evaluation of commercially available wastewater treatment systems		4Q	1Q-3Q					

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development						PROJECT DK39		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Large heater engineering	In-house	US Army CECOM Ft. Belvoir, V		150							150	
b. 18K vert ECU contract	FP	Contractor, TBD	0	200	Jan 00					0	200	200
c. 18K ECU engineering	in-house	US Army CECOM Ft. Belvoir, V		50							50	
d. CO2 components	In-house	US Army CECOM Ft. Belvoir, V		94							94	
e. 9K ECU prototype contract	FP	Contractor, TBD	0			200	Feb 00			0	200	200
f. 9K ECU engineering	In-house	US Army CECOM Ft. Belvoir, V				50					50	
g. Automotive CO2 development contract	FP	Contractor, TBD	0			250	Nov 99			0	250	250
h. CO2 engineering	In-house	US Army CECOM Ft. Belvoir, V				44					44	
i. Absorption ECU development contract	FP	Contractor, TBD	0					225	Nov 99	0	225	225
j. Absorption engineering	In-house	US Army CECOM Ft. Belvoir, V						80			80	
k. Shelter CO2 development contract	FP	Contractor, TBD	0					225	Feb 00	0	225	225
l. CO2 engineering	In-house	US Army CECOM Ft. Belvoir, V						80			80	
m. TARDEC Engineering	In-House		704	750	Nov 99	477	Nov 00	500	Nov 01	Cont.	2431	
n. Contractors (LWP)	CPFF/PO	George Scott Intl. Pensacola, FL	1168	250	Nov 99	450	May 00	200	Mar 01	Cont.	2068	
o. ARL Engineering	MIPR	Edgewood, MD	43	20	Dec 99	10	Dec 00	10	Dec 01	Cont.	83	
p. CECOM Support	MIPR	US Army CECOM Ft Belvoir, V	1054							Cont.	1054	
q. NFESC	MIPR	Port Hueneme, CA		50	Dec 98	50	Dec 99	50	Dec 00	Cont.	150	
CRRE	MIPR	Hanover, NH		10	Jan 99	10	Jan 00				20	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development						PROJECT DK39		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal Product Development:			2969	1574		1541		1370			7454	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
b. TARDEC	In-House/MIPR		1267	350	Dec 99	191	Dec 00	290	Dec 01	Cont.	2098	
Subtotal Support Costs:			1267	350		191		290			2098	
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. ECU component tests	In-house	US Army CECOM, FT. Belvoir, VA		50							50	
b. CO2 component tests	In-house	US Army CECOM, FT. Belvoir, VA				50					50	
c. Absorption component tests	In-house	US Army CECOM, FT. Belvoir, VA						50			50	
TECOM	MIPR	APG, MD	175	623	Mar 99	100	Jan 00			Cont.	898	
TARDEC	MIPR	US Army TACOM, Warren, M		305	Jan 99			300	Nov 01	Cont.	605	
NBC Removal Tests	MIPR	US Army TECOM Dugway Proving Gnd		150	Feb 99						150	
Wastewater Testing	MIPR	David Taylor Naval Research Ctr		150	Mar 99						150	
Subtotal Test and Evaluation			175	1278		150		350			1953	
Project DK39				Page 17 of 30 Pages				Exhibit R-3 (PE 0603804A)				

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development	PROJECT DK39
---	---	------------------------

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. ECU/Heater support	In-house	US Army CECOM, FT. Belvoir, VA		53							53	
b. ECU/Heater support	In-house	US Army CECOM, FT. Belvoir, VA				40					40	
c. ECU/Heater support	in-house	US Army CECOM, FT. Belvoir, VA						30			30	
Subtotal Management Services:				53		40		30			123	
Project Total Cost:			4411	3255		1922		2040			11628	

DATE
February 1999

BUDGET ACTIVIT
4 - Demonstration and Validation

PE NUMBER AND TITLE
**0603804A Logistics and Engineering Equipment -
Advanced Development**

COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DK41 Petroleum, Oil and Lubricant (POL) Distribution Equipment Advanced Development	813	824	869	858	904	904	983	981	Continuing	Continuing

A. Mission Description and Justification: Develop and demonstrate the potential of prototype equipment to satisfy petroleum distribution requirements.

FY 1998 Accomplishments:

- 45 Prepared and coordinated Petroleum Quality Analysis System (PQAS) program management documentation (PMD).
 - 233 Demonstrated feasibility of PQAS analytical instruments for use in forward areas.
 - 157 Developed baseline technical requirements for Petroleum Quality Surveillance Laboratory (PQSL).
 - 250 Began investigation of Lightweight Pipeline Alternatives to support FXXI.
 - 128 Initiated analysis of extent of Petroleum and Water Systems (PAWS) automation/digitization for the Digitized Division and Corps.
- Total 813

FY 1999 Planned Program:

- 180 Prepare PQSL contract package for design, fabrication, and test.
 - 145 Prepare PQSL PMD and conduct MS I/II IPR.
 - 198 Complete analysis of FXXI Lightweight Pipeline Alternatives; recommend implementation approach.
 - 279 Identify PAWS to be automated/digitized, and recommend implementation strategy.
 - 22 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 824

FY 2000 Planned Program:

- 569 Demonstrate selected approach for FXXI Lightweight Pipeline Alternative.
 - 300 Award incrementally funded contract for portable in-service oil analyzer/sensors.
- Total 869

FY 2001 Planned Program:

- 308 Develop brassboard prototypes of Advanced Fuel Quality Analysis Sensors.
- 550 Test and evaluate portable in-service oil analyzer/sensors.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE
BUDGET ACTIVIT	PE NUMBER AND TITLE	PROJECT
4 - Demonstration and Validation	0603804A Logistics and Engineering Equipment - Advanced Development	DK41
Total	858	

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999	
BUDGET ACTIVIT 4 - Demonstration and Validation					PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development			PROJECT DK41	

B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
RDTE, 0604804.DL41, Fuels and Equipment Engineering Development	768	1078	5327	4904	3830	2472	1479	1478	Cont.	Cont.
OPA3, ML5330, Items Less Than \$5 million (POL)	6865	4613	3083	4053	4898	8568	4980	4136	Cont.	Cont.

C. Acquisition Strategy: Develop engineering prototypes or select Non-Developmental Item based on market surveys and proposals from industry.

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Prepared performance requirements for PQAS production phase.								
Updated PQAS PMD for MS II IPR.								
Completed fabrication and testing of PQAS technology demonstration model.								
Demonstrated feasibility of PQAS analytical instruments.	3Q*							
Prepared and coordinated PQAS PDM.	3Q*							
Developed baseline technical requirements fo PQSL.	4Q*							
Awarded contract for analysis of extent of PAWS automation/digitization.	4Q*							
Complete analysis of pipeline alternatives.		3Q						
Prepare PQSL contract package for design, fabrication, and test.		1Q-4Q						
Complete identification of PAWS to be automated/digitized.		4Q						
Prepare PQSL PMD and conduct MS I/II IPR.			2Q-4Q					
Award contract for portable oil analyzer/sensors.			3Q					
Demonstrate pipeline alternatives.			3Q					

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)							DATE February 1999	
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development			PROJECT DK41	
D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Develop brassboard prototypes of Advanced Fuel Quality Analysis Sensors.				1Q-3Q				
Test and evaluate portable oil analyzer/sensors.				2Q-4Q				
Continue development of Advanced Fuel Quality Analysis Sensors.					2Q-4Q	1Q-4Q		
Develop Advanced POL Decontamination Technology for AAN.						3Q-4Q	1Q-4Q	
Develop AAN SARS Robotic Refueling.							2Q-4Q	1Q-4Q

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment -					PROJECT D266	
				Advanced Development						
<i>COST (In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D266 Airdrop Equipment Advanced Development	1273	1347	0	0	0	0	0	0	0	2632
<p>A. <u>Mission Description and Justification:</u> Conduct demonstration and validation of aerial delivery systems for equipment and personnel, with emphasis on reduced incidence of injuries, improved safety and accuracy, and increased survivability of aircraft, equipment, and personnel.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 465 Completed and executed Advanced Tactical Parachute System (ATPS) component development and performance validation contract. • 808 Initiated Extraction Parachute Jettison Device (EPJD) effort. Conducted market survey and initiated feasibility testing on NDI candidates. <p>Total 1273</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 741 Initiate and conduct Developmental Testing of ATPS. • 590 Initiate Developmental Testing of EPJD, obtain tri-service certification of load extraction system. • 16 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 1347</p> <p>FY 2000 Planned Program: Mission and dollars transferred to PE 0603747A/DC09</p> <p>FY 2001 Planned Program: Mission and dollars transferred to PE 0603747A/DC09</p>										
B. <u>Other Program Funding Summary</u>										
	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Compl	Total Cost
RDTE, 0604804.D279 Airdrop Equipment Engineering Development	1523	1361	0	0	0	0	0	0	0	2884
<p>C. <u>Acquisition Strategy:</u> Rapid development through the acquisition lifecycle, capitalizing on all opportunities to accelerate development, production and fielding.</p>										
Project D266			Page 22 of 30 Pages				Exhibit R-2A (PE 0603804A)			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development	PROJECT D266
---	---	------------------------

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY2005</u>
ATPS Component Development and Performance Validation	4Q*							
EPJD Component Development and Performance Validation		1Q						
EPJD Developmental Testing		4Q						

* Milestones Completed

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development					PROJECT D428	
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D428 Rigidwall Shelter Advanced Development	2277	867	0	0	0	0	0	0	0	3152
<p>A. <u>Mission Description and Justification:</u> Develop a family of tactical rigid wall shelters which enhances soldier survivability and sustainability of command, control, communications and intelligence. Shelters provide highly mobile, joint service platforms for the digitization of the battlefield, housing many critical vehicle-mounted battlefield systems, medical critical care in a Chemical/Biological (C/B) environment and high tech maintenance.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 1452 Completed vulnerability assessment for Standard Integrated Command Post System (SICPC) shelter. Fabricated sample shelter panels. Note: SICPS program moved out of D428 beginning in FY99 to PE63747/DC09. • 825 Completed development and technical feasibility testing of Cargo Bed Cover (CBC) 2.5 Ton truck variant. Designed and fabricated test prototypes for 5 Ton truck CBC Variant. HMMWV CBC Variant effort was moved to D429. <p>Total 2277</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 864 Complete Milestone I/II for 2.5 ton truck CBC variant. Prepare solicitation and award LRIP/Production contract for CBC 2.5 Ton truck variant, build LRIP items and initiate First Article Testing (FAT). Complete fabrication of test prototypes, conduct Technical Feasibility Testing and complete development for 5 ton truck CBC variant. • 3 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 867</p> <p>FY 2000 Planned Program: Mission and dollars transferred to PE 0603747A/DC09</p> <p>FY 2001 Planned Program: Mission and dollars transferred to PE 0603747A/DC09</p>										
B. <u>Other Program Funding Summary</u>										
	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDTE, 0604804.D429, Rigidwall Shelte Engineering Development	1403	902	0	0	0	0	0	0	0	2314
<p>C. <u>Acquisition Strategy:</u> Product development and testing up to Engineering and Manufacturing Development.</p>										

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development	PROJECT D428
--	--	-------------------------------

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To Comp</u>	<u>To Comp</u>
Designed/Fabricated 5 Ton Truck CBC Variant	4Q*									
Completed Development and Testing of 2½ Ton Truck CBC Variant	3Q*									
Complete MS I/II for 2½ Ton Truck CBC Variant.		2Q								
Award LRIP Contract for 2½ Ton Truck CBC Variant		2Q								
Complete Development and Testing of 5 Ton Truck CBC Variant		4Q								

*Denotes completed milestone

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development					PROJECT D526	
COST <i>(In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D526 Marine Oriented Logistics Equipment Advanced Development	0	10910	2424	2316	2020	1806	3863	3954	Continuing	Continuing

A. Mission Description and Justification: Provides funds for the Army's share of the Joint Lighterage and Causeway Program. This program, managed jointly with the Navy, will improve cargo offload speed under normal sea states and allow for successful offload under challenging sea state conditions. These efforts will significantly improve operational capability and flexibility. Funds will permit efforts to develop joint plans and materiel in conjunction with the Navy and Marines, truly integrating Logistics Over The Shore (LOTS) capabilities. Project funds will also serve to support conceptual development of the Rapidly Installed Breakwater (RIB). This project will also assist the Army to conduct LOTS exercises under adverse sea state conditions. Together, these efforts will extend capabilities of the joint Army/Navy LOTS program, and allow the Army to proceed with deployment of forces under less than ideal sea and weather conditions. The FY 00 Program supports the definition of the Port Communications and Control Center (PCCC). The center will track and direct the progress of vessel movements and loading/unloading during LOTS operations. The PCCC program will provide for the safe and efficient management of Army and Joint Port Operations during deployment of forces; both under degraded/non-existent port conditions and in adequate port facilities. The FY 01 program will cover two initiatives. The first effort will begin advanced development of program parameters and performance characteristics for the new Landing Craft Utility (LCU) 2000. This will support the upcoming funded acquisition of new vessels in FY 04 and out. The second effort will focus on Operations and Support (O&S) cost reduction. A study will be conducted to identify specific cost-effective efforts which can be undertaken to improve the Army's O&S posture within the watercraft fleet. The study will examine areas such as Fuel Management, Lubrication, Paints, Maintenance Frequencies & Procedures, etc. Follow-on acquisition or maintenance initiatives will be developed for the most promising study recommendations.

FY 1998 Accomplishments: Project not funded in FY 1998.

FY 1999 Planned Program:

- 1521 Conceptual development of the Rapidly Installed Breakwater (RIB).
 - 9100 Joint program with Navy to develop Sea State 3 Capable Causeways/Lighterage.
 - 289 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 10910

FY 2000 Planned Program:

- 2424 Port Communications and Control Center (PCCC)– Advanced Development & Prototyping
- Total 2424

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development	PROJECT D526
--	--	-------------------------------

- FY 2001 Planned Program:**
- 1657 Landing Craft Utility Parameters and Performance Characteristics
 - 659 Operations & Support Cost Reduction Study
- Total 2316

B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Compl	Total Cost
RDTE, 0604804A, D461, Marine Oriented Logistics, Engineering Development		2070	4283	1454	1212	2720	2788	2861	Cont.	Cont.
OPA 3, M32400, Floating Crane, 100-250 Ton	13555	14959	0	0	0	0	0	0	Cont.	Cont.
OPA 3, M44500, Pusher Tug, Small	6506	8545	0	0	0	0	0	0	Cont.	Cont.
OPA 3, R09600, Causeway, Powered System	0	0	8070	0	8818	9425	5412	5459	Cont.	Cont.
OPA 3, R09800, RO/RO Discharge Platfor	0	17037	8670	12861	0	0	12303	12386	Cont.	Cont.
OPA 3, R09900, Causeway, Floating	0	0	0	4895	0	0	0	0	Cont.	Cont.
OPA 3, M11200, Logistic Support Vessel (LSV)	0	0	18924	0	18426	18044	0	0	Cont.	Cont.
OPA 3, M11201, Logistic Support Vessel (ESP)	0	0	0	6097	7283	13091	0	0	Cont.	Cont.
OPA 3, M32500, Rapidly Installed Breakwate	0	0	0	0	4687	4662	0	0	Cont.	Cont.
OPA 3, M11300, Containerized Maintenance Facilit	0	5286	0	0	0	0	0	0	Cont.	Cont.
OPA 3, M34200, Landing Craft Utility 2000							19488	19622	Cont.	Cont.

C. Acquisition Strategy: RIB: Engineering work to be accomplished by the Corps of Engineers Waterways Experiment Station (WES) (current developers). However, programmatic documentation for the RIB will be undertaken via contract. Support for the Joint Sea State 3 Causeway and Lighterage System will be undertaken with the Navy PM and executed through Navy contract and in-house vehicles. PCCC Advanced Development & Prototyping will be undertaken through competitive contract. The current Watercraft Communications, Electronics, & Navigation (CEN) Equipment contractor is Conley & Associates. FY 01 efforts will be conducted primarily with the Naval Surface Warfare Center (NSWC). NSWC can call on both in-house and contract resources (based on workload and expertise) to cover Army requirements.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development	PROJECT D526
---	---	------------------------

D. Schedule Profile	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2004</u>	<u>FY 2005</u>
Conceptual Development of the RIB.			2Q-3Q							
Joint Program with Navy to develop Sea State 3 Capable Causeways/Lighterage.			2Q-4Q							
PCCC- Advanced Development & Prototyping				2Q-4Q						
LCU Parameters and Performance Characteristics					2Q-4Q					
Operations & Support Cost Reduction Study					2Q-4Q					

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development	PROJECT D526
--	--	-------------------------------

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Modern Technologies Corp. (MTC)	SS-FP	Warren, MI		563	Apr					Cont.	563	
a. Navy (NSWC)	MIPR	Suffolk, VA				21	May	2187	Dec	Cont.	2208	
b. Navy (PM JMLS)	MIPR	Hueneme, CA		8906	Jan		May		Dec	Cont.	8906	
c. COE (WES)	MIPR	Vicksburg, MS		1122	Jan					Cont.	1122	
d. Conley & Assoc.	SS-FP	St. Louis, MO				2292	Feb			Cont.	2292	
Subtotal Product Development:				10591		2313		2187			15091	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TACOM IMMC	MIPR	Warren, MI		37	Jan	15	Oct	31	Oct	Cont.	83	
Subtotal Support Costs:				37		15		31			83	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TECOM	MIPR	APG, MD		105	Jan	21	May	15	May	Cont.	141	
Subtotal Test and Evaluation:				105		21		15			141	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development	PROJECT D526
---	---	------------------------

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Transportation Systems Mgt. Ofc.	MIPR	TACOM, Warren, MI		177	Jan	75	Oct	83	Oct		335	
Subtotal Management Services:				177		75		83			335	
Project Total Cost:				10910		2424		2316			15650	

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603805A Combat Service Support Control Systems Evaluation and Analysis						
<i>COST (In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
Total Program Element (PE) Cost	7037	14056	11062	8839	3725	3827	4028	4023	9981	197877
D091 Combat Service Support Control System	5447	12275	11062	8839	3725	3827	4028	4023	8200	185717
D246 Tactical Communications System-Advanced Development	1590	1781	0	0	0	0	0	0	1781	12160

A. Mission Description and Budget Item Justification: Project D091: The Combat Service Support Control System is an automated command and control (C2) system that supports the CSS component of the Army Battle Command System (ABCS), and provides a critical logistical C2 capability for the Army's Force XXI. It will automate the current manual processes of force level planning and decision-making for commanders and their staffs. Project D246, Tactical Communications System – Demonstration Validation, provides for insertion of selected proven communications technology from program elements 0602782A, Project AH92 applied research and 0603006A, advanced technology development, into the next phase of development. Examples of these potential programs are the Joint Tactical Radio, high power solid state amplifiers and couplers, and packet appliquéés used to increase network efficiency. Note: Funding for PE/Proj. 0603805A/D246 has been transferred to PE/Proj. 0604805/D629, beginning in FY 2000.

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	7280	14353	8265	5975
Appropriated Value	7673	14353		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-393	-297		
b. SBIR / STT	-182			
c. Omnibus or Other Above Threshold Reductions	-61			
d. Below Threshold Reprogramming				
e. Rescissions				
Adjustments to Budget Years Since FY 1999 PB			+2797	+2864
Current Budget Submit (FY 2000 / 2001 PB)	7037	14056	11062	8839

Change Summary Explanation: FY 2000 funds increased 4644 and FY 2001 funds increased 4720 to support Force XXI software enhancements. FY 2000 funds (-1847), and FY 2001 funds(-1856), for Project D246 have been transferred to PE/Proj 0604805/D629.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603805A Combat Service Support Control Systems Evaluation and Analysis	PROJECT D091
--	--	-------------------------------

COST (<i>In Thousands</i>)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D091 Combat Service Support Control System	5447	12275	11062	8839	3725	3827	4028	4023	8200	185717

A. Mission Description and Justification: Project D091, Combat Service Support (CSS) Control System . The Combat Service Support Control System is an automated command and control (C2) system that supports the CSS component of the Army Battle Command System (ABCS), and provides a critical logistical C2 capability for the Army's Force XXI. It will automate the current manual processes of force level planning and decision-making for commanders and their staffs. CSSCS interoperates both vertically, within the CSS Battlefield Functional Area (BFA), as well as horizontally with the other BFAs; namely, Fire Support, Maneuver Control, Intelligence/Electronic Warfare, and Air Defense. CSSCS implements functionally through use of Common Hardware and Software (CHS), Common Operating Environment (COE), reuse software, and unique application software.

FY 1998 Accomplishments:

- 3136 Continued Version 4 development.
- 520 Began Version 5 development.
- 750 Conducted Demonstrations for DOT&E.
- 1041 Prepared for and conducted Army Warfighting Experiments and implemented Force XXI enhancements.

Total 5447

FY 1999 Planned Program:

- 9055 Continue Version 4 development.
- 820 Continue Version 5 development.
- 775 Conduct Version 4 continuous evaluation activities.
- 1300 Prepare for and conduct Army Warfighting Experiments and implement Force XXI enhancements.
- 325 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs

Total 12275

FY 2000 Planned Program:

- 2750 Complete Version 4 development.
- 5862 Continue Version 5 development.
- 2450 Prepare for and conduct Army Warfighting Experiments and achieve First Digitized Division IOC.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603805A Combat Service Support Control Systems Evaluation and Analysis	PROJECT D091
--	--	-------------------------------

Total 11062

FY 2001 Planned Program:

- 7149 Continue Version 5 development.
- 1690 Prepare for and conduct Army Warfighting Experiments.

Total 8839

B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
Procurement, OPA 2 (W34600)	6648	9306	19922	18090	15534	25374	13934	18420	57525	201056
Spares (BS9706)	293	183	167	167	177	176	194	0	5755	8372

C. Acquisition Strategy: Acquisition strategy is to pursue a spiral development process, with program development structured to evolve over five versions. Versions 1 and 2 served as proof of principle, and provided initial division level CSS functional capability on common hardware. Version 3 was built on the capabilities of the previous versions and provided an Initial Operational Capability at Division and Corps level, to include initial horizontal interoperability with ABCS systems. Version 4 extends CSSCS to EAC, as well as provides added capabilities at Echelons Corps and Below (ECB). Version 5, the objective CSSCS software, will provide remaining ECB functionality, and extend CSSCS capabilities to joint, allied and coalition forces. TRW is the software development contractor. Lockheed Martin Corporation (LMC) provides training support. Hardware is procured from the Common Hardware/Software-2 (CHS-2) contract with GTE.

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
FUE V3	1Q*							
V3 IOC	3Q*							
V4 Technical Test	4Q*							
V4 Continuous Evaluation		1-4Q						
Complete V4			3Q					
First Digitized Division (FDD) IOC			4Q					
Incremental Software Build Releases				3Q	3Q	3Q		
Complete V5							3Q	
V5 Operational Test							4Q	
First Digitized Corps (FDC) IOC							4Q	

*Milestone Complete

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE **February 1999**

BUDGET ACTIVIT
4 - Demonstration and Validation

PE NUMBER AND TITLE
0603805A Combat Service Support Control
Systems Evaluation and Analysis

PROJECT
D091

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TRW	CPAF	Carson, CA	85191	7624	1 Oct 98	6712	1 Oct 99	4956	1 Oct 00	0	104483	110000
b. Lockheed Martin	CPAF	Springfield, VA	4744	829	1 Oct 98	875	1 Oct 99	775	1 Oct 00	300	7523	20500
c. COE/Common Spt	MIPR	Various	5290	656	1 Oct 98	550	1 Oct 99	450	1 Oct 00	0	6946	
d. TBD			0	0		0		0		13128	13128	
e. GFE	FFP	Various	3601	0						1500	5101	
Subtotal Product Development:			98826	9109		8137		6181		14928	137181	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. CECOM	MIPR	Ft. Monmouth/Belvoir	1600	213	1 Oct 98	203	1 Oct 99	175	1 Oct 00	740	2931	
b. SDC-LEE	MIPR	Ft. Lee	550	0		0		0		0	550	
c. SDC-HUACHUC	MIPR	Ft. Huachuca, AZ	971	408	1 Oct 98	380	1 Oct 99	320	1 Oct 00	992	3071	
d. EER	MIPR	McLean, V	5054	1400	1 Oct 98	1330	1 Oct 99	1260	1 Oct 00	3842	12886	
e. LMI			775	300	1 Oct 98	275	1 Oct 99	250	1 Oct 00	975	2575	
Subtotal Support Costs:			8950	2321		2188		2005		6549	22013	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. GOVT	MIPR	Various	5112	400	1 Oct 98	350	1 Oct 99	250	1 Oct 00	1650	7762	
b. EPG	MIPR	Various	833	145	1 Oct 98	75	1 Oct 99	79	1 Oct 00	345	1477	
c. OPTEC	MIPR	Various	1578	0		0		0		0	1578	
Subtotal Test and Evaluation			7523	545		425		329		1995	10817	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603805A Combat Service Support Control Systems Evaluation and Analysis	PROJECT D091
---	---	------------------------

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PM CSSCS	N/A	Ft. Belvoir, V	14439	300	1 Oct 98	312	1 Oct 99	324	1 Oct 00	331	15706	
Subtotal Management Services:			14439	300		312		324		331	15706	
Project Total Cost:			129738	12275		11062		8839		23803	185717	

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603805A Combat Service Support Control Systems Evaluation and Analysis				PROJECT D246		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D246 Tactical Communications System-Advanced Development	1590	1781	0	0	0	0	0	0	1781	12160
<p>A. Mission Description and Budget Item Justification This project will validate the new Tactical Internet capability required for Force XXI. It provides definition, integration and testing of a mix of mature and prototype products which are used to develop a Tactical Internet capability. The Tactical Internet will be the primary data communications infrastructure at Corps and below for Force XXI and will revolve around interconnecting a mix of existing (e.g.: SINCGARS, SINCGARS SIP, EPLRS, MSE TPN, ETC) and emerging communications devices using gateways and routers. Gateways will also provide the link to Strategic levels. This capability will result in the tactical equivalent of the Information Highway and will support key battlefield functional areas to include logistics reporting, telemedicine, etc. The Tactical Internet (TI) will use and leverage commercial network standards and products. The "Internet Protocol" (IP) suite will be used to provide seamless communications with the capability to dynamically route data to hosts. It will be designed to facilitate technology insertion. The focus of this project will be to reduce the technical risk by assembling, integrating, and testing the Tactical Internet components prior to TF XXI, Division XXI, and Corps XXI and beyond. New services and components will be added and tested as required for each iteration leading up to Force XXI. Note: Funding for this project has been transferred to PE/Proj. 0604805/D629, beginning in FY2000.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 350 Resolved technical issues with Transmissions Control Protocol (TCP) parameters and the Near Term Digital Radio (NTDR) instrumentation identified during the TF XXI and DIV XXI Exercises • 555 Integrated and tested the latest EPLRS, SINCGARS, INC and FBCB2 software products. Expanded the testbed to include NTDR, HF radios and C2 Protect products. Insert latest products and expand the testbed to address requirements for Corps size networks • 100 Provided empirical data from experiments with the US Marines data systems to support joint service integration. • 181 Incorporated NTDR and HF radios into the testbed, and evaluated DARPA Glomo products for potential integration. • 404 Procured state-of-the art video equipment for airborne demos. Performed demonstration of NTDR networking capabilities using latest equipment in video teleconferencing. <p>Total 1590</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 394 Integrate new applications and data services for the Tactical Internet (TI). Demonstrate advanced architectural concepts for the TI beyond the First Digitized Division (FDD) • 670 Evaluate emerging Internet protocols for use in the TI. Support the Tactical Internet for FDD fielding. • 238 Support Advanced Technology Demonstrations (ATD) including C2 Protect. 										
Project D246	Page 6 of 8 Pages					Exhibit R-2A (PE 0603805A)				

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603805A Combat Service Support Control Systems Evaluation and Analysis	PROJECT D246
--	--	-------------------------------

FY 1999 Planned Program: (continued)

- 447 Conduct airborne demo of latest NTDR capabilities, using new video equipment. Procure emerging technologies in video/multimedia equipment. Demonstrate networking capabilities of Handheld Multimedia Terminal in airborne platform.
 - 32 Small Business Innovation Research/ Small Business Technology Transfer Programs
- Total 1781

FY 2000 Planned Program: Funding for this program has been transferred to PE/Project 0604805/D629 beginning in FY2000.

FY 2001 Planned Program: Funding for this program has been transferred to PE/Project 0604805/D629 beginning in FY2000.

B. Other Program Funding Summary: Not Applicable.

C. Acquisition Strategy: The objective of this program is to validate new TI Capabilities required for Force XXI. In FY97, laboratory integration testing was conducted to reduce risk for Task Force XXI AWE. Similar laboratory testing was performed in FY98 for Division XXI and for the FBCB2 Limited User Test (LUT). In FY99 new services and components will be added and tested to validate critical technologies for Force XXI beyond FDD.

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2004</u>	<u>FY 2005</u>
Tactical Internet									
Prototype Instrumentation	4Q								
System Integration	4Q	4Q							
Demonstration Range Extension	4Q	4Q							
Address Architecture Issue		4Q							
Integrate Network Services		4Q							
Laboratory Testing	4Q	4Q							
Airborne Communications									
System Integration	4Q	4Q							
Video Demonstration	4Q	4Q							

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603805A Combat Service Support Control Systems Evaluation and Analysis	PROJECT D246
--	--	-------------------------------

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Systems Engineering	PO	CECOM RDEC, Ft. Monmouth, NJ	3966	1356	01/01/99						5322	
b. Contract Services												
1)	C-T&M AF	CSC/BAH	485	90	5/13/99						575	
2)	C-T&M Rqmts	C3I	270	135	08/28/98						405	
3)	C-T&M IDIQ	TAMSCO	105	150	05/19/98						255	
4)	C-T&M PSLA	LSI	150	50	08/01/99						200	
Subtotal Product Development:			4976	1781							6757	

Remark: **NOTES:**

Performing Activity & Location
 CSC/BAH- Computer Science Corporation, support contractor Booz, Allen & Hamilton – Eatontown, NJ
 C3I – C3I Systems Group Inc, Award date 8/28/98 with 3 option years- Tinton Falls, NJ
 TAMSCO – TAMSCO Inc, Award date 5/19/98 with 5 options years- Calverton, MD
 LSI – Lear Sigler Inc, Lakehurst, NJ

Contract Method and Type
 C-T&M – Competitive, Time and Materials
 -AF- Award Fee
 -Rqmts-Requirements
 -IDIQ-Indefinite Delivery Indefinite Quantit
 -PSLA- Purchase Service Labor Agreement

II. Support Costs: Not applicable

III. Test and Evaluation: Not applicable

V. Management Services: Not applicable

Project Total Cost:	4976	1781							6757	
---------------------	------	------	--	--	--	--	--	--	------	--

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603807A Medical Systems - Advanced Development
--	--

COST <i>(In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
Total Program Element (PE) Cost	9181	11329	12723	12235	12768	13382	11729	12976	Continuing	Continuing
D808 DoD Drug and Vaccine-Advanced Development	2063	3684	5153	4653	4084	5107	5161	5179	Continuing	Continuing
D811 Military HIV Vaccine and Drug-Advanced Development	0	3238	2689	2690	2702	2663	1735	1928	Continuing	Continuing
D836 Combat Medical Materiel-Advanced Development	6332	3606	3996	4031	4210	4042	4024	4080	Continuing	Continuing
D837 Soldier System Protection-Advanced Development	786	801	885	861	1772	1570	809	1789	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program element (PE) funds the Advanced Development (AD) of medical materiel necessary to field an effective capability for infectious diseases. The PE funds AD of systems for medical protection against naturally occurring diseases and Human Immunodeficiency Virus (HIV). This includes development and initial human testing of vaccines, prophylactic and therapeutic drugs. Additionally, the PE supports AD of field medical equipment and drugs essential for combat casualty care on all battlefields and military operations other than war while reducing logistical support requirements. The PE also funds AD of systems that provide enhancement of or protection against physiological and psychological factors affecting cognitive and physical performance imposed by military systems, combat operations or the environment. This includes AD of vision corrective devices. Systems include resuscitators, blood substitutes, advanced sensors and diagnostic algorithms, field x-ray, field production of medical grade oxygen, intensive care delivery platforms and litters, and Advanced Surgical Suites fo Trauma Care (ASSTC). This program is primarily managed by the U.S. Army Medical Research and Materiel Command.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE **February 1999**

BUDGET ACTIVIT
4 - Demonstration and Validation

PE NUMBER AND TITLE
0603807A Medical Systems - Advanced Development

Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	6555	11414	11073	11041
Appropriated Value	6765	11414		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-210	-85		
b. SBIR / STT	-163			
c. Omnibus or Other Above Threshold Adjustments	2844			
d. Below Threshold Reprogramming	-55			
e. Rescissions				
Adjustments to Budget Years Since <u>FY 1999</u> P			1650	1194
Current Budget Submit (FY 2000 / 2001 PB)	9181	11329	12723	12235

Change Summary Explanation: Funding: FY1998 – Congressional special interest funds internally reprogrammed by DoD to this PE (+2844) for proper program execution. FY2000/FY2001: Funding increased to begin the advanced development on far-forward medical diagnostic kits and accelerate the development of products used to prevent or treat militarily relevant infectious diseases.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603807A Medical Systems - Advanced Development				PROJECT D808		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D808 DoD Drug and Vaccine-Advanced Development	2063	3684	5153	4653	4084	5107	5161	5179	Continuing	Continuing
<p>A. <u>Mission Description and Justification:</u> This project funds program definition and risk reduction of candidate medical countermeasures such as vaccines and drugs through safety, immunogenicity, and small-scale efficacy testing in volunteers against naturally occurring infectious diseases of mission-aborting potential. Work performed in laboratories and among troop populations is directed to prevention, diagnosis and treatment of viral, bacterial and parasitic disease to prevent casualties, sustain operational performance and minimize deaths and disability of armed forces during military operations. Some major contractors are Southern Research Institute, Birmingham AL; South Florida Research Institute, Miami, FL; Institute of Biology for the Army, Rio de Janeiro, Brazil; and Kenya Medical Research Institute, Nairobi, Kenya.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 756 Conducted Phase 1 safety trial for RTS,S malaria vaccine. • 75 Reformulated leishmania skin test to a liquid product. • 257 Conducted first year of Phase 1/2 safety and immunogenicity studies for <i>Shigella flexneri</i> vaccine. • 75 Continued Phase 2 efficacy studies for antimalarial drug WR238605. • 265 Conducted first year of disease incidence survey and site preparation for testing antimalarial drug WR238605 in Kenya. • 517 Conducted first year of multiple dose study with antimalarial drug WR238605 in Ghana. • 61 Conducted first year of carcinogenicity study in rats of antimalarial drug WR238605. • 19 Completed Phase 2 safety and efficacy study in Brazil with Paromomycin. • 38 Conducted first year of Paromomycin Phase 2 safety and efficacy study in Colombia. <p>Total 2063</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 1377 Conduct first year of Phase 2 field trials with RTS,S malaria vaccine. • 136 Conduct first year of Phase 2 study on Leishmania Skin Test Antigen. • 44 Conduct first year of testing of insect repellent camouflage face paint. • 70 Conduct first year of Phase 1 testing of artelinic acid for the treatment of malaria. • 780 Conduct first year of Phase 2 safety and efficacy trial for <i>Shigella flexneri</i> vaccine. • 145 Conduct first year of program for Malaria Rapid Diagnostic Device. 										
Project D808			Page 3 of 18 Pages				Exhibit R-2A (PE 0603807A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE February 1999
BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603807A Medical Systems - Advanced Development	PROJECT D808
<p>FY 1999 Planned Program: (continued)</p> <ul style="list-style-type: none"> • 70 Complete Phase 1/2 safety and immunogenicity studies fo <i>Shigella flexneri</i> vaccine. • 78 Conduct market survey for co-development partner for Paromomycin. • 8 Complete Paromomycin Phase 2 safety and efficacy study in Colombia. • 18 Complete Phase 2 efficacy studies for antimalarial drug WR238605. • 18 Complete disease incidence survey and site preparation for testing antimalarial drug WR238605 in Kenya. • 18 Complete multiple dose study with antimalarial drug WR238605 in Ghana. • 855 Continue carcinogenicity study in rats for antimalarial drug WR238605. • 67 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 3684</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 522 Continue Phase 2 studies on RTS,S Malaria vaccine. • 325 Conduct Phase 2 field trials for Malaria Rapid Diagnostic Device. • 312 Continue testing of insect repellent camouflage face paint. • 546 Complete Phase 1 testing of artelinic acid for the treatment of malaria. • 132 Conduct first year of Phase 2 clinical trials of artelinic acid. • 405 Complete Phase 2 safety and efficacy trial fo <i>Shigella flexneri</i> vaccine. • 249 Continue carcinogenicity study in rats for antimalarial drug WR238605. • 72 Continue Phase 2 study on Leishmania Skin Test Antigen. • 339 Conduct first year of program for dengue rapid diagnostic device. • 110 Conduct first year of program for shigella rapid diagnostic device. • 338 Conduct first year of program for scrub typhus kit. • 328 Conduct first year of pilot lot manufacture and testing of Japanese encephalitis vaccine (improved). • 611 Conduct first year of Phase 2 trials for malaria DNA vaccine. • 864 Conduct first year of Phase 2 field trials for hepatitis E vaccine. <p>Total 5153</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 300 Complete testing on insect repellent camouflage paint. • 216 Continue Phase 2 study on leishmania skin test antigen. 		
Project D808	Page 4 of 18 Pages	Exhibit R-2A (PE 0603807A)

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE February 1999
BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603807A Medical Systems - Advanced Development	PROJECT D808

FY 2001 Planned Program: (continued)

- 438 Continue Phase 2 clinical trials of artelinic acid.
 - 671 Continue Phase 2 trials for malaria DNA vaccine.
 - 486 Complete Phase 2 studies on RTS,S malaria vaccine.
 - 200 Develop planning for pivotal Phase 3 study fo *Shigella flexneri* vaccine.
 - 300 Complete Phase 1 and initiate Phase 2 testing of Japanese Encephalitis Vaccine (improved).
 - 621 Continue Phase 2 field trials for Hepatitis E vaccine.
 - 879 Conduct first year of Phase 2 field trials for dengue tetravalent vaccine.
 - 216 Continue program for dengue rapid diagnostic device.
 - 110 Continue program for shigella rapid diagnostic device.
 - 216 Continue program for scrub typhus kit.
- Total 4653

B. Other Program Funding Summary: Not applicable.

C. Acquisition Strategy: Test and evaluate in-house and commercially developed products in extensive government-managed clinical trials to gather data required fo Food and Drug Administration licensure.

D. Schedule Profile	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
RTS,S malaria vaccine - MS II							2Q02			
Leishmania skin test - MS II					1Q00					
Camouflage face paint - MS I and MS II				4Q99		3Q01				
Artelinic acid - MS I and MS II				2Q99		2Q01				
Shigella flexneri - MS II							2Q02			
Paromomycin - MS II						1Q01				
WR238605 antimalarial - MS II				2Q99						
Dengue rapid diagnostic device - MS I and MS II					1Q00		1Q02			
Malaria DNA vaccine - MS I and MS II					1Q00				1Q04	
Hepatitis E vaccine - MS I and MS II					1Q00				1Q04	
Dengue tetravalent vaccine - MS I and MS II						4Q01			1Q04	
Malaria Rapid Diagnostic Device						1Q01				

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603807A Medical Systems - Advanced Development						PROJECT D808		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. No product/contract costs greater than \$1M individuall			204	295		412		373		Continue	Continue	
b. Subtotal Product Development:			204	295		412		373		Continue	Continue	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. No product/contract costs greater than \$1M individuall			103	185		259		233		Continue	Continue	
b. Subtotal Support Costs:			103	185		259		233		Continue	Continue	
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. No product/contract costs greater than \$1M individuall			1278	2320		3246		2931		Continue	Continue	
b. Subtotal Test and Evaluation			1278	2320		3246		2931		Continue	Continue	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603807A Medical Systems - Advanced Development	PROJECT D808
--	--	-------------------------------

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. No product/contract costs greater than \$1M individuall			478	884		1236		1116		Continue	Continue	
b. Subtotal Management Services:			478	884		1236		1116		Continue	Continue	
Project Total Cost:			2063	3684		5153		4653				

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603807A Medical Systems - Advanced Development				PROJECT D811		
COST <i>(In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D811 Military HIV Vaccine and Drug-Advanced Development	0	3238	2689	2690	2702	2663	1735	1928	Continuing	Continuing
<p>A. <u>Mission Description and Justification:</u> This project funds Congressionally mandated, militarily relevant Human Immunodeficiency Virus (HIV) research fo demonstration and validation of candidate vaccines and drugs through safety, immunogenicity and small-scale efficacy testing and behavioral intervention in volunteers. Efforts are directed to answer militarily unique needs affecting manning, mobilization and deployment.</p> <p>FY 1998 Accomplishments: Project not funded in FY 1998.</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 3152 Conduct Phase 2/3 efficacy field trials for GP120 recombinant protein HIV vaccine. • 86 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 3238</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 2689 Conduct first year of Phase 2/3 efficacy field trials for avipox HIV vaccine. <p>Total 2689</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 2690 Continue Phase 2/3 efficacy field trials for avipox HIV vaccine. <p>Total 2690</p> <p>B. <u>Other Program Funding Summary:</u> Not applicable.</p> <p>C. <u>Acquisition Strategy:</u> Test and evaluate commercially developed vaccine candidates in government-managed trials.</p>										
Project D811			Page 8 of 18 Pages				Exhibit R-2A (PE 0603807A)			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603807A Medical Systems - Advanced Development	PROJECT D811
---	---	------------------------

D. Schedule Profile	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
GP 120 recombinant protein HIV vaccine - MSI				1Q99						
GP 120 recombinant protein HIV vaccine - MSII					1Q00					
Avipox HIV vaccine - MSI and MSII					1Q00		1Q02			
Combined HIV Vaccine - MSI								1Q03		

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999			
BUDGET ACTIVIT 4 - Demonstration and Validation					PE NUMBER AND TITLE 0603807A Medical Systems - Advanced Development					PROJECT D811			
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract	
a. Product Development		WRAIR/AFRIMS		3238		2689		2690		Continue	Continue		
b. Subtotal Product Development:				3238		2689		2690		Continue	Continue		
II. Support Costs: Not applicable													
III. Test and Evaluation: Not applicable													
IV. Management Services: Not applicable													
Project Total Cost:						3238		2689		2690		Continue	Continue
Project D811				<i>Page 10 of 18 Pages</i>				Exhibit R-3 (PE 0603807A)					

DATE
February 1999

BUDGET ACTIVIT
4 - Demonstration and Validation

PE NUMBER AND TITLE
0603807A Medical Systems - Advanced Development

COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D836 Combat Medical Materiel-Advanced Development	6332	3606	3996	4031	4210	4042	4024	4080	Continuing	Continuing

A. Mission Description and Justification: The project supports Advanced Development of new and improved systems essential for battlefield casualty care, patient transport and evacuation, and return to duty in support of special contingency and conventional force operations. Primary civilian contractors are University of Illinois, Chicago, IL and United Defense Limited Partnership, San Jose, CA.

FY 1998 Accomplishments:

- 1990 Completed an Analysis of Alternatives for Armored Medical Evacuation Vehicle (AMEV), initial prototype constructed and delivered to 4th Infantry Division for initial user evaluation.
 - 350 Completed Operational Requirements Document and market investigation for Life Support for Trauma and Transport (LSTAT); conducted electromagnetic emissions testing, submitted data to the Food and Drug Administration (FDA), and received FDA approval for initial model of LSTAT medical device.
 - 745 Developed Analysis of Alternatives and manufacturing process for production and demonstration of efficacy of fibrin bandage.
 - 300 Completed initial development of glycerolization portion of thawed blood processing system to extend shelf life of thawed blood products from 24 hours to 2 weeks.
 - 200 Initiated evaluation of ceramic oxygen generator system to replace currently used oxygen cylinders in medical evacuation.
 - 23 Completed standardization of field triage light.
 - 2724 Developed plan to conduct cost-benefit trade-offs, overcome technological barriers and integrate solutions into next generation LSTAT.
- Total 6332

FY 1999 Planned Program:

- 1013 Evaluate AMEV in National Training Center Rotation 99-05 and conduct concept evaluation phase (CEP) test.
- 316 Develop prototype Warrior Medic variant system and test effectiveness in Land Warrior.
- 69 Transition Warrior Medic program to advanced development [Milestone O/I In-process Review (IPR)].
- 130 Conduct first year of clinical testing and FDA approval process of thawed blood processing device while continuing development of glycerolization device.
- 303 Develop quality control assays for fibrin bandage and prepare to conduct a Milestone I/II for fibrin bandage in order to move into clinical trials in humans.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE February 1999
BUDGET ACTIVIT	PE NUMBER AND TITLE	PROJECT
4 - Demonstration and Validation	0603807A Medical Systems - Advanced Development	D836
<ul style="list-style-type: none"> • 28 Continue evaluation of ceramic oxygen generator system. <p>FY 1999 Planned Program: (continued)</p> <ul style="list-style-type: none"> • 842 Develop next generation jet injector for administration of vaccines to large numbers of troops without cross-contamination. • 136 Continue development and refinement of LSTAT device to include air worthiness certification and preparation of FDA submission. • 275 Design and construct lightweight litter using advanced composite materials. • 425 Conduct market survey and evaluation of candidate technologies for microbiological assay and sample preparation for the Drinking Water microbiological assay system. • 69 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 3606</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 1704 Complete evaluation and conduct a Milestone I/II and production qualification test (PQT) for AMEV. • 62 Conduct technology cost-benefit trade-off analysis and initiate formal acquisition program for upgraded LSTAT device. • 573 Complete Warrior Medic variant design and qualification testing. • 100 Conduct clinical trials for efficacy and safety of fibrin bandage. • 970 Conduct clinical trials and continue development of FDA submission of thawed blood processing system. • 587 Prepare documentation for FDA approval to conduct bioequivalence testing of next generation jet injector. <p>Total 3996</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 100 Conduct clinical trials for the fibrin bandage program and prepare the Product License Application (PLA) and Establishment License Application (ELA). • 125 Prepare IOT&E and conduct Milestone II/III IPR for Warrior Medic program. • 700 Finalize development of the platelet processing system for thawed blood processing system. • 1700 Begin low rate initial production (LRIP) and conduct production verification test (PVT) for AMEV. • 1406 Develop and conduct field for testing of the improved Advanced Surgical Suites for Trauma Casualties (ASSTC). <p>Total 4031</p> <p>B. <u>Other Program Funding Summary:</u> Not applicable.</p> <p>C. <u>Acquisition Strategy:</u> Evaluate commercially developed materiel in government-managed tests for hardening or other modification.</p>		
Project D836	Page 12 of 18 Pages	Exhibit R-2A (PE 0603807A)

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603807A Medical Systems - Advanced Development	PROJECT D836
---	---	------------------------

D. Schedule Profile	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Warrior Medic				MS0/I 4QTR		MS III 4QTR				
LSTAT						4QTR				
Fibrin Bandage				MSI 3QTR	3QTR					
AMEV					MS I/II 4QTR					
Ceramic Oxygen Generator System				4QTR						
Jet Injecto					MS I/II 4QTR					
Thawed Blood System					MS I/II 4QTR					

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE **February 1999**

BUDGET ACTIVIT
4 - Demonstration and Validation

PE NUMBER AND TITLE
0603807A Medical Systems - Advanced Development

PROJECT
D836

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. AMEV	MIPR	PM Bradley, Warren, MI	1990	1010	Nov 98	1404	Nov 98	1700	Nov 98	Continue	Continue	
b. LSTAT	TBD	TBD	2724							Continue	Continue	
c. ASSTC								1410		Continue	Continue	
Subtotal Product Development:			4714	1010		1404		3110				

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. No product/contract costs greater than \$1M individuall												
Subtotal Support Costs:												

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. No product/contract costs greater than \$1M individuall												
Subtotal Test and Evaluation												

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603807A Medical Systems - Advanced Development						PROJECT D836		
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. No product/contract costs greater than \$1M individuall			1618	2596		2592		921		Continue	Continue	
Subtotal Management Services:			1618	2596		2592		921				
Project Total Cost:			6332	3606		3996		4031				

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603807A Medical Systems - Advanced Development				PROJECT D837		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D837 Soldier System Protection-Advanced Development	786	801	885	861	1772	1570	809	1789	Continuing	Continuing
<p>A. <u>Mission Description and Justification:</u> This project supports demonstration and validation of preventive medicine materiel including devices, pharmacologicals and other tools to provide protection, sustainment, and enhancement of the physiological and psychological capabilities of soldiers in the face of combat operations under all environmental conditions. Focus is on reduction in the incidence of personnel losses due to preventable disease and non-battle injuries through development of environmental and physiological performance monitors and other preventive medicine countermeasures.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 32 Provided consultation on the warfighter physiological status monitor. • 192 Integrated databases of the Medical Situational Awareness and Control System (MSAC) into databases of Combat Service and Support Control System (CSSCS). • 191 Developed software links to port all of MSAC into CSSCS. • 62 Developed organizational structure for Medical Communications for Combat Casualty Care (MC4) program management office. • 124 Integrated MC4 functional requirements into Theatre Medical Information Program (TMIP) requirements documentation. • 185 Provided system engineering support to Army Medical Department (AMEDD) integrated process and product development. <p>Total 786</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 45 Provide consultation on the warfighter physiological status monitor. • 588 Develop prototype warrior medic variant system and test effectiveness in Land Warrior initial operational test and evaluation (IOT&E). • 147 Provide system engineering support for system integration with Force XXI Battle Command – Brigade and Below (FBCB2) and Global Combat Support System (GCSS). • 21 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 801</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 31 Provide consultation on the warfighter physiological status monitor. • 41 Prepare acquisition documents for Milestone 0 In-process Review (IPR) for warfighter physiological status monitor. 										
Project D837			Page 16 of 18 Pages				Exhibit R-2A (PE 0603807A)			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603807A Medical Systems - Advanced Development	PROJECT D837
--	--	-------------------------------

FY 2000 Planned Program: (continued)

- 715 Initiate contract funding for required Investigational New Drug (IND) application sections and manufacturing of leishmania skin test antigen (LSTA) kits.
 - 49 Initiate program for second indication for modafinil as short-term measure to sustain performance in continuous operations (counter fatigue).
 - 49 Initiate program for caffeine formulations to counter fatigue.
- Total 885

FY 2001 Planned Program:

- 31 Provide consultation on the warfighter physiological status monitor.
 - 700 Provide for manufacture of LSTA kits for Phase 1 dose ranging safety and sensitivity clinical trial.
 - 91 Continue to investigate caffeine formulation as short-term measure to sustain performance in continuous operations.
 - 39 Initiate program for melatonin formulations to counter warfighter fatigue.
- Total 861

B. Other Program Funding Summary: Not applicable.

C. Acquisition Strategy: Test and evaluate materiel in government-managed trials to meet fielding requirements.

D. Schedule Profile	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Leishmania Skin Test Antigen - MS II						4Q01				
Modafinil - MS 0 and MS I/II				1Q99	3Q00					
Caffeine - MS 0 and MS I				1Q99	4Q00					
Melatonin - MS 0 and MS I				4Q99		4Q01				
Warfighter Physiological Status Monitor - MS 0					4Q00					

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE **February 1999**

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603807A Medical Systems - Advanced Development	PROJECT D837
--	--	-------------------------------

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. No product/contract costs greater than \$1M individuall				520		715		700		Continue	Continue	
Subtotal Product Development:				520		715		700		Continue	Continue	

II. Support Costs: Not applicable

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. No product/contract costs greater than \$1M individuall								52		Continue	Continue	
Subtotal Test and Evaluation								52		Continue	Continue	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. No product/contract costs greater than \$1M individuall				281		170		109		Continue	Continue	
Subtotal Management Services:				281		170		109		Continue	Continue	

Project Total Cost:				801		885		861		Continue	Continue	
----------------------------	--	--	--	-----	--	-----	--	-----	--	----------	----------	--

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603854A Artillery Systems Advanced Development
--	--

COST (<i>In Thousands</i>)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
Total Program Element (PE) Cost	301160	313526	282937	120457	0	0	0	0	0	1249605
D505 Crusader - Advanced Development*	298012	311257	282937	120457	0	0	0	0	0	1241461
DC68 DC68	3148	2269	0	0	0	0	0	0	0	8144

*In FY 2002/2003 the database erroneously reflects the spread of the pay increase to this line, should have been given to PE 0604854A/project D503. What appears above is the correct amounts for FY 2002/2003.

A. Mission Description and Budget Item Justification: This program element supports the Program Definition and Risk Reduction (PDRR) efforts for the Crusader – Advanced Development Program. The Crusader system is the Army’s next generation artillery system consisting of a self-propelled howitzer (SPH) and a resupply vehicle (RSV). Crusader will have significantly increased capabilities in the areas of lethality, mobility, survivability, resupply, command and control, and sustainability b capitalizing on emerging, advanced technologies. The SPH will also achieve increased lethality levels through independent operations. The RSV will have significantl increased capabilities in the areas of resupply, mobility and survivability and will provide a single source of ammunition, fuel, propellant and other supplies for the SPH. Beginning in FY 1999, efforts previously funded in PE 0603640A, Project DB91, Artillery Propellant Development will be funded within this program element.

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President’s Budget (<u>FY 1999 PB</u>)	314017	313166	309059	126386
Appropriated Value	324380	317166		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-10363	-3640		
b. SBIR / STT	-7874			
c. Omnibus or Other Above Threshold Reductions	-2583			
d. Below Threshold Reprogramming	-2400			
e. Rescissions				
Adjustments to Budget Years Since <u>FY 1999 PB</u>			-26122	-5929
Current Budget Submit (<u>FY 2000/ 2001 PB</u>)	301160	313526	282937	120457

Change Summary Explanation: FY 2000/2001 reduction due to realignment of funds to higher priority requirements.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603854A Artillery Systems Advanced Development	PROJECT D505
--	--	-------------------------------

COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D505 Crusader - Advanced Development*	298012	311257	282937	120457	0	0	0	0	0	1241461

*In FY 2002/2003 the database erroneously reflects the spread of the pay increase to this line, should have been given to PE 0604854A/project D503. What appears above is the correct amounts for FY 2002/2003.

A. Mission Description and Justification: This project supports the Program Definition and Risk Reduction (PDRR) efforts for the Crusader – Advanced Development Program. The Crusader system is the Army’s next generation artillery system consisting of a self-propelled howitzer (SPH) and a resupply vehicle (RSV). Crusader will have significantly increased capabilities in the areas of lethality, mobility, survivability, resupply, command and control, and sustainability by capitalizing on emerging, advanced technologies. The SPH will also achieve increased lethality levels through independent operations. The RSV will have significantly increased capabilities in the areas of resupply, mobility and survivability and will provide a single source of ammunition, fuel, propellant and other supplies for the SPH. Beginning in FY99, efforts previously funded in PE 0603640A, Project DB91, Artillery Propellant Development will be funded within this project. Beginning in FY00, work previously executed in Project DC68 will transition to Project D505.

FY 1998 Accomplishments:

- 269102 Product development: Continued development efforts under the Crusader PDRR contract. Continued efforts in support of maturation, integration and risk reduction of critical technologies. Continued component prototype fabrication and demonstration. Conducted system level review. Conducted PEO/CMDT IPR. Received delivery of key system components, such as Resupply Magazines, RSV-Hull, Gun Turret, Bench Top Electronics, Projectile Load Arm and Engine & Transmission. Initiated component integration efforts in the System Integration Facility (SIF).
 - 21438 Support and management: Continued project management efforts; to include scientific and engineering analysis, product development team support and engineering management services.
 - 7472 Test and evaluation: Purchased ammo for EDT and continued EDT-A testing.
- Total 298012

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE February 1999
BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603854A Artillery Systems Advanced Development	PROJECT D505
FY 1999 Planned Program:		
•	266058	Product development: Continue developmental efforts under the Crusader PDRR contract. Continue efforts in support of maturation and continue integration and risk reduction of critical technologies. Initiate long lead item buys. Initiate system prototype fabrication (Version I SPH/RSV). Initiate integration and checkout. Complete component fabrication and demonstration. Type Classification of MACS XM231. Delivery of 1 (RSV-) engineering development test article to be used in Performance/RAM Testing.
•	19081	Support and management: Continue project management efforts; to include scientific and engineering analysis, product development team support and engineering management services.
•	14450	Test and evaluation: Finalize EDT-A testing. Initiate testing of RSV(-). Initiate Safety Certification Activity. Purchase of ammunition and propellant for program testing.
•	11668	Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	311257	
FY 2000 Planned Program:		
•	248130	Product Development: Continue developmental efforts under Crusader PDRR contract. Continue efforts in support of integration and risk reduction of critical technologies. Continue long lead item buys. Continue automotive maturation. Complete integration and checkout of Version 1 SPH and RSV. Initiate Integration and Checkout of Version 2 SPH. Type classification of MACS XM232. Select Production Facility site. Delivery of 2 SPH and 1 RSV engineering development test articles to be used in DT/OT, EUT and Reliability Growth Testing.
•	19268	Support and Management: Continue project management efforts; to include engineering analysis, product development team support and engineering management activities. Finalize coordination and development of MSII activities.
•	15539	Test and Evaluation: Continue testing of RSV(-). Initiate EDT/EUE of Version 1 SPH and RSV. Finalize Safety Certification activity. Establish Cannon Interim Safety Fatigue Life. Initiate System Reliability Growth Testing. Initiate Ballistic Hull and Turret Survivability Testing. Purchase of ammunition and propellant for program testing.
Total	282937	
FY 2001 Planned Program:		
•	105310	Product Development: Finalize development efforts under Crusader PDRR contract. Complete efforts in support of integration and risk reduction of critical technologies. Complete automotive maturation. Complete integration and checkout of Version 2 SPH.
•	9734	Support and Management: Complete project management efforts; to include engineering analysis, product development team support and engineering management activities. Conduct MSII.
•	5413	Test and Evaluation: Finalize EDT/EUE of Version 1 SPH and RSV and conduct EUT. Conduct EDT/EUT and Reliability Growth Test of SPH2. Finalize Safety Certification activity. Finalize Ballistic Hull and Turret Survivability Testing. Purchase of ammunition and propellant for program testing.
Total	120457	
Project D505		

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603854A Artillery Systems Advanced Development	PROJECT D505
--	--	-------------------------------

B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To Comp</u>	<u>Total Cost</u>
RDTE, BA5, Army, PE 0604854, D503			60577	315253	411143	258066	295415	23988	0	1364442
Procurement, WCTV, Army, G83500					41607	95543	382601	628003	9437130	10584884
Procurement, WCTV, Army, G83600					32967	80240	314331	499726	7633500	8560764
RDTE, BA5, Army, PE 0604854, D2KT		100	396	1145	200	3330	5404	20111	10000	40686
RDTE, BA4, Army, PE 0603640, DB91	7983								0	115572
Procurement, Ammo, Army, ER 8021			42938	55602	73182	93248	54184	78394	Cont	Cont
RDTE, BA5, Army, PE 0604645, D175		4470	2899	2214					0	43281
Procurement, Ammo, Army, ER 8017		1510	14061	45917	53257	53921	54032	56430	Cont	Cont

C. Acquisition Strategy: On 29 December 1994, a Sole Source-CPIF contract award was made selecting United Defense, Limited Partnership (UDLP) as the prime contractor for the PDRR phase of Crusader. General Dynamics Land Systems (Warren, MI) and General Dynamics Armament Systems (Burlington, VT) are the major sub-contractors in the areas of mobility and resupply respectively. On 19 March 1996, the Army changed the armament system for Crusader from liquid propellant (LP) to solid propellant (SP) as a consequence of cost and persistent technical problems. In March 1996, the contract with UDLP was restructured to reflect the change from LP to SP. In June 1996, UDLP selected the government's Advanced Solid Propellant Armament system (XM297 cannon and Modular Artillery Charge System (MACS) as the basis for SP Crusader). On 6 November 1996, TACOM-ARDEC signed a Memorandum of Agreement (MOA) with UDLP establishing a unique teaming arrangement for the Government to provide engineering services to UDLP for the development of the SP armament system. On 29 January 1997, UDLP signed a contract modification worth \$804.9M that definitized the remainder of PDRR and details the scope of work through MSII. Delay in the decision to switch from LP to SP and alignment of program activities to match fiscal profile required an adjustment in the schedule portion of the Acquisition Program Baseline (APB). On 23 October 1997, the Office of the Secretary of Defense approved Crusader's revised APB.

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
PEO/Cmdt In-Process-Review (IPR)	4 th Qtr							
Integration Checkout		4 th Qtr						
Safety Certification Activit		4 th Qtr						
MACS XM231 TC		4 th Qtr						
Select Production Facilit			4 th Qtr					
MACS XM232 TC			4 th Qtr					
Milestone II				2 nd Qtr				

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603854A Artillery Systems Advanced Development	PROJECT D505
---	---	------------------------

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
EMD Continuation Review				4 th Qtr				
LRIP IPR						4 th Qtr		
FUE								4 th Qtr

*Milestone completed

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE
February 1999

BUDGET ACTIVIT
4 - Demonstration and Validation

PE NUMBER AND TITLE
**0603854A Artillery Systems Advanced
Development**

PROJECT
D505

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Systems Contractor	SS/CPIF	UDLP, Minneapolis, MN	434289	238173	Oct-98	231729	Oct-99	99472	Oct-00	0	1003663	
b. Systems Development Engineering	PO	ARDEC, Picatinn Arsenal, NJ	34871	18796	Oct-98	9751	Oct-99	3424	Oct-00	0	66842	
c. Systems Development Engineering	PO	TACOM, Warren, M	2237	940	Oct-98	1482	Oct-99	863	Oct-00	0	5522	
d. Systems Development Engineering	PO	ARL, Adelphi, MD	2676	1766	Oct-98	800	Oct-99	400	Oct-00	0	5642	
e. Systems Development Engineering	PO	Various OGAs	827	5109	Oct-98	3640	Oct-99	837	Oct-00	0	10413	
f. Systems Development Engineering	Various	Various contracts	78	1274	Dec-98	728	Dec-99	314	Dec-00	0	2394	
Subtotal Product Development:			474978	266058		248130		105310			1094476	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Development Support	PO	PM Crusader, Picatinny Arsenal, NJ	11816	6472	Oct-98	6628	Oct-99	3397	Oct-00	10	28323	
b. Development Support	PO	ARDEC, Picatinn Arsenal, NJ	16767	6955	Oct-98	7039	Oct-99	3653	Oct-00	0	34414	
c. Integrated Logistics Support	PO	RIA, Rock Island, IL	271	149	Oct-98	150	Oct-99	80	Oct-00	0	650	
d. Development Support	PO	TACOM, Warren, M	3971	1488	Oct-98	1528	Oct-99	788	Oct-00	-	7775	
e. Development Support	PO	ARL, Adelphi, MD	1950	853	Oct-98	798	Oct-99	403	Oct-00	0	4004	
f. Development Support	PO	Various OGAs	2171	707	Oct-98	805	Oct-99	441	Oct-00	0	4124	
g. Development Support	Various	Various contracts	4501	366	Oct-98	166	Oct-99	85	Oct-00	0	5118	
Subtotal Support Costs:			41447	16990		17114		8847		10	84408	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603854A Artillery Systems Advanced Development						PROJECT D505		
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Development Test and Evaluation	PO	TECOM (YPG, AZ; CSTA, APG, MD)	2091	1170	Oct-98	5842	Oct-99	2193	Oct-00	0	11296	
b. Ammunition and propellant	PO	Various	6029	13280	Dec-98	9697	Dec-99	3220	Dec-00	0	32226	
Subtotal Test and Evaluation			8120	14450		15539		5413			43522	
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Project Management Support	SS/FP	Vector Research, Inc., VA	739	670	Nov-98	600	Nov-99	300	Nov-00	0	2309	
b. Project Management Support	SS/FP	System Research & Integration, Inc., V	101	100	Nov-98	105	Nov-99	55	Nov-00	0	361	
c. Project Management Support	SS/FP	GSA, VA	130	160	Nov-98	165	Nov-99	85	Nov-00	0	540	
d. Project Management Support	SS/FP	Unknown	0	287	Nov-98	400	Nov-99	0	-	0	687	
e. Systems Engineering Support	SS/FP	PRC, V	294	494	Nov-98	504	Nov-99	257	Nov-00	0	1549	
f. Software Development Support	SS/FP	Mitre Corporation, VA	991	380	Nov-98	380	Nov-99	190	Nov-00	0	1941	
g. SBIR/STTR				11668							11668	
Subtotal Management Services:			2255	13759		2154		887			19055	
Project Total Cost:			526800	311257		282937		120457		10	1241461	

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE February 1999		
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603856A SCAMP Block II (Space)				PROJECT D389		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D389 SCAMP Block II	569	7683	10703	20402	20022	31382	6878	7848	Continuing	Continuing
<p>A. <u>Mission Description and Budget Item Justification:</u> Project D389 - SCAMP Block II: The Single Channel Anti-Jam Manportable (SCAMP) Block II Terminal will be a manpackable, satellite communications terminal to be employed by units that require range extension for command and control communications. Block II will be used by priority ground tactical users to transmit and receive intelligence, situational awareness, and command and control traffic. It will transmit in the Extremely High Frequency (EHF) band and receive in the Super High Frequency (SHF) band. SCAMP Block II will operate over MILSTAR, other MIL-STD-1582 compatible payloads, and the future Advanced EHF payload providing secure voice and data services at data rates up to 64Kbps. SCAMP Block II EHF terminal will provide direct support to the tactical warfighter mobile forces with anti-jam protection, low probability of intercept, and low probability of detection. Engineering Feasibility Efforts (EFE) began in FY 1996. The FY00/01 activities will continue the current prototype development with the primary focus toward completion of the Technology Transfer (TT) medium (CD ROM) and preparation of the TT Statement of Work (SOW) which will require each partnering contractor to assume design responsibility of the Lincoln Lab architecture. These efforts will provide confidence in technical approach and lead to procurement of ten Baseline 2 terminals.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 569 Continued prototype development <p>Total 569</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 4807 Complete Baseline 0 prototype development • 1070 Test, evaluate and demonstrate Baseline 0 prototype: RDTE Test Quantity: 2 • 1602 Commence Baseline 1 prototype development • 204 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 7683</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 7984 Complete Baseline 1 prototype terminals: RDTE Test Quantity: 4 • 1816 Test, evaluate and demonstrate four Baseline 1 terminals • 903 RFP/SSEB preparation and documentation for Baseline 2 terminals. <p>Total 10703</p>										
Project D389			Page 1 of 5 Pages				Exhibit R-2 (PE 0603856A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603856A SCAMP Block II (Space)	PROJECT D389
--	--	-------------------------------

FY 2001 Planned Program:

- 8020 Complete Baseline 1 terminal improvements and conduct MS II decision
- 8369 Lincoln Labs and industry partnering to develop, test and demonstrate ten Baseline 2 terminals. RDTE Test Quantity: 10
- 4013 Baseline 2 improvements and Development Test/Early Operational Assessment preparation.

Total 20402

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	71	7969	16568	35084
Appropriated Value	73	7969		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-2	-286		
b. SBIR / STT	-2			
c. Omnibus or Other Above Threshold Reduction	-1			
d. Below Threshold Reprogramming	+501			
e. Rescissions				
Adjustments to Budget Years Since FY 1999 PB			-5865	-14682
Current Budget Submit (FY 2000/2001 PB)	569	7683	10703	20402

Change Summary Explanation:

In FY98, funds reprogrammed to allow continuation of ongoing Engineering Feasibility Efforts (EFE) (+501)

In FY00/01, funds were realigned IAW Spiral Development Acquisition Strategy to align SCP II program with AEHF satellite launch schedule.

C. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To</u>	<u>Total</u>
									<u>Compl</u>	<u>Cost</u>
Other Procurement Army 2 - SSN: BC 4110	0	0	0	0	0	0	46831	45227	Cont	Cont

D. Acquisition Strategy: SCAMP Block II will be a manpackable terminal in the 12-15 lb. range. Acquisition strategy consists of a spiral development program with four spiral phases. The spiral development phase occurring in FY 2000 will result in the development, test and demonstration of four Baseline 1 MDR (receive) Terminals. Following the Milestone II decision and partnering with industry contract award in FY 2001, ten Baseline 2 terminals will be produced which will validate the contractor's ability to achieve the design resulting from the Lincoln Labs partnering.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603856A SCAMP Block II (Space)	PROJECT D389
---	---	------------------------

E. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Complete Baseline 0 prototype		2Q						
Test, evaluation and demonstrate prototype		4Q						
Complete Baseline 1 prototypes			3Q					
DT&E Baseline 1 prototypes			4Q					
Milestone II decision				1Q				
EMD partnering contract award				2Q				
Developmental testing					1-4Q			
IOTE						1-4Q		
Milestone III decision							1Q	
FRP award							2Q	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999			
BUDGET ACTIVIT 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603856A SCAMP Block II (Space)						PROJECT D389			
I. Product Development													
	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract	
a.	System Development	MIPR	Lincoln Labs Lexington, M	3383	4730	Feb 99	5414	Feb 00	8822	Feb 01	Cont	22349	
b.	Other Contracts	Various	Various	1856	303						Cont	2159	
c.	Govt Eng Support	MIPR	Various	416	527		678		797		Cont	2418	
d.	Major Contract	C - CPAF	TBS					6301	Jan 01		Cont	6301	
Subtotal Product Development:				5655	5560		6092		15920			33227	
II. Support Costs													
	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract	
a.	Labs/OGAs	MIPR	Various	61	110		684		857		Cont	1712	
b.	Support Contracts	Various	Various	1065	186		252		358		Cont	1861	
c.	SSEB	MIPR	Various				644					644	
Subtotal Support Costs:				1126	296		1580		1215			4217	
III. Test and Evaluation													
	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract	
a.	Test Demonstration	MIPR	Lincoln Labs Lexington, M	1125	200		366					1691	
b.	DT&E	Various	Various		270		350		1117		Cont	1737	
c.	Major Contracts							368			Cont	368	
d.	LL DT&E				600		1100		525		Cont	2225	
Subtotal Test and Evaluation				1125	1070		1816		2010			6021	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603856A SCAMP Block II (Space)	PROJECT D389
---	---	------------------------

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Govt Program Support	MIPR	Various	364	273		688		721		Cont	2046	
b. Support Contracts	Various	Various		280		527		536		Cont	1343	
c. SBIR/STTR				204							204	
Subtotal Management Services:			364	757		1215		1257			3593	
Project Total Cost:			8270	7683		10703		20402			47058	

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604201A Aircraft Avionics				PROJECT DC97		
COST (In Thousands)	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
DC97 Aircraft Avionics	32504	14780	6372	2990	9254	9247	8941	32810	Continuing	Continuing
<p>A. Mission Description and Budget Item Justification: This Program Element (PE) funds the development of avionics systems required to horizontally and vertically integrate the battlefield. Tasks in this PE support research efforts in the engineering and manufacturing development phases of these systems. The Army Airborne Command and Control System (A2C2S) functions as a highly mobile command post. When mounted in the UH-60 helicopter with auxiliary equipment, it provides tactical voice, data, and imagery digitized battlefield communications both in secure and nonsecure modes for corps, division, and brigade commanders. The system provides battle commanders access to critical situational awareness and off-board national asset intelligence information via satellite communications. It also provides digitized battlefield communications links with Army combined arms team members, joint service and combined force elements, and intercommunications facilities for up to five operators, and joint interoperability as well as maritime and air traffic control communications. The A2C2S is in response to real world needs of combat maneuver commanders to perform highly mobile and responsive digital, voice, and imagery command and control (C2) functions in the UH-60 helicopter. The A2C2S system will enable the commander and staff to remain highly mobile with the capability to interject critical C2 across the designated battle area without sacrificing access to information products or jeopardizing continuity of operations due to command post relocation. Interoperability is enhanced with this system by providing the capability to communicate digitally with Navy or Air Force close air support as well as relaying target information. The A2C2S is used to provide C2 for disaster relief, peacekeeping, drug interdiction, and both low and high intensity conflict missions. The A2C2S will play a major role in eliminating costly fratricide incidents via the capability to closely monitor and control operations. Satellite communications provide access to tactical communication systems and enable communication with the force and command structure from Joint Chiefs of Staff (JCS) down to battalion when required. RDTE funds are also required to develop Improved Data Modem (IDM) hardware and software interfaces for the Improved Cargo Helicopter to incorporate Embedded Battle Command (EBC) software for processing Joint Variable Message Formatting (JVMF) messages that will allow for battlefield interoperability. The Improved Data Modem (IDM) program provides Aviation assets with a flexible, software-driven digital messaging capability that facilitates Aviation interoperability with existing Combined Arms teams and the US Air Force. This capability provides digital interoperability with emerging Tactical Internet and joint information exchange models. RDTE is required to develop a common, multi-function, upgradeable software driven communication module that integrates or replaces existing discrete information exchange and information processing applications or devices. This open architecture design yields a multifaceted, highly reliable product that will reduce avionics space, weight and power requirements, resulting in lower overall life-cycle costs.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 3600 Accelerated development of enhanced communications terminal, workstation consoles and other A2C2S prime mission equipment • 1200 Accelerated development of A2C2S Antenna Interface Module (AIM) • 1300 Accelerated development of A2C2S Workstation Software • 2598 Accelerated test and integration procedures for A2C2S Engineering Development Model (EDM) • 1600 Accelerated system engineering, logistics, and technical documentation for A2C2S • 13705 Continued development of enhanced communications terminal, workstation consoles and other A2C2S prime mission equipment • 2600 Completed development of A2C2S Antenna Interface Module (AIM) 										
Project DC97			Page 1 of 6 Pages				Exhibit R-2 (PE 0604201A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)		DATE February 1999
BUDGET ACTIVIT	PE NUMBER AND TITLE	PROJECT
5 - Engineering and Manufacturing Development	0604201A Aircraft Avionics	DC97
<p>FY 1998 Accomplishments: (continued)</p> <ul style="list-style-type: none"> • 3538 Continued development of A2C2S Workstation Software • 663 Continued test and integration procedures for A2C2S Engineering Development Model (EDM) • 550 Continued system engineering, logistics, and technical documentation for A2C2S • 1150 Continued program management support for the A2C2S <p>Total 32504</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 5030 Continue development of enhanced communications terminal, workstation consoles and other A2C2S prime mission equipment • 1103 Continue development of A2C2S Workstation Softwar • 4002 Continue test and integration procedures for A2C2S Engineering Development Model (EDM) • 2630 Continue system engineering, logistics, and technical documentation for A2C2S • 305 Continue program management support for the A2C2S development • 309 Initiate IDM interface nonrecurring engineering to incorporate EBC for processing of JVMF messages into the Improved Cargo Helicopter (ICH) • 1010 Initiate IDM/ICH platform interface software development • 391 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) programs. <p>Total 14780</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 1818 Continue development of enhanced communications terminal, workstation consoles and other A2C2S prime mission equipment • 370 Continue development of A2C2S Workstation Softwar • 1218 Continue test and integration procedures for A2C2S Engineering Development Model (EDM) • 675 Continue system engineering, logistics, and technical documentation for A2C2S • 345 Continue program management support for the A2C2S development • 500 Complete IDM interface nonrecurring engineering for IC • 500 Continue IDM/ICH platform interface software development • 946 Initiate system level and interoperability testing for ICH with EBC <p>Total 6372</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 751 Complete IDM/platform interface software development • 1174 Complete testing of EBC in the ICH • 1065 Initiate development of common digitization communication module <p>Total 2990</p>		
Project DC97	Page 2 of 6 Pages	Exhibit R-2 (PE 0604201A)

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604201A Aircraft Avionics	PROJECT DC97
--	--	------------------------

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	31660	7878	1828	2800
Appropriated Value	32669	14878		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-1009	-98		
b. SBIR / STTR	-794			
c. Omnibus or Other Above Threshold Reductions	-262			
d. Below Threshold Reprogramming	+1900			
e. Rescissions				
Adjustments to Budget Years Since FY 1999 PB			+4544	+190
Current Budget Submit (FY 2000/ 2001 PB)	32504	14780	6372	2990

Change Summary Explanation. Funding – The FY 98 reprogramming of \$1.9M was required to initiate development of software changes in accordance with requirements of the First Digitized Division (FDD).
 The FY 00 increase of \$4.5M was reprogrammed from APA for the engineering and manufacturing development changes to A2C2S components and software required to maintain interoperability with First Digitized Division.

C. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To</u>	<u>Total</u>
Aircraft Procurement, Army (APA):									<u>Compl</u>	<u>Cost</u>
Airborne Command and Control Console AA0710 BLIN 901029	0	0	0	17252	35464	77247	78331	65539	Continue	Continue
Aircraft Avionics SSN AA0700, BLIN 901021	41697	56173	43690	43336	71248	56307	71020	53769	Continue	Continue

D. Acquisition Strategy: This project is comprised of multiple systems. The A2C2S is being developed by the Naval Research Laboratory (NRL). The initial limited production will be accomplished by the developer. The follow on full production contract will be competitively awarded starting in FY 01. The A kits and B kits will be installed by depot level contractors. Rockwell/Boeing will perform the nonrecurring engineering and software development required to incorporate the IDM EBC functionality into the ICH. This development will be completed in FY 01. The B kits will be procured and installed during ICH production.

E. Schedule Profile	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Continue/Complete Design and Development of A2C2S Workstation Consoles	4Qtr	4Qtr	4Qtr	4Qtr	4Qtr					
Continue/Complete Technical Documentation - A2C2S Test and Integration Procedures	4Qtr	4Qtr	4Qtr	4Qtr	4Qtr					

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604201A Aircraft Avionics				PROJECT DC97		
E. Schedule Profile	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Continue/Complete Development of A2C2S Antenna Interface Module (AIM)	4Qtr	4Qtr	4Qtr							
Continue/Complete A2C2S Systems Engineering, Logistics Processes	4Qtr	4Qtr	4Qtr	4Qtr	4Qtr					
Continue/Complete Development of Enhanced Communications terminal, Work Station Consoles and other Prime Mission Equipment	4Qtr	4Qtr	4Qtr	4Qtr	4Qtr					
Continue/Complete Development of A2C2S Workstation Software	4Qtr	4Qtr	4Qtr	4Qtr	4Qtr					
Initiate IDM interface nonrecurring engineering to incorporate EBC				4Qtr						
Initiate IDM/ICH platform interface software development				4Qtr						
Complete IDM interface nonrecurring engineering for ICH					4Qtr					
Initiate system level and interoperability testing fo ICH with EBC					4Qtr					
Continue IDM/ICH platform interface software development					4Qtr					
Complete IDM/platform interface software development						4Qtr				
Complete testing of EBC in the ICH						4Qtr				
Initiate development of common digitization communication module						4Qtr				

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604201A Aircraft Avionics	PROJECT DC97
--	--	------------------------

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development	MIPR	Naval Research Lab Washington, DC	30148	6790	Oct 98	2090	Oct 99	384	Oct 00		39412	Cont
Ancillary Hardware Development	MIPR	Army Aviation Tech Dir. Ft. Eutis, VA	6591	400	Jan 99						6991	6591
Systems Engineering	MIPR	Naval Research Lab Washington, DC	16871	2325	Oct 98/ Jan 99	440	Oct 99				19636	19636
GFE	MIPR	Naval Research Lab Washington, DC	578								578	578
Subtotal Product Development:			54188	9515		2530		384			66617	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Software Development	MIPR	Naval Research Lab Washington, DC Boeing, Philadelphia	14402	1807	Oct 98	370	Oct 99	266	Oct 00		16845	16845
Software Development	CPFF/SS	Naval Research Lab Washington, DC Boeing, Philadelphia		1369	Jul 99	1946	Aug 00	1925	Jul 01		5240	5240
Training Development	CPFF/C/	CAS, Huntsville, AL	90								90	90
Integrated Logistics Support	MIPR	1 Naval Research Lab Washington, DC 2 AMCOM, AL 3 ARL	1041	196	Jan 99	135	Oct 99				1372	1372
Configuration Management	MIPR	Naval Research Lab Washington, DC	1449								1449	1449
Technical Data	CPFF/SS	Dynamics Research Corp, Andover, M Naval Research Lab Washington, DC	253								253	253

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)											DATE February 1999	
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604201A Aircraft Avionics						PROJECT DC97		
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Technical Data	MIPR	Dynamics Research Corp, Andover, M Naval Research Lab Washington, DC		750	Jan 99	100	Oct 99				850	850
Subtotal Support Costs:			17235	4122		2551		2191			26099	
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	MIPR	TECOM FT. Huachuca, AZ	351	350	Jan 99	350	Oct 99				1051	1051
Operational Test & Evaluation	MIPR	TEXCOM FT. Hood, TX	250	0		148	Oct 99	415	Oct 00		813	813
Subtotal Test and Evaluation			601	350		498		415			1864	
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Government Engineering Support	MIPR	AMCOM, AL	402	358	Jan 99	358	Oct 99				1118	1118
Program Management Support	CPFF/C MIPR	AMCOM PATS, MATRIX, AL	4095	345	Jan 99	345	Oct 99				4785	4785
Travel	Allot	AMCOM, AL	240	90		90					420	420
Overhead	MIPR	Naval Research Lab Washington, DC AMCOM, AL	655								655	655
Subtotal Management Services:			5392	793		793					6978	
Project Total Cost:			77416	14780		6372		2990			101558	

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604223A Comanche
---	--

COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
Total Program Element (PE) Cost	262601	364784	427069	565800	770569	744860	770041	379919	Continuing	Continuing
DC72 T800 Engine Engineering Development (LH)	42097	38019	33527	32242	58017	50252	13461	0	Continuing	Continuing
D2LT Comanche Operational Test	0	0	49	1089	722	5871	1318	5231	Continuing	Continuing
D327 Comanche	220504	326765	393493	532469	711830	688737	755262	374688	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program element provides for the development and operational testing and evaluation of the RAH-66 Comanche and the T800 growth engine. The Comanche is a multi-mission aircraft optimized for the critical battlefield mission of tactical armed reconnaissance. It provides a globally self-deployable attack platform for light/contingency forces. Comanche provides the solution to reconnaissance deficiencies of no night/adverse weather/high/hot/stand-off capability and is a key component on the digitized battlefield in winning the information war. The Comanche is the Army's technology leader and provides significant horizontal technology transfer within the Army and DoD. Project DC72 provides for continued development and qualification of the T800 growth engine and air vehicle support for integration into the Comanche aircraft. Project D2LT includes funding for the operational testing of Comanche to include modeling and simulation accreditation for Early User Test, Limited User Test and Initial Operational Test and Evaluation. Project D327 provides for development of the airframe, mission equipment package, integration and qualification of the complete system to include training and logistic support.

B. Program Change Summary	<u>FY 98</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	272187	367823	438723	586385
Appropriated Value	282009	367823		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-9822	-3039		
b. SBIR / STT	-6686			
c. Omnibus or Other Above Threshold Reductions				
d. Below Threshold Reprogramming	-2900			
e. Rescissions				
Adjustments to Budget Years Since FY 1999 PB			-11654	-20585
Current President's Budget (FY 2000/2001 PB)	262601	364784	427069	565800

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604223A Comanche	PROJECT DC72
---	--	-------------------------------

COST <i>(In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DC72 T800 Engine Engineering Development (LH)	42097	38019	33527	32242	58017	50252	13461	0	Continuing	Continuing

A. Mission Description and Justification: This project includes tasks to design, develop and qualify an advanced technology engine. It provides for the continued development and qualification of the T800 growth engines and air vehicle support for integration of same into the Comanche aircraft. The growth engine is for the Army's RAH-66 Comanche and other applications.

FY 1998 Accomplishments:

- 10301 Continued engine air vehicle support
 - 19061 Continued growth engine development
 - 7437 Continued contractor development testing
 - 5298 Continued manufacturing growth engines for flight test
- Total 42097

FY 1999 Planned Program:

- 4200 Continue engine air vehicle support
 - 15646 Continue growth engine development
 - 6642 Continue contractor development testing
 - 2001 Complete manufacturing of growth engines for flight test
 - 9530 Pre-Production Prototype (PPP) Program air vehicle support
- Total 38019

FY 2000 Planned Program:

- 9835 Continue PPP program air vehicle support
 - 4318 Continue contractor development testing
 - 14603 Productionization of T801 engine design
 - 4771 Begin PPP Program engine manufacturing
- Total 33527

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604223A Comanche	PROJECT DC72
---	--	-------------------------------

- FY 2001 Planned Program:**
- 9997 Continue PPP program air vehicle support
 - 5811 Continue contractor development testing
 - 4308 Productionization of T801 engine design
 - 12126 Continue PPP Program engine manufacturing
- Total 32242

B. Other Program Funding Summary: There are no other related RDT&E or other appropriation efforts.

C. Acquisition Strategy: Continue work with current contractor leading to FAA certification, military qualification and production.

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>
Continue engine air vehicle support	1-4Q	1Q					
Continue growth engine development	1-4Q	1-4Q					
Continue contractor development testing	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-3Q
Continue mfg growth engines for flight test	1-4Q	1-4Q					
Complete mfg of growth engines for flight test		1-4Q					
PPP program air vehicle support		2-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
Productionization of T801 engine design			1-4Q	1-4Q	1-4Q	1-4Q	1-3Q
Begin PPP Program engine manufacturing			3-4Q				
Continue PPP Program engine manufacturing				1-4Q	1-4Q	1-4Q	1-4Q

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE
February 1999

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604223A Comanche

PROJECT
DC72

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. DAAJ09-92-C-0453	C/CPFF	LHTEC, Indiana	273965	37726	Oct 98	33247	Dec 99	31932	Dec 00	Cont	376870	Cont
b. DAAJ09-85-C-B017	C/FFP	LHTEC, Indiana	276821							0	276821	276821
c. DAAJ09-93-C-0518	C/CPFF	LHTEC, Indiana	460							0	460	460
d. DAAJ09-85-C-B019	C/FFP	AVCO, Connecticut	128526							0	128526	128526
e. PMO/Gov't Agencies	MIPR		13993	143	Qtrly	220	Qtrly	250	Qtrly	Cont	14606	Cont
Subtotal Product Development			693765	37869		33467		32182			797283	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PATS contracts	C/FFP		96							0	96	96
b. Rail	C/FFP		2806							0	2806	2806
c. Other Contracts	Agreement		400							0	400	400
Subtotal Support Costs:			3302								3302	3302

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Government Agencies	MIPR		23052	150	Qtrly	60	Qtrly	60	Qtrly	Cont	23322	Cont
Subtotal Test and Evaluation			23052	150		60		60			23322	

IV. Management Services: None

Project Total Cost:			720119	38019		33527		32242			823907	
---------------------	--	--	--------	-------	--	-------	--	-------	--	--	--------	--

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604223A Comanche	PROJECT D2LT
---	--	-------------------------------

COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D2LT Comanche Operational Test	0	0	49	1089	722	5871	1318	5231	Continuing	Continuing

A. Mission Description and Justification: This project provides for progressive test requirements in support of the test and fielding of the RAH-66 Comanche helicopter. Requisite activities include Force Development Tests I, II, III and IV dedicated to tactics, techniques and procedures, Electro Optical Sensor System (EOSS) Survey and Limited User Test (LUT) that provide operational input early in the system's life cycle, the Army Training Evaluation Program (ARTEP) and Initial Operational Test and Evaluation (IOT&E) in support of a Milestone III production decision.

FY 1998 Accomplishments: Program not funded in FY 1998

FY 1999 Planned Program: Program not funded in FY 1999

FY 2000 Planned Program:

- 30 Independent evaluation at contractor test facility in support of LUT
- 9 Support Comanche Portable Cockpit for Force Development, Test & Evaluation (FDT&E) Phase I
- 10 Independent evaluation assessment of Mission Equipment Package subcomponents at contractor sites
- Total 49

FY 2001 Planned Program:

- 484 Execution of FDT&E I, Phases II and III at Fort Rucke
- 105 Continue independent evaluation at contractor test facilit
- 250 Initiate subcomponent assessment by Operational Test & Evaluation Command (OPTEC) for their Systems Evaluation Report
- 250 Support PPP Program pilot's initial evaluation of Mission Equipment Package for LUT
- Total 1089

B. Other Program Funding Summary: There are no other related RDT&E or other appropriation efforts.

C. Acquisition Strategy: This project is for test and evaluation effort to support Comanche acquisition.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604223A Comanche	PROJECT D2LT
--	---	------------------------

<u>D. Schedule Profile</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Prepare for FDT&E Phase I			2Q					
Conduct FDT&E I, Phase I			3Q					
Conduct independent evaluation at contractor test facility supporting LUT			1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	
Conduct FDTE I, Phase II and III				3-4 Q				
Prepare for EOSS Surve					4Q			
Conduct EOSS Survey					4Q			
Prepare for FDT&E II						3-4Q		
Conduct FDT&E II						4Q		
Prepare for LUT						4Q		
Conduct LUT							4 Q	
Prepare for FDT&E III						4Q		
Conduct FDT&E III							3-4Q	
Prepare for FDT&E IV and ARTEP							4Q	3-4Q
Prepare for IOT&E							4Q	3-4Q

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604223A Comanche	PROJECT D2LT
--	---	------------------------

I. Product Development: Not applicable

II. Support Costs: Not applicable

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Government Agencies		OPTEC, V	0	0		49	Qtrly	1089	Qtrly	Cont	1138	Cont
Subtotal Test and Evaluation						49		1089			1138	

IV. Management Services: Not applicable

Project Total Cost:						49		1089			1138	
---------------------	--	--	--	--	--	----	--	------	--	--	------	--

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)									DATE February 1999	
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604223A Comanche				PROJECT D327	
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D327 Comanche	220504	326765	393493	532469	711830	688737	755262	374688	Continuing	Continuing
<p>A. Mission Description and Justification: The Comanche helicopter is a highly sustainable and operationally flexible armed reconnaissance light helicopter, incorporating significant reductions in personnel and support equipment, capturing the latest combat technologies and capable of accepting upgrades to meet ever-changing threats. It will dominate the battlefield in the close, deep and rear operations; provide a decisive air cavalry capability in day, night, and adverse weather. It will be operationally tailorable to regional conflicts and provide the battle commander with timely, detailed reconnaissance information and an unprecedented level of lethality.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 19333 Continued digitization effort • 146130 Continued engineering development • 15670 Updated prototype #1 and continued manufacturing of #2 • 39371 Continued flight test program of prototype #1 <p>Total 220504</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 112025 Continue Mission Equipment Package (MEP) development • 133747 Continue PPP engineering development • 66680 Continue development testing and flight test program for prototype #1 and conduct first flight of prototype #2 • 2809 Continue to update prototypes #1 and #2 • 11504 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) programs. <p>Total 326765</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 156496 Continue MEP development • 153493 Continue PPP engineering development • 73890 Continue development testing and flight test program for prototypes #1 and #2 • 3764 Continue to update prototypes #1 and #2 • 5850 Begin material procurement for PPP aircraft <p>Total 393493</p>										
Project D327			Page 8 of 12 Pages				Exhibit R-2A (PE 0604223A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604223A Comanche	PROJECT D327
--	---	------------------------

FY 2001 Planned Program:

- 218599 Continue MEP development
 - 186210 Continue PPP engineering development
 - 99470 Continue development testing and flight test program for prototypes #1 and #2
 - 4067 Continue to update prototypes #1 and #2
 - 24123 Continue material procurement for PPP aircraft and begin manufacturing PPP aircraft
- Total 532469

B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>Total Cost</u>
APA									
A08300 Comanche						5388	183197	1004513	Cont

C. Acquisition Strategy: Continue work with current contractor leading to Engineering and Manufacturing Development and production.

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Continued digitization effort	1-4Q							
Continued engineering development	1-4Q							
Updated prototype #1 and continued mfg of #2	1-4Q							
Continued flight test program of prototype #1	1-4Q							
Continue MEP development		1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
Continue PPP Program engineering development		1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
Continue development testing & flight test program for prototype #1		1-4Q	1-4Q	1-4Q	1-4Q			
Conduct first flight of prototype # 2		3Q						
Continue to update prototypes #1 and #2		1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	
Begin material procurement for PPP Prog aircraft			3Q					
Continue material procurement and begin manufacturing PPP aircraft				1-4Q				
Continue manufacturing of PPP Program aircraft					1-4Q	1-4Q	1-4Q	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604223A Comanche	PROJECT D327
---	--	-------------------------------

<u>D. Schedule Profile</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Begin flight testing of aircraft #3 and #4							1Q	
Continue development testing and flight testing of aircraft #3 thru #4							1-4Q	1-4Q
Begin flight testing aircraft #5 thru #11							3Q	
Complete manufacturing of PPP Program aircraft								2Q
Continue development testing of acft #3 thru #11								1-4Q
Begin flight testing of aircraft #12 thru #16								1Q

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604223A Comanche	PROJECT D327
--	---	------------------------

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. DAAJ09-91-C-A004	C/CPIF	Boeing Sikorsky, PA	2401054	296206	Oct 98	365573	Oct 99	501026	Oct 00	Cont	3563859	Cont
b. DAAJ09-87-D-A022	C/FFP	Veridian, VA	50180	7000	Jan 99	6500	Jan 00	6500	Jan 01	Cont	70180	Cont
c. Product Development (Other Contracts)	C/T&M			1393	Nov 98	1500	Nov 99	1600	Nov 00	Cont	4493	Cont
d. Other Completed Contracts			370288								370288	370288
Subtotal Product Development:			2821522	304599		373573		509126			4008820	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. SysTeam	C/FFP	Huntsville, AL	15181	0							15181	15181
b. TRAC	C/T&M			1500	Mar 99						1500	1500
c. DAAB07-97-C-J020	C/T&M	AEG, Germany	375	1800	Jan 99		Jan 00		Jan 01		2175	Cont
d. Other Contracts	C/T&M		25470	1390		1400		1500			29760	Cont
e. Gov't Agencies	MIPR		104076	7542	Qtrly	8000	Qtrly	8500	Qtrly	Cont	128118	Cont
Subtotal Support Costs:			145102	12232		9400		10000			176734	

Remark: Funding includes GFE directly related to test and evaluation.

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Government Agencies	MIPR		22647	1072	Qtrly	1500	Qtrly	3923	Qtrly	Cont	29142	Cont
Subtotal Test and Evaluation			22647	1072		1500		3923			29142	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604223A Comanche	PROJECT D327
--	---	------------------------

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. DAAJ09-96-D-0028	C/T&M	DRC, Massachusetts	2667	1195	Jan 99	1220	Jan 00	1220	Jan 01	Cont	6302	Cont
b. Other Contracts	C/T&M		323	350	Dec 98	200	Dec 99	200	Dec 00		1073	Cont
c. PMO/Gov't Agencies	MIPR			7317	Oct 98	7600	Oct 99	8000	Oct 00	Cont	22917	Cont
Subtotal Management Services:			2990	8862		9020		9420			30292	
Project Total Cost:			2992261	326765		393493		532469			4244988	

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development
---	---

COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
Total Program Element (PE) Cost	84106	86258	78603	81037	71055	68958	36071	37095	Continuing	Continuing
D665 Aircraft Survivability Equipment Development	49161	64176	8415	211	3134	10070	13061	13095	Continuing	Continuing
D2VT Advanced Threat Infrared Countermeasures (ATIRCM)/Common Missile Warning System (CMWS) Operational Test	146	1173	834	0	0	0	0	0	0	2153
DL12 Signals Warfare Development	29716	16285	21930	56146	53052	42362	12836	13810	Continuing	Continuing
DL15 Army Reprogramming and Analysis Team (ARAT)	1075	3316	0	0	0	0	0	0	0	17670
DL16 Trojan Development	1198	1308	0	0	0	0	0	0	0	4341
DL18 High Value Asses Defense System	2810	0	0	0	0	0	0	0	0	25613
DL20 Advanced Threat Infrared Countermeasures/ Common Missile Warning Systems (ATIRCM/ CMWS) Development	0	0	47424	24680	14869	16526	10174	10190	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program element encompasses engineering and manufacturing development for tactical electronic warfare (EW), signals warfare (SW), aircraft survivability equipment (ASE), battlefield deception, rapid software reprogramming and protection of personnel and equipment from hostile artillery. EW encompasses the development of tactical EW equipment and systems mounted in both ground and air vehicles. The systems under this program provide the Army with the capability to degrade or deny hostile forces the effective use of their communications, countermortar/counterbattery radars, surveillance radars, infrared/optical battlefield surveillance systems and electronically fused munitions. Existing Army EW systems must be replaced or upgraded to maintain their capability in the face of threat technical advancements. This program element satisfies requirements for brigade, division, corps and higher commanders to conduct electronic warfare to meet tactical and Special Electronic Mission Aircraft (SEMA) requirements, attach/scout, and assault/cargo mission requirements. Signals Warfare Development provides for development of multifunction ground based and airborne intelligence and electronic warfare systems. The Shortstop Development program will provide effective protection of personnel and equipment from electronically fused munitions. Trojan developments will complete Proof-of-Principle R&D for specific Trojan applications in advanced threat signals processing and prototype software upgrades; high frequency (HF) algorithms for compact antenna array technology (CAAT) configured into small aperture antenna arrays; search and acquisition capabilities for unattended signal collectors; and new digital intelligence collection, processing and dissemination technology. The

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development
---	---

ARAT Project will develop, test and equip an Army wide infrastructure capable of rapidly reprogramming electronic combat software embedded in offensive and defensive weapon systems.

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	84180	85989	16128	13635
Appropriated Value	87024	86989		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-2844	-731		
b. SBIR / STT	-2017			
c. Omnibus or Other Above Threshold Reductions	-689			
d. Below Threshold Reprogramming	+2632			
e. Rescissions				
Adjustments to Budget Years Since FY 1999 PB			+62475	+67402
Current Budget Submit (FY 2000 / 2001 BES)	84106	86258	78603	81037

Change Summary Explanation: FY 2000/2001 – funding increase in support of critical ATIRCM developmental efforts.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development	PROJECT D665
---	---	-------------------------------

COST <i>(In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D665 Aircraft Survivability Equipment Development	49161	64176	8415	211	3134	10070	13061	13095	Continuing	Continuing

A. Mission Description and Budget Item Justification: Aircraft Survivability Equipment Development provides for the development and system integration of Aircraft Survivability Equipment (ASE) to achieve survivability, reduce vulnerability, and enhance combat effectiveness required to fulfill all Army aircraft mission requirements. Equipment developed will increase combat effectiveness and potential for mission accomplishment by reducing or eliminating the ability of threat air defense systems to detect, hit, track, damage or destroy Army aircraft. Developments respond to the approved requirements documents, test and type classification for production and fielding of ASE systems to address infrared, radar, laser and optical/electro-optical directed air defense threats. Efforts in development include new or upgraded systems to counter monopulse, millimeter wave, frequency agile, pulse doppler and continuous wave radars, passive infrared missile seekers and laser directed weapon systems. Continual adjustments are made to this program to meet the changing and evolutionary nature of technology and threat. This program has joint service applications that are coordinated through the Joint Technical Coordinating Group for Aircraft Survivability (JTCG/AS), as well as NATO applications coordinated through DOD. This project also provides the technical base for electronic warfare equipment for Apache, Blackhawk, Chinook, Comanche and Special Operations Aircraft. The Suite of Integrated Radio Frequency Countermeasures (SIRFC) and Advanced Threat Infrared Countermeasures (ATIRCM) systems are necessary to the survival of the AH-64, MH-47E, MH-60K, RC-12K, EH-60, UH-60 and CH-47D aircraft. The ATIRCM program has been designated a Tri-service program. The SIRFC is an Office of the Secretary of Defense (OSD) oversight program with high joint interest. Air Force Special Operations Command (AFSOC) selected SIRFC as CV-22 EW bus controller and sensor fusion processor. SIRFC EMD schedule is connected to the CV-22 development and test schedule and is monitored closely by US Special Operations Command (SOCOM). Both SIRFC and ATIRCM have application to the Air Force and Navy aircraft. The SIRFC system key capabilities include advanced threat radar warning , advanced threat radar jammer, sensor data fusion and light weight modular design. ATIRCM/CMWS is an integrated Infrared (IR) countermeasure system designed to bring the latest and most sophisticated state of the art technologies available for US Army aircraft to survive on the modern digital battlefield.

- FY 1998 Accomplishments:**
- 32540 Continued EMD of ATIRCM/CMWS
 - 1883 Continued EMD of the AIRCMM
 - 11175 Continued EMD of SIRFC
 - 551 Continued development of AVESSA
 - 3012 Continued in-house and program management administration
- Total 49161

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development	PROJECT D665
---	---	-------------------------------

- FY 1999 Planned Program:**
- 35750 Continue EMD of ATIRCM/CMWS
 - 1438 Continue EMD of the AIRCMM
 - 348 Continue EMD of the AVESSA
 - 21328 Continue EMD of the SIRFC
 - 2975 Continue in-house and program management administration
 - 2337 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 64176
- FY 2000 Planned Program:**
- 7900 Complete EMD of the SIRFC
 - 515 Continue in-house and program management administration
- Total 8415
- FY 2001 Planned Program:**
- 211 Continue in-house and program management administration
- Total 211

B. <u>Other Program Funding Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
APA, BA 4 AZ3508 ASE*		5108	88	14632	14619	13427	13415		Cont	Cont
APA, BA 2 AA0720 ASE Modifications**	23112	2735	11796	4517	14422	4802	4993	2250	Cont	Cont

*SSN AZ3508 all years are SIRFC only funding.
 **SSN AA0720 FY98 funding includes ATIRCM Funding. FY99 – 2005 are SIRFC funds only.

C. Acquisition Strategy: Project is comprised of multiple programs which have been competitively awarded.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development	PROJECT D665
--	--	------------------------

D. Schedule Profile	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2004</u>	<u>FY 2005</u>
Continued EMD of ATIRCM/CMWS	4Q									
Continued EMD of AIRCMM	4Q									
Continued EMD contract of SIRFC	4Q									
Continued EMD of AVESSA	4Q									
Continued EMD of ATIRCM/CMWS		4Q								
Continued EMD of AIRCMM		4Q								
Continued EMD of SIRFC		4Q								
Continued EMD of AVESSA		4Q								
Continue EMD of ATIRCM/CMWS			4Q							
Continue EMD of AIRCMM			4Q							
Continue EMD of SIRFC			4Q							
Continue EMD of AVESSA			4Q							
Complete EMD of SIRFC				3Q						

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development					PROJECT D665		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Thiokol (AIRCMM)	C/CPHF	Picatinny Arsenal, NJ	6182	1438	2Q FY99						7620	
b. ITT Corp (SIRFC)	C/CPAF	CECOM	43659	18442	2Q FY99	7900	1Q FY00				70001	
c. Sanders (ATIRCM)	C/CPAF	CECOM	41569	23199	2Q FY99						64768	
d. Various Contracts		CECOM	15364								15364	
Subtotal Product Development:			106774	43079		7900					157753	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Support Cost	MIPR	CAS	2082	2082	2Q FY99						4164	
b. Modeling & Sim	MIPR			3148							3148	
Subtotal Support Costs:			2082	5230							7312	
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TECOM	MIPR		4312	3675	Reimburs						7987	
b. EPG	MIPR		6025	4344	Reimburs						10369	
c. MISC	MIPR		1521	2536	Reimburs						4057	
Subtotal Test and Evaluation			11858	10555							22413	
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
c. Project Management	MIPR	Various		2975		515		211			3701	
a. SBIR/STTR				2337							2337	
Subtotal Management Services:				5312		515		211			6038	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development	PROJECT D665
--	--	------------------------

	Total PYs Cost	FY 1999 Cost		FY 2000 Cost		FY 2001 Cost		Cost To Complete	Total Cost	Target Value of Contract
Project Total Cost:	120714	64176		8415		211			193516	

--	--	--	--	--	--	--	--	--	--	--

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development	PROJECT D2VT
--	--	------------------------

COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D2VT Advanced Threat Infrared Countermeasures (ATIRCM)/Common Missile Warning System (CMWS) Operational Test	146	1173	834	0	0	0	0	0	0	2153

A. Mission Description and Justification: This project supports the operational testing for the Advanced Threat Infrared Countermeasures (ATIRCM)/ Common Missile Warning System (CMWS). This project will provide active and passive Infrared Countermeasure (IRCM) protection against infrared guided weapons. The system is designed to meet operational requirements for a modular IRCM system capable of providing awareness and self-protection jamming countermeasures. The system is applicable to the AH-64D, MH-47D/E, MH-60K/L, EH-60, UH-60, and CH-47D aircraft. The program has been designated a tri-service program, with application to the Air Force and Navy aircraft.

FY 1998 Accomplishments:

- 146 Initiated ATIRCM/CMWS operational test support
- Total 146

FY 1999 Planned Program:

- 1142 Continue ATIRCM/CMWS operational test support
 - 31 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 1173

FY 2000 Planned Program:

- 834 Complete ATIRCM/CMWS operational test support
- Total 834

FY 2001 Planned Program: Project not funded in FY 2001

B. Other Program Funding Summary	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
APA, BA 4 AZ3507 ASE Infrared CM				8147	26761	69377	114196	111603	Cont	Cont
APA, BA 2 AA0720 ATIRCM Modifications				705	12121	12075	21317	31410	Cont	Cont

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development	PROJECT D2VT
--	--	------------------------

C. Acquisition Strategy: Not applicable

D. Schedule Profile	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Continue Operational testing fo ATIRCM/CMWS				2Q	2Q					

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development				PROJECT DL12		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DL12 Signals Warfare Development	29716	16285	21930	56146	53052	42362	12836	13810	Continuing	Continuing
<p>A. <u>Mission Description and Budget Item Justification:</u> Signals Warfare Development provides for a family of integrated ground-based and heliborne intelligence and electronic warfare common sensor (IEWCS) systems. In Fiscal Year (FY) 1998, the US Army decided the objective Ground Based Common Sensor-Light (GBCS-L) systems were not ready to enter IOT&E. However, the Army's intention to field the GBCS-L Limited Production Urgent (LPU) to the 82nd ABN Div in response to an urgent operational requirement is still valid. The United States Marine Corps is utilizing the same subsystems as IEWCS and configuring them in a Light Armored Vehicle as a part of the Mobile Electronic Warfare Support System (MEWSS) improvement program.</p> <p>The Army has decided to restructure the former IEWCS program, essentially making a "right turn" from IEWCS into a new program to be called Prophet. Prophet will consist of air and ground platforms and a ground control element.</p> <p>The Prophet Operational Requirement Document (ORD) has been revised and is currently undergoing final review. The desired capabilities in the revised ORD include the following: remoting operations of subsystems; Joint Airborne Signals Intelligence (SIGINT) Architecture (JASA) compliance, increased Area of Responsibility (AOR) coverage, and electronic mapping of the battlefield.</p> <p>The Prophet system will use the emerging SIGINT standards for internal system interfaces/communications/datalinks and the tactical communications standards for the external system interfaces with the Army Tactical Command and Control System (ATACCS), the intelligence community and other specified intelligence processing facilities.</p> <p>FY 00 and FY 01 funding supports this restructured program. This project provides for engineering and manufacturing development (EMD) and testing leading to Milestone III for the restructured Prophet program.</p> <p>This project is unclassified and there is a cooperative effort with the United Kingdom's Project Catalyst. The National Security Agency's Defense Cryptologic Program (DCP), Program Element 030885G also provides a portion of the funds required for subsystem development.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 1365 Developed increased TACJAM-A special signal capabilities and correct existing platform integration problems IAW UKMO • 1790 Continued Development and integration of GBCS-H • 1789 Fixed existing central software issues • 4790 Contractor field tests and follow on fixes • 1100 Conducted training and provide contractor depot level repair in preparation for and support of DT/OT for GBCS-L • 11064 Conducted DT/OT on GBCS-L • 761 Full-band DF Calibration • 2400 Government Test Support to DT/OT, GBCS-L • 2500 C2 Upgrade • 2157 Raytheon FSED GBCS-L Recalibration 										
Project DL12	Page 10 of 25 Pages					Exhibit R-2A (PE 0604270A)				

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development	PROJECT DL12
---	---	-------------------------------

Total 29716

FY 1999 Planned Program:

- 300 Prepare for/conduct Special In-Process Review leading to the E&MD contract
- 3500 Continue Government Support of On-Going GBCS-ONS (Operational Needs Statement) Efforts
- 1500 C2 Upgrade
- 3300 COMINT subsystem development; increase accuracy and coverage
- 1800 Conduct investigations and demonstrate existing technology and off-the-shelf COTS hardware as COMINT technologies
- 600 Conduct initial technical survey of available manpack (MP) COMINT receivers in preparation for Special In Process Review of restructured Prophet program
- 1200 Preliminary design of JASA compliant architecture
- 1560 Initiate design of Common Remote/Reporting Architecture
- 2107 Systems Engineering and Front End Trade-Off Analysis to prepare performance specifications
- 418 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs

Total 16285

FY 2000 Planned Program:

- 21930 Award E&MD Contract for restructured Prophet program. Design and develop the SIGINT capability in response to revised ORD. Develop the architecture required for interoperability between air and ground platforms and the ground control element.

Total 21930

FY 2001 Planned Program:

- 56146 Continue E&MD Contract for restructured Prophet program. Continue design and develop the SIGINT capability in response to revised ORD. Initiate development of a soldier transportable SIGINT subsystem. Continue developing the architecture required for interoperability between air and ground platforms and the ground control element. Begin Spiral Development testing. Start fabrication of Air/Control elements.

Total 56146

B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
OPA (SSN BZ7326)	0	12039	0	0	0	34645	134862	101834	Cont'd	Cont'd
OPA (SSN BZ9750)	1615	4877	9090	2771	2867	144	5847	9810	Cont'd	Cont'd
APA (SSN AB3000)	36475	0	4915	9820	0	99671	119455	113471	Cont'd	Cont'd

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999			
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development				PROJECT DL12			
B. Other Program Funding Summary		<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
RDTE Budget Activity 7 DCP PE 030885G, GBCS		18334	17350	13225	13035	15966	13060	11806	12178	Cont'd	Cont'd
RDTE Budget Activity 7 DCP PE 030885G, CHALS-X		1996	3800	3991	4726	3918	2700	2488	2060	Cont'd	Cont'd
<p>C. Acquisition Strategy: In November 1995, the US Army competitively awarded a five-year contract to continue development and to acquire the GBCS/AQF systems required to meet initial Army needs. Contracted for six (6) GBCS Limited Production Urgent (LPU) units in support of the 82nd Abn Division's urgent operational requirement and three (3) Low Rate Initial Production (LRIP) units of the Advanced QuickFix (AQF) and initiated development of the GBCS-H.</p> <p>The US Army has decided that the GBCS-L systems were not ready to enter IOT&E and that the requirements/ORD should be reviewed and restructured. This decision resulted in the restructure of the program. FY99 was established as the transition year between GBCS/AQF and the restructured Prophet program. The following decisions were made:</p> <ul style="list-style-type: none"> a. The GBCS-Heavy segment of the program was terminated. b. The AQF systems would undergo a DT/OT in FY99. Subsequent decision cancelled DT/OT of AQF. c. No MS III decision reviews for production of objective systems (GBCS-L/AQF). d. GBCS-LPUs would be fielded to the 82nd ABN Div. GBCS-LPUs upgrades/fixes have been delayed; deployment of GBCS-ONS scheduled to start in 4Q00. e. Requirements would be relooked. ORD requirements are being reevaluated and will be finalized in FY99. f. Program Special In Process Review (SIPR) will be conducted in 3QFY99, at which time the revised Acquisition Strategy would be approved. g. Contractual: Competitive contract award for development, fabrication, and integration of E&MD Systems for Prophet. 											
D. Schedule Profile		<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>		
Complete GBCS-L DT/OT		4Q									
SIPR for Restructured Program			3Q								
Award Contract/begin E&MD of Restructured Program				2Q							
Spiral Development Testing					3Q	3Q	3Q				
Begin Development of Oper/Maint Trainers							2Q				
Complete IOT&E										2Q	
MS III Decision										4Q	
Project DL12				Page 12 of 25 Pages				Exhibit R-2A (PE 0604270A)			

DATE **February 1999**

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604270A Electronic Warfare (EW) Development

--

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development						PROJECT DL12		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TACJAM (Joint venture)	C-CPIF	Sanders/AEL; Lansdale, PA	213744	0		1000	1Q	1450	1Q	0	216194	216194
b. LRIP procurement (GBCS-L and AQF)	SS-CPFF	IBM/Loral; Owego, NY	47923	0						0	47923	47923
c. Full scale engineering development models (GBCS-L/ H, AQF)	C-CPAF	ESI; Richardson, TX	107606	0						0	107606	107606
d. Mod to Bradley derivative for GBCS-H	SS-CPFF	FMC/UDLP; Santa Clara, CA	16257	0						0	16257	16257
e. LRIP procurement (GBCS-L and AQF)	C-FFP	LMFS-O; Owego, NY	22423	6907	2Q00					0	29330	29330
f. AD/EXJA	SS-CPIF	Loral; Owego, NY	1785							0	1785	1785
g. Misc efforts		Various	3056							0	3056	3056
h. Engineering/Program Support	FFP	Questech; Falls Church, V	2033	850	2Q	700	1Q	800	1Q	CONT	4383	4383
i. Prophet development	TBD	TBD	0	5160	2Q00	17730	1Q	49196	1Q	CONT	72086	72086
j. Engineering Support	MIPR	I2WD; Fort Monmouth, NJ	0	900	2Q						900	900
k. SBIR/STTR				418							418	418
Subtotal Product Development:			414827	14235		19430		51446			499938	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Alternative COMINT system	FFP	MITRE; McLean, V	75							0	75	75
Subtotal Support Costs:			75								75	75

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development						PROJECT DL12		
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. DT/OT Support	MIPR	EPG/Fort Hood, TX	4965							0	4965	4965
b. DT/OT Support	MIPR	Government; TBD						2000	2Q	CONT	2000	2000
Subtotal Test and Evaluation			4965					2000			6965	6965
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Contractor Engineering and Support	FFP	Questech; Falls Church, VA	4120	700	2Q	700	1Q	700	1Q	CONT	6220	
b. Contractor Engineering and Support	FFP	Sytex; Doylestown, PA	500	300	2Q	300	1Q	400	1Q	CONT	1500	
c. In-House	Direct	Fort Monmouth, NJ	9478	250	2Q	700	1Q	800	1Q	CONT	11228	
d. Government Engineering and Logistics Support	MIPR	CECOM; Fort Monmouth, NJ	8685	800	2Q	800	1Q	800	1Q	CONT	11085	
e. Monitor efforts of FMC/UDLP	MIPR	TACOM; Warren, M	70	0						0	70	
Subtotal Management Services:			22853	2050		2500		2700			30103	
Project Total Cost:			442720	16285		21930		56146			537081	

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development				PROJECT DL15		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DL15 Army Reprogramming and Analysis Team (ARAT)	1075	3316	0	0	0	0	0	0	0	17670
<p>A. <u>Mission Description and Justification:</u> Army Reprogramming and Analysis Team (ARAT) for Target Sensing Systems (TSS) project will design, develop, implement, test, equip and institutionalize an Army-wide infrastructure capable of rapidly reprogramming electronic combat software embedded in offensive and defensive weapon systems. ATSS are those tactical weapons and sensor systems which rely on embedded, well-defined target or emitter signature data for specific identification. Systems supported by this project include but are not limited to: radar warning receiver and jammer sub-systems of attack, scout, utility and SEMA aircraft; aircraft survivability equipment; automated intelligence collection systems and jammers; advanced threat sensors for air defense, artillery and missile applications, and use as vehicle /troop self-protection systems. The project focuses on advanced information management technologies to: automate the threat recognition process; evaluate the operational impact of threat changes on inventoried sensor; develop, test and evaluate software to counter the change; develop tactical loading devices for deploying o deployed forces; and institutionalize the infrastructure to accomplish these tasks as well as distribute/disseminate the new software.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 1075 Began development of specific flagging models for AN/APR-39A(V)2 Radar Warning Receive <p>Total 1075</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 827 Complete integration of Radio Frequency (RF) based systems into reprogramming infrastructure. • 327 Complete design of communications architecture paths to support CONUS and OCONUS field unit communications. • 1179 Implement support plans for PM, Aviation Electronic Combat . • 602 Complete Development of specific flagging models for AN/APR-39A(V)2 Radar Warning Receiver. • 300 Development of Multi-Service Electronic Combat Secure Web Site. • 81 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 3316</p> <p>FY 2000 Planned Program: Project not funded in FY 2000</p> <p>FY 2001 Planned Program: Project not funded in FY 2001</p> <p>B. <u>Other Program Funding Summary:</u> Not applicable.</p>										
Project DL15	Page 15 of 25 Pages					Exhibit R-2A (PE 0604270A)				

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development	PROJECT DL15
---	---	-------------------------------

C. Acquisition Strategy: The ARAT to TSS project will design, develop, implement, test, equip and institutionalize all Army-wide infrastructure capable of reprogramming electronic combat software embedded in offensive and defensive weapons systems. The program requirements for software engineering, development, support equipment engineering acquisition, operational training and test and evaluations support will be acquired by the use of time and material contracts. This strateg will further such major program events such as the test and evaluation of off-the-shelf and developmental loading devices, the completion of connectivity of a secure Wide Area Network with all reprogramming centers and the development of flagging models for specific electronic combat survivability systems.

D. <u>Schedule Profile</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2004</u>	<u>FY 2005</u>
Complete design of communications architecture paths to support CONUS and OCONUS field unit communications			4Q							
Implement support plans for PM, Aviation Electronic Combat .			4Q							
Complete development of specific flagging models for AN/APR-39A(V)2 Radar Warning Receiver.			4Q							
Development of Multi-Service Electronic Combat Secure Web Site.			4Q							
Complete integration of Radio Frequency (RF) based systems into reprogramming infrastructure.			4Q							

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development	PROJECT DL16
---	---	-------------------------------

COST <i>(In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DL16 Trojan Development	1198	1308	0	0	0	0	0	0	0	4341

A. Mission Description and Budget Item Justification: This project is a Tactical Intelligence and Related Activities (TIARA) program. A key factor in modern warfare is the ability to collect, process and use information about an adversary while preventing him from obtaining similar information. Trojan is a combined operational and readiness mission system which uses advanced networking technology to provide seamless rapid radio relay, secure communications to include voice, data, facsimile, and electronic reconnaissance support to U.S. forces throughout the world. Trojan operations may be easily tailored to fit military intelligence unit training schedules and surged during specific events to involve every aspect of the tactical intelligence collection, processing, analysis and reporting systems. This project engineers, tests and evaluates new digital intelligence collection, processing and dissemination technology using the fielded Trojan systems, prior to the acquisition of those technologies. Digitization is the process that will enable the United States to win on the battlefield of the information war. This capability will allow us to process and disseminate real-time intelligence data from various sources; it forms the intelligence needed to issue orders inside the threat decision cycle. To that end, it is imperative the Trojan system keep pace with digitization initiatives in order to respond aggressively to the emerging intelligence communication threats.

FY 1998 Planned Program:

- 247 Conducted operational test and evaluation of previously developed specialized software and enhanced signal processing algorithms).
 - 330 Tested Warfighter Information Network (WIN) interfaces technology for the Trojan intelligence network.
 - 490 Conducted proof-of-concept testing of ATM switching technology for incorporation into Trojan Spirit.
 - 131 Developed prototype Common Remoted Systems compatible Remote Receiver Group for Trojan Classic XXI.
- Total 1198

FY 1999 Planned Program:

- 480 Conduct operational assessment of voice/audio over Internet Protocol (IP) technology, and develop prototype architecture to maximize bandwidth of Trojan intelligence collection/dissemination products to reduce communications costs.
 - 318 Continue implementation and testing of Warfighter Information Network (WIN) Intelligence Gateway (IG) interfaces for the Trojan network.
 - 480 Apply Common Remote Systems (CRS) control and functionality to soldier transportable remote SIGINT collection packages, and demonstrate prototype systems
 - 30 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 1308

FY 2000 Planned Program: Project not funded in FY 2000

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development	PROJECT DL16
--	--	------------------------

FY 2001 Planned Program: Project not funded in FY 2001

B. <u>Other Program Funding Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
OPA BA0331	3225	3520	4268	4382	4412	4430	4512	4641	Cont'd	Cont'd
OPA BA0333	462	460	0	0	0	0	0	0	0	923

C. Acquisition Strategy: Competitive contract award utilizing firm fixed price and best value selection procedures for engineering and manufacturing development.

D. <u>Schedule Profile</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2004</u>	<u>FY 2005</u>
<u>Acquisition Milestones</u>										
Contract Award for Spec Software for Sig Proc Algorithms	4Q*									
Contract Award for enhanced Sig Proc Algorithms	4Q*									
Procurement of hardware for Interface of Trojan Intel Network to WIN POC testbed		4Q*								
Procurement of development of Multi-bandwidth compression algorithms		4Q*								
Procurement of Voice over IP software applications and hardware			4Q							
Procurement of hardware for development of advanced prototype for WIN IG			4Q							
Procurement of hardware for development of CRS capable soldier remote portable SIGINT			4Q							
<u>Engineering Milestones</u>										
Prototype insertion-video compression/processing	4Q*									
Spec software for signal processing Algorithms		4Q*								
Evaluate Enhanced signal processing algorithms		4Q*								

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development	PROJECT DL16
--	--	------------------------

D. Schedule Profile	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2004</u>	<u>FY 2005</u>
Demonstrate prototype CRS capable soldier remote portable SIGINT			4Q							
Demonstrate WIN Intelligence Gateway (IG) interface to Trojan network			4Q							

*Denotes a completed effort

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999																																									
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development					PROJECT DL16																																									
I. Product Development: Not applicable.																																																			
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:15%;">II. Support Costs</th> <th style="width:10%;">Contract Method & Type</th> <th style="width:15%;">Performing Activity & Location</th> <th style="width:5%;">Total PYs Cost</th> <th style="width:5%;">FY 1999 Cost</th> <th style="width:5%;">FY 1999 Award Date</th> <th style="width:5%;">FY 2000 Cost</th> <th style="width:5%;">FY 2000 Award Date</th> <th style="width:5%;">FY 2001 Cost</th> <th style="width:5%;">FY 2001 Award Date</th> <th style="width:5%;">Cost To Complete</th> <th style="width:5%;">Total Cost</th> <th style="width:5%;">Target Value of Contract</th> </tr> </thead> <tbody> <tr> <td>a. Misc.</td> <td>C/CPFF MIPR MIPR MIPR</td> <td></td> <td align="right">3023</td> <td align="right">1308</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td align="right">0</td> <td align="right">4331</td> <td></td> </tr> <tr> <td colspan="3">Subtotal Support Costs:</td> <td align="right">3023</td> <td align="right">1308</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td align="right">4331</td> <td></td> </tr> </tbody> </table>													II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract	a. Misc.	C/CPFF MIPR MIPR MIPR		3023	1308						0	4331		Subtotal Support Costs:			3023	1308							4331	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract																																							
a. Misc.	C/CPFF MIPR MIPR MIPR		3023	1308						0	4331																																								
Subtotal Support Costs:			3023	1308							4331																																								
III. Test and Evaluation: Not applicable																																																			
IV. Management Services: Not applicable																																																			
Project Total Cost:			3023	1308							4331																																								
Project DL16				Page 20 of 25 Pages				Exhibit R-3 (PE 0604270A)																																											

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development	PROJECT DL18
--	--	------------------------

COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DL18 High Value Asses Defense System	2810	0	0	0	0	0	0	0	0	25613

A. Mission Description and Budget Item Justification The SHORTSTOP Operational Requirements Document, approved Apr 94, called for a system with a lightweight autonomous configuration to provide protection for personnel and other high value assets against proximity fuzed munitions. The Engineering & Manufacturing Development (EMD) program for the SHORTSTOP Electronic Protection System (SEPS) provided a lightweight, fully integrated Radio Frequenc Countermeasure system in three configurations: a manpack system, a stand alone system, and a vehicle mounted system.

FY 1998 Planned Program:

- 120 Complete development of 1553 instrumentation data interface
- 885 Develop Low-Profile Rigid Antenna
- 642 Conduct threat assessment and develop simulation
- 929 Develop countermeasure techniques
- 234 Conduct live fire testing

Total 2810

FY 1999 Planned Program: Project not funded in FY 1999

FY 2000 Planned Program: Project not funded in FY 2000

FY 2001 Planned Program: Project not funded in FY 2001

B. <u>Other Program Funding Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Compl	Total Cost
Other Procurement Army										
SSN: VA8000-Shortstop	5780	9973								20753

C. Acquisition Strategy: FY98 funding will develop additional capabilities which may be incorporated into SEPS.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development	PROJECT DL18
--	--	------------------------

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2004</u>	<u>FY 2005</u>
Complete 1553 interface development		2Q							
Complete development of Threat Assessment/Simulation		3Q							
Complete development of Low-Profile Rigid Antenna		3Q							
Complete development of countermeasure techniques		3Q							
Conduct Testing		4Q							

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development	PROJECT DL20
--	--	------------------------

COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DL20 Advanced Threat Infrared Countermeasures/ Common Missile Warning Systems (ATIRCM/ CMWS) Development	0	0	47424	24680	14869	16526	10174	10190	Continuing	Continuing

A. Mission Description and Budget Item Justification: The ATIRCM/CMWS is a U. S. Army program to develop, test and integrate defensive infrared (IR) countermeasures capabilities into existing, current generation host platforms for more effective protection against a greater number of IR guided missile threats than afforded by currently fielded IR countermeasures. The CMWS component systems is a joint U. S. Navy, U. S. Marine Corps, and U. S. Air Force program to develop, test, and integrate common missile warning on tactical aircraft and rotorcraft for IR guided missile threat warning. The ATIRCM/CMWS is the core systems of the U. S. Army's modular Suite of Integrated Infrared Countermeasures (SIIRCM). For the Army, the current IRCM configuration for the fleet helicopter consist of the AN/ALQ-144A for the AH-64 and the UH/MH-60 and the AN/ALQ-156 missile detector and M-130 flare/chaff dispenser for the CH/MH-47. The ATIRCM/CMWS will selectivel replace the AN/ALQ-144A, AN/ALQ-156 or AN/AAR-47, and the M-130. For the Navy and the Air Force, no existing equivalent systems exists.

FY 1998 Accomplishments: Program was funded in Project D665

FY 1999 Planned Program: Program will be funded in Project D665

FY 2000 Planned Program:

- 25175 Continue EMD contract for ATIRCM/CMWS
 - 13984 Continue Development Testing for ATIRCM/CMWS
 - 1300 Complete EMD for Advanced Infrared Countermeasures Munitions (AIRCMM)
 - 600 Complete EMD for Advanced Visual Electro-optical Signature Suppression & Analysis (AVESSA)
 - 3994 Continue Support costs for ATIRCM/CMWS
 - 2371 Continue in-house and program management administration
- Total 47424

FY 2001 Planned Program:

- 12447 Complete EMD contract for ATIRCM/CMWS
- 5899 Initiate ATIRCM/CMWS P3I
- 1000 Initiate AVESSA P3I
- 400 Initiate AIRCMM P3I

Project DL20

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development	PROJECT DL20
--	--	------------------------

FY 2001 Planned Program: (continued)

- 700 Complete development testing for the ATIRCM/CMWS
 - 3000 Continue Support costs for ATIRCM/CMWS
 - 1234 Continue in-house and program management administration
- Total 24680

B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
APA, BA 4 AZ3507 ASE Infrared CM				8147	26761	69377	114196	111603	Cont	Cont
APA, BA 2 AA0722 ATIRCM Modifications				705	12121	12075	21317	31410	Cont	Cont

C. Acquisition Strategy: EMD contract competitively awarded in FY 1995 with a LRIP decision and procurement scheduled FY 2000.

D. Schedule Profile	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Continue ATIRCMWS EMD contract					1Q-4Q					
Complete ATIRCM/CMWS EMD contract						4Q				
Continue ATIRCM/CMWS development testing					1Q-4Q	4Q				
Complete ATIRCM/CMWS modeling & simulation					4Q					
Complete AVESSA EMD phase					4Q					
Complete AIRCMM EMD phase					4Q					
Continue Project Management Administration					1Q-4Q	1Q-4Q				
Initiate ATIRCM/CMWS P3I effort						1Q-4Q				
Continue ATIRCM/CMWS P3I effort							1Q-4Q	2Q-4Q	1Q-4Q	1Q-4Q
Initiate AIRCMM P3I effort						1Q-4Q				
Continue AIRCMM P3I effort							1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Initiate AVESSA P3I effort						1Q-4Q				
Continue AVESSA P3I effort							1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development	PROJECT DL20
---	---	-------------------------------

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Thiokol (AIRCMM)	C/CPIF	Picatinny Arsenal, NJ				1300	Jan 00	1000	Jan 01	Cont	2300	Cont
b. Thiokol (AVESSA)	C/CPIF	Picatinny Arsenal, NJ				600	Jan 00	400	Jan 01	Cont	1000	Cont
c. Sanders (ATIRCM)	C/CPAF	CECOM, NJ				25175	Dec 99	18346	Jan 01	Cont	43521	Cont
Subtotal Product Development:						27075		19746			46821	

Remark: FY99 and prior funding included on R-Forms for Project D665

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. CAS	C/FFP	AMCOM, AL				2478	Jan 00	1813	Jan 01		4291	1935
b. Matrix Support	MIPR	Various				1516	Quarterly	1187	Quarterly		2703	2703
c. Project Mgmt Support	MIPR	AMCOM, AL				2371	Quarterly	1234	Quarterly		3605	3649
Subtotal Support Costs:						6365		4234			10599	

Remark: FY99 and prior funding included on R-Forms for Project D665

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. EPG support	MIPR	Ft. Huachuca, AZ				500	Quarterly				500	85
b. TECOM support	MIPR	Various				2640	Quarterly	700	Quarterly	1000	4340	5440
c. ATTC test support	MIPR	Fort Rucker, AL				560	Quarterly				560	560
d. Sanders test support	T&M	Nashua, NH				10084	Jan 00				10084	1255
e. Neer test support	C/FFP	AMCOM, AL				200	Dec 99				200	400
Subtotal Test and Evaluation						13984		700		1000	15684	

Remark: FY99 and prior funding included on R-Forms for Project D665

IV. Management Services: Not applicable.

Project Total Cost:						47424		24680		1000	73104	
---------------------	--	--	--	--	--	-------	--	-------	--	------	-------	--

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604280A Joint Tactical Radio	PROJECT D162
---	--	-------------------------------

COST (<i>In Thousands</i>)	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
D162 Joint Tactical Radio System	0	0	36797	68296	80723	66224	51387	40516	0	343943

A. Mission Description and Budget Item Justification: The Joint Tactical Radio System is a joint Research and Development program with the Army as the lead Service that will lead to the Services acquiring a family of affordable, scaleable, high-capacity, interoperable Line of Sight (LOS) and Beyond Line of Sight (BLOS) tactical radios. The singular functionality of current systems requires a commensurate number of unique discrete radio systems. These systems lack the connectivity and throughput capacity to support the required simultaneous networked voice, video, and data operations with low probability of intercept over multiple frequency bands. In addition, each current system requires significant allocation of space, weight, power, and cooling on weapons systems platforms, and has associated with it a costly logistics infrastructure. Therefore, a consolidated systems approach to provide substantial increase in capability and interoperability, and to provide overall cost savings mandate an approach like JTRS. JTRS activity in this program element creates the foundation for achieving network connectivity across the RF spectrum. This program element will provide an open standards architecture monitoring and compliance, a supporting certification infrastructure, the development of a set of software-based legacy tactical waveforms as well as a new wideband waveform which functions in networked environment and will operate on hardware that is built to JTRS architecture standards. Together, the architecture, the hardware, and the software will yield software programmable and hardware configurable digital radio systems that provide increased interoperability, flexibility and adaptability. The open standards based architecture will also provide the path for future hardware and software growth of delivered systems at minimal cost by allowing the Services to take advantage of advances in technology being realized in the commercial wireless communications marketplace. The JTR will provide the operational forces with an upgraded communications capability, for more effective battlespace management and interoperability among Command, Control, Communications, Computers and Intelligence (C4I) Systems supporting the warfighters' goal of realizing a fully digitized battlespace.

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (<u>FY 1999</u> PB)	0	0	0	0
Appropriated Value				
Adjustments to Appropriated Value				
a. Congressional General Reductions				
b. SBIR / STTR				
c. Omnibus or Other Above Threshold Reductions				
d. Below Threshold Reprogramming				
e. Rescissions				
Adjustments to Budget Years Since <u>FY 1999</u> PB			+36797	+68296
Current Budget Submit (<u>FY 2000/ 2001</u> PB)	0	0	36797	68296

Change Summary Explanation: Funding – FY 00-05 funds realigned to support the JTRS program.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604280A Joint Tactical Radio	PROJECT D162
--	---	------------------------

FY 1998 Accomplishments: Project funded in PE 0603280A.

FY 1999 Planned Program: Project funded in PE 0604280A (BA 3), project D152 in FY 1999

FY 2000 Planned Program:

- 3381 JTRS Program Support
 - 24365 Re-Code Initial JTRS Legacy Waveforms Complete Architecture Development, Validate Architecture Compliant Hardware
 - 2984 Certification Infrastructure
 - 6067 JTRS Technical Support
- Total 36797

FY 2001 Planned Program:

- 3548 JPO Program Support
 - 9855 Technology Insertion
 - 38829 Re-code Additional Legacy Waveforms, Architecture Expansion
 - 6899 JTRS Technical Support
 - 9165 Certification Infrastructure
- Total 68296

B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
RDTE, 0604805A, D615 JTRS Ground Domain Integration, Army			4904	5183	3581	6001	12281	9810		21760
RDTE, 0604280A, D152 JTRS, BA3		10033								

C. Acquisition Strategy: With approval of the FY 98 reprogramming/new start approval and FY 99 appropriation, the JTRS task force was stood up as the JTRS Joint Program Office (JPO). The JPO will be responsible for common core activities including developing, maintaining, and evolving the JTRS open standards architecture, providing re-coded versions of legacy waveforms to operate on JTRS architecture compliant hardware, and providing a certification infrastructure for hardware/software compliance. The JPO hosted an Industry Day for the architecture definition phase on 18 Nov 1998. On 20 Nov 1998, the JPO released a solicitation to industry for the purpose of having an industry team(s) provide a baseline definition for the JTRS architecture. This is the first step in the development of the JTRS open standards architecture. This step will be followed by a second solicitation for the development of the selected baseline definition and the validation of the resulting JTRS architecture, again using an industry team(s). Following the architecture's validation and a market survey of industry's capabilities, a program review will occur. Following that review, the Services, which retained acquisition and weapon system integration responsibility, will begin acquiring scaleable JTRS systems commensurate with Service migration plans. In addition to its core functions, the JPO will provide support to Service Program Management Offices (PMO) as they acquire the family of JTRS hardware.

Project D162

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604280A Joint Tactical Radio	PROJECT D162
--	---	------------------------

Through industry teaming, the JTRS program and architecture will capitalize on previous government sponsored software definable radio activity such as SPEAKEASY, JCIT, TC DL, GLOMO, and ULTRACOM, WRN as well as similar efforts occurring in the commercial wireless information transfer sector. The development of this open standards architecture will foster and facilitate increased competition at all levels for initial acquisitions as well as for future hardware and software upgrades.

D. Schedule Profile	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
JTRS Initial Architecture Development*								
Conduct Market Survey			4Q					
Milestone II Review				1Q				

*Funds reside in PE 00603280 for FY98 and PE 0604280A, D162, Budget Activity 3.

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604280A Joint Tactical Radio	PROJECT D162
--	---	------------------------

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Architectural Development, Validation, Waveform re-coding	FP/Other Transactions (OT)	TBD		*		24365	1Q	38829	1Q	169700	232894	
b. Certification Infrastructure	FP	TBD				2984		9165	4Q	31167	43316	
c. Technology Insertion	FP	TBD						9855	4Q	35979	45834	
Subtotal Product Development:						27349		57849		236846	322044	

Remark: *Funded under PE 0602480, Budget Activity 3, Project D152 in FY 1999

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. FFRDC – MITRE and Other contracted Technical Support	FFP	TBD		*		6067	1Q	6899	1Q	12113	25079	
Subtotal Support Costs:						6067		6899		12113	25079	

Remark: *Funded under PE 0602480, Budget Activity 3, Project D152 in FY 1999

III. Test and Evaluation: Not applicable.

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Support	TBD	TBD		*		3381	TBD	3548	TBD	6965	13894	
Subtotal Management Services:						3381		3548		6965	13894	

Remark: *Funded under PE 0602480, Budget Activity 3, Project D152 in FY 1999

Project Total Cost:						36797		68296		255924	361017	
---------------------	--	--	--	--	--	-------	--	-------	--	--------	--------	--

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604321A All Source Analysis System (TIARA)
---	--

COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
Total Program Element (PE) Cost	25275	33776	49684	46399	45705	28357	18629	10722	Continuing	Continuing
DB19 ASAS Evolutionary Acquisition	23146	28854	43729	42489	41339	23835	16075	8260	Continuing	Continuing
DB41 CI/HUMINT Software Products	0	2682	3674	1843	2262	2380	2554	2462	Continuing	Continuing
D2FT ASAS Operational Test	2129	2240	2281	2067	2104	2142	0	0	Continuing	Continuing

A. Mission Description: This program element funds the development of the All Source Analysis System (ASAS), Evolutionary Acquisition (EA) system and its operational testing. ASAS is the automated support system for the intelligence and electronic warfare (IEW) functional area of the Army Battle Command System (ABCS). It is a tactically deployable Automated Data Processing (ADP) system designed to support management of IEW operations and target development in battalions, brigades, armored cavalry regiments (ACR), separate brigades, divisions, corps, and echelons above corps (EAC).

B. Program Change Summary	FY 1998	FY 1999	FY 2000	FY 2001
Previous President's Budget	26094	28081	30199	39480
Appropriated Value	27245	34081		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-1151	-305		
b. Omnibus or Other Above Threshold Reductions	-203			
c. SBIR / STT	-616			
d. Below Threshold Reprogramming				
e. Rescissions				
Adjustments to Budget Years Since FY 1999 PB			+19485	+6919
Current Budget Submit (FY 1999 / 2000 PB)	25275	33776	49684	46399

Change Summary Explanation: Funding – FY 1999: Congressional increase (+6000) for Multi-Adaptive Single Source software development.
 FY00/01 increases attributed to restoration of intelligence functionality previously delayed by Digitization reprioritizations.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604321A All Source Analysis System (TIARA)				PROJECT DB19		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DB19 ASAS Evolutionary Acquisition	23146	28854	43729	42489	41339	23835	16075	8260	Continuing	Continuing
<p>A. <u>Mission Description:</u> Project DB19 - ASAS Evolutionary Acquisition: This project funds the development of the Army's only tactical intelligence fusion project, the ASAS Block II Evolutionary Acquisition, within the Intelligence Fusion Project Office. The successful execution of military operations requires a flexible and modular intelligence and targeting system that will provide tactical commanders a common view of the battlefield and a means for gaining a timely and comprehensive understanding of enemy force deployments, capabilities, and potential courses of action. The ASAS is a ground based, mobile, command and control, intelligence processing system. The ASAS system provides automated support to the combat commander in the areas of intelligence collection management, all-source fusion (signals intelligence, correlation, imagery, and human intelligence) target and situation analysis, single- and multi-source processing, intelligence reporting, electronic warfare/countermeasures, and operational security as well as "digitized Army" automation support to the battlefield commander's command and control (ABCS). ASAS is providing incremental prototype software for military intelligence operations in the ABCS First Digitized Division (FDD).</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 20946 Continued ASAS Block II Evolutionary Acquisition EMD <ul style="list-style-type: none"> -Implemented DII COE-Compliant System Services and Common Applications (Achieved COE Level 6) -Developed and integrated ABCS 4.0 and 4.1 software functionalit -Enhanced Remote Workstation (RWS) to meet evolving EXFOR XXI capabilities (Division AWE) -Initiated Modernized Integrated Data Base (MIDB) Effort -Continued rehost and improvement of All Source intelligence functionality from Blk I -Developed and integrated preliminary ACE capability on RWS infrastructure -Developed improved target analysis capabilit • 2200 Conducted Development/Operational/Assessment Testing <p>Total 23146</p>										

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE February 1999
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604321A All Source Analysis System (TIARA)	PROJECT DB19
<p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 25703 Continue ASAS Block II Evolutionary Acquisition EMD <ul style="list-style-type: none"> -Integrate and test ASAS Block II Remote Workstation (RWS) V4.1 -Incorporate US Message Text Format (USMTF99) message upgrades -Complete rehost and update of All Source intelligence functionality from Blk I; document and baseline a "Foundation ACE" capability -Enhance RWS-C to meet evolving ABCS 5.0 FDD Force XXI capabilities -Final assessment of "Year 2000" Proof of Operation, and compliance certification -Develop "ASAS Light" battalion level software prototype -Provide warfighter training, test support, and Central Technical Support Facility (CTSF) on-site field support for ABCS/FDD -Develop program acquisition decision package for procurement of RWS -Begin Block III procurement package ASAS Block II MS IIIA PM • 2435 Conduct ASAS Block II RWS Testing • 716 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 28854</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 43729 Continue ASAS Block II Evolutionary Acquisition EMD <ul style="list-style-type: none"> -Develop and deliver "FDD ACE" (configuration product specification) -Resolve Level 6 DII COE migration waivers - Conduct warfighter training for ABCS use of FDD RWS -Perform first year deployment of field support software -Enhance "ASAS Light" battalion level software prototype and productize for field development testing -Support warfighter tests and exercises, provide CTSF on-site field support for ABCS -Develop ABCS 6.0 RWS -Develop ABCS 6.1 RWS -Participate in ABCS Synchronization Event Field Testing -FDD ASAS Light Test during JCF AWE -Resolve technical issues and achieve ABCS FDD IOC <p>Total 43729</p>		
Project DB19	Page 3 of 12 Pages	Exhibit R-2A (PE 0604321A)

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604321A All Source Analysis System (TIARA)	PROJECT DB19
--	---	------------------------

FY 2001 Planned Program:

- 16901 Continue ASAS Block II Evolutionary Acquisition EMD
 - Deliver final "Foundation ACE" configuration product specification
 - Perform overload updates to ABCS FDD RWS V6.1, provide warfighter training
 - Participate in both tiers of the ABCS Digital Capstone Exercise (OT for ACE)
 - Enhance the FDD RWS for ABCS 7.x requirements
 - Upgrade and enhance "ASAS Light"
 - Perform deployment operational support software maintenance of the ASAS Block II RWS software releases
 - Support warfighter tests and exercises and provide CTSF on-site field support for ABCS
- 2435 Conduct ASAS Block II Developmental/Operational Testing (DT/OT)
- 23153 Initiate ASAS Block III Evolutionary Acquisition EMD
 - Complete source selection process and award ASAS Block III contract
 - Develop the "Objective ASAS" delivery order using "Foundation ACE;" integrate enhanced and All Source SIGINT intelligence applications
 - Develop the "Objective ASAS" new and upgraded MI applications (CI/HUMINT, IMINT, EW/ECM, OPSEC)
 - Add Measures and Signatures Intelligence (MASINT) and Open Systems Intelligence (OSINT) capabilit
 - Provide fully structured "JUMP" capabilit
 - Initiate system engineering analysis for migration to Level 8 DII COE
 - Perform field support software maintenance of the ASAS Block III prototype-ACE and the software releases

Total 42489

B. Other Program Funding Summary	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA (K28801) ASAS Modules	22597	30782	56514	70628	51008	66406	68210	53076	Cont	Cont
Spares (BS9704)	1000	0	692	764	809	790	1072	0	Cont	Cont

C. Acquisition Strategy: The ASAS Block II development program will build upon and expand the capabilities and functionality developed and produced in the ASAS Block I System including conversion to the Army Tactical Command and Control System (ATCCS) Common Hardware/Software Open Architecture and the OSD directed Defense Information Infrastructure Common Operating Environment (DII COE) and Modernized Integrated Database (MIDB). Additional software capabilities include enhanced intelligence and command and control functionality, jump and degraded mode operations, enhanced communications, and improved reliability and supportability. We will use proven Office of Secretary of Defense (OSD) and ATCCS Command, Control, Communications and Intelligence (C3I) software. Emphasis is to support warfighter field operational exercise needs via multiple prototype deliveries and continuous user test and evaluation opportunities. This is built upon experience and feedback gained from the fielded ASAS and other tactical fusion prototypes. ASAS Block II will undergo a milestone III A program management review in FY99.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604321A All Source Analysis System (TIARA)	PROJECT DB19
--	---	------------------------

D. Schedule Profile	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
ABCS 5.0 Integration	3Q						
ABCS 5.x Integration	4Q						
ABCS 6.0 Integration	4Q	1-2Q					
Block II RWS Test	1-2Q						
Block II FDD ACE Test			2Q				
ABCS 6.1 Integration		2-4Q					
FDD ACE & ASAS Light Test		4Q					
Block II/Milestone IIIA (RWS)	3Q						
Block II ABCS FDD IOC		4Q					
Block II FUE (FDD)		4Q					
Block III/Milestone IIB (ACE)			3Q				
Block III Software Development			1-4Q	1-4Q	1-4Q	1-4Q	1Q

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604321A All Source Analysis System (TIARA)						PROJECT DB19		
I. Product Development												
	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a.	System Development	CPAF	Lockheed Martin	116281	17356	1-3Q 99	23700	1-3Q 00	7500	1Q 01	Cont	Cont
b.	Subsystem Development	CPFF	EWA	4314	6768	1Q 99	1100	1Q 00			0	12182
c.	Test Hardware	MIPR	CHS II (GFE)	5154			532	1Q 00			0	5686
d.	System Development	TBD	TBD			11857	1-3Q 00	27710	1Q		39567	
Subtotal Product Development:				125749	24124		37189		35210		222272	
II. Support Costs												
	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a.	Contractor Spt	PWD	Sytex, Inc Vienna, VA	8202	1590	1, 3Q 99	2650	1, 3Q 00	2629	1, 3Q 01	Cont	Cont
b.	Gov't In House			9417	1460	1-4Q 99	2570	1-4Q 00	2530	1-4Q 01	Cont	Cont
Subtotal Support Costs:				17619	3050		5220		5159		31048	
III. Test and Evaluation												
	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a.	ASAS DT	MIPR	EPG	1594	868	1Q 99	500	2Q 00	1300	1Q 01	Cont	Cont
Subtotal Test and Evaluation				1594	868		500		1300		4262	
IV. Management Services												
	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a.	FFRDC	MIPR	MITRE	5200	812	1Q 99	820	1Q 00	820	1Q 01	0	Cont
Subtotal Management Services:				5200	812		820		820		7652	
Project Total Cost:				150162	28854		43729		42489		265234	

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999			
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604321A All Source Analysis System (TIARA)				PROJECT DB41			
COST (In Thousands)		FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DB41	CI/HUMINT Software Products	0	2682	3674	1843	2262	2380	2554	2462	Continuing	Continuing
<p>A. <u>Mission Description:</u> Project DB41 - CI/HUMINT Management System (CHIMS): The Counter Intelligence/Human Intelligence (CI/HUMINT) Management System (CHIMS) is the All Source Analysis System (ASAS) Counter Intelligence/Human Intelligence (CI/HUMINT) subsystem. It is a counter intelligence and human intelligence automation system that meets Army tactical CI/HUMINT information collection, investigation, interrogation, operation, document exploitation, and force protection automation requirements. The architecture is built from three sub-elements: 1) Individual Tactical Reporting Tool (ITRT) for agent/interrogator remote operations; 2) CI/HUMINT Automated Tool Set (CHATS) which operates at the Counter Intelligence Team/Interrogation Prisoner of War (IPW) Team level; 3) Counter Intelligence and Interrogation Operations workstation (CI&I OPS) for DS/GS MI unit command and control which provides functional interfaces to the All Source Analysis System ; and 4) CI Single-Source Processors (CISSP) which will operate within the ASAS Analysis and Control Element (ACE).</p> <p>FY 1998 Accomplishments: Project not funded in FY 1998</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 1429 Develop, investigate and apply functionality enhancements to the CHATS developmental baseline <ul style="list-style-type: none"> -Migrate existing CHATS software to DII/COE baseline -Data handling and message enhancements -Mapping and presentation enhancements -Communications improvements -Interoperability enhancements -Follow-on operational testing • 600 Initiate development of the CI&I Operations workstation and CI Single Source Processor software baselines • 582 Initiate development on ITRT software baseline • 71 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 2682</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 1000 Develop, investigate and apply functionality enhancements to the CHATS developmental baseline • 2000 Mature CI&I Operations and CI SSP workstation software baselines • 674 Develop, investigate and apply functionality enhancements to the ITRT software baseline <p>Total 3674</p>											
Project DB41				Page 7 of 12 Pages				Exhibit R-2A (PE 0604321A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604321A All Source Analysis System (TIARA)	PROJECT DB41
--	---	------------------------

FY 2001 Planned Program:

- 1007 Develop, investigate and apply functionality enhancements to the CHATS developmental baseline
 - 800 Mature CI&I Operations and CI SSP workstation software baselines
 - 36 Develop, investigate and apply functionality enhancements to the ITRT software baseline
- Total 1843

B. <u>Other Program Funding Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
OPA (BK5275) CHATS (TIARA)	0	3690	3137	378	1501	3893	5164	1472	Cont	Cont

C. Acquisition Strategy: FY99 and FY00 funding supports continued improvements and functionality enhancements to the CHATS software baseline and the initiation of development of the software baselines for the Individual Team Member Device and the C&I Operations and CI Single Source Processor workstations. During FY01 through FY03, the C&I Operations and CI Single Source Processor workstations software baselines will fully mature and the CHATS and Individual Team Membe Device baselines will undergo an evolutionary transition to a new generation of modernized COTS and developed software programs.

D. <u>Schedule Profile</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
CHATS Hardware/Software Upgrade	2Q, 4Q	2Q, 4Q	2Q, 4Q	2Q, 4Q	2Q, 4Q	2Q, 4Q	2Q, 4Q
Develop ITRT	2-4Q						
Field ITRT		1-4Q	1-4Q				
Upgrade ITRT				2Q, 4Q	2Q, 4Q	2Q, 4Q	2Q, 4Q
Develop CI&I Operations and CI SSP Workstation	2-4Q	1-4Q	1-4Q				
Field CI&I Operations and CI SSP Workstation				1-4Q	1-4Q		
Upgrade CI&I Operations and CI SSP Workstation						2Q, 4Q	2Q, 4Q

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE **February 1999**

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604321A All Source Analysis System (TIARA)

PROJECT
DB41

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. CHATS Software	BPA	Sterling, Inc Omaha, NE	0	1100	2Q 99	800	1Q 00	433	1Q 01	Cont	Cont	
b. Indiv Tact Rptg Tool	TBD	TBD	0	200	TBD	200	TBD				400	
c.												
d. Workstation SW	TBD	TBD	0	432	TBD	1764	TBD	650	TBD		2633	
a. Baseline Integration	MIPR	CECOM SEC		140	2Q 99	100	2Q 00			Cont	Cont	
Subtotal Product Development:				1872		2864		1083			Cont	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Technical	MIPR	CECOM		130	1Q 99	130	1Q 00	130	1Q 01	Cont	Cont	
Subtotal Support Costs:				130		130		130			Cont	
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. OEC	MIPR	EPG	0	50	1Q 99	50	1Q 00	50	1Q 01	Cont	Cont	
Subtotal Test and Evaluation				50		50		50			Cont	
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. SET	MIPR	Logicon/Sytex McLean, V		280	1Q 99	280	1Q 00	280	1Q 01		840	
b. Facility Support	MIPR	PMO Intel Fusion McLean, V		350	2Q 99	350	2Q 00	300	2Q 01		1000	
Subtotal Management Services:				630		630		580			1840	

DATE **February 1999**

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604321A All Source Analysis System (TIARA)

Project Total Cost:				2682		3674		1843			Cont
---------------------	--	--	--	------	--	------	--	------	--	--	------

--	--	--	--	--	--	--	--	--	--	--	--

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604321A All Source Analysis System (TIARA)				PROJECT D2FT		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D2FT ASAS Operational Test	2129	2240	2281	2067	2104	2142	0	0	Continuing	Continuing
<p>A. <u>Mission Description:</u> Project D2FT - ASAS Test and Evaluation: This project finances the direct costs of planning and conducting testing and evaluation of the ASAS by the Operational Test and Evaluation Command (OPTEC). ASAS is an Acquisition Category (ACAT) I system with several dedicated iterations of Test and Evaluations (Technical and Operational) between FY 1995 and FY 2001. Testing and evaluations are conducted under conditions, as close as possible, to those encountered in actual combat with typical user troops trained to employ the system. As necessary, OPTEC provides Army leadership with an evaluation of the effectiveness and suitability of the system. Project D2FT is restructured from PE 0605712A.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 2129 Developed testing scenarios <p>Total 2129</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 2181 Warfighter data collection; RWS testing; test scenario development • 59 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 2240</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 2281 Warfighter data collection; OT events; test scenario development <p>Total 2281</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 2067 Warfighter data collection; OT events; test scenario development <p>Total 2067</p> <p>B. <u>Other Program Funding Summary:</u> Not Applicable</p> <p>C. <u>Acquisition Strategy:</u> Not applicable, see B19 above</p>										
Project D2FT			Page 10 of 12 Pages				Exhibit R-2A (PE 0604321A)			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604321A All Source Analysis System (TIARA)	PROJECT D2FT
--	---	------------------------

D. Schedule Profile	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
ASAS Testing							
- Warfighter dedicated OT events	1-2Q						
- ACE OT		2Q					
- Block III OT			2Q		2Q		

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604321A All Source Analysis System (TIARA)	PROJECT D2FT
--	---	------------------------

I. Product Development: None

II. Support Costs: None

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. OPTEC		IEWTD	8542	2240		2281		2067		4246	19376	19376
Subtotal Test and Evaluation			8542	2240		2281		2067		4246	19376	

IV. Management Services: None

Project Total Cost:			8542	2240		2281		2067		4246	19376	
---------------------	--	--	------	------	--	------	--	------	--	------	-------	--

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604601A Infantry Support Weapons	PROJECT D033
---	--	-------------------------------

COST (<i>In Thousands</i>)	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
D033 Objective Crew Served Weapon	0	0	0	1747	3709	3814	12970	8155	1000	31395

A. Mission Description and Budget Item Justification: Objective Crew Served Weapon (OCSW) – The OCSW will represent the next generation crew served weapon. The OCSW will replace selected existing crew served weapons i.e., M2 and MK19 Machine Guns in various applications. This new Crew Served Weapon capability will provide both infantry and vehicle-mounted soldiers with significant increase in lethality along with an increase in overall system performance.

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program: Project not funded in FY 1999

FY 2000 Planned Program: Project not funded in FY

FY 2001 Planned Program:

- 1747 Contract/Weapon Development
- Total 1747

B. <u>Program Change Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (<u>FY 1999 PB</u>)	0	0	0	1766
Appropriated Value				
Adjustments to Appropriated Value				
a. Congressional General Reductions				
b. SBIR / STTR				
c. Omnibus or Other Above Threshold Reductions				
d. Below Threshold Reprogramming				
e. Rescissions				
Adjustments to Budget Years Since <u>FY 1999 PB</u>				-19
Current Budget Submit (<u>FY 2000/ 2001 PB</u>)	0	0	0	1747

C. Other Program Funding Summary: Not applicable.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604601A Infantry Support Weapons	PROJECT D033
--	---	------------------------

D. Acquisition Strategy: The OCSW prototype system will have been demonstrated under the Advanced Technology Demonstration (ATD). Non-conventional contracting strategies will be examined for implementation such as integrated contractor-government product teaming and various contact incentives. Integrated Product and Process Design (IPPD) efforts initiated in the previous ATD phase of this program will reduce work and streamline activities in EMD. The program will contract to build and qualify weapon hardware for developmental and operational testing in preparation of a Milestone III.

E. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>
Contract Preparation				1-3Q					
Weapon Development				3-4Q	1-4Q	1-2Q	3-4Q	1-2Q	
Quality Design & Build						3-4Q	1-2Q	1-2Q	
Developmental Testing & Assessment							3-4Q	1-3Q	
Operational Testing & Assessment								4Q	1-3Q
Milestone III									4Q

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604601A Infantry Support Weapons					PROJECT D033		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Hardware Development	FP	Contractor TBD								20818	20818	20818
Subtotal Product Development:										20818	20818	20818
Remark: Produce development will take place beyond FY 2005.												
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Development	MIPR	Multiple						1500	Multiple	2944	4444	4444
b. ILS	MIPR	Multiple						50	Multiple	1467	1517	1517
Subtotal Support Costs:								1550		4411	5961	5961
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. DT	MIPR	TECOM								2061	2061	2061
b. OT	MIPR	OPTEC								883	883	883
Subtotal Test and Evaluation										2944	2944	2944
Remark: Test and evaluation will take place beyond FY 2005.												
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PGM Management	ALLOT	PM SA						177	Multiple	1375	1552	1552
b. Travel								20	Multiple	100	120	120
Subtotal Management Services:								197		1475	1672	1672
Project Total Cost:								1747		29648	31395	31395

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604604A Medium Tactical Vehicles				PROJECT DH07		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DH07 Medium Tactical Vehicles	2917	0	1973	1971	1969	1968	1965	1962	Continuing	Continuing
<p>A. Mission Description and Budget Item Justification: This program element (PE) supports modernization of the Army's medium truck fleet. The Family of Medium Tactical Vehicles (FMTV) will replace aging M44 Series 2 1/2 ton trucks and M39 and M809 Series 5 ton trucks that are beyond their average useful life of 20-22 years. FMTV will also provide a follow-on to the M939/A2 Series 5 ton truck. FMTV is required to fill 2 1/2 (LMTV) and 5 ton truck (MTV) requirements, resolve operational deficiencies and operate throughout the theater as multi-purpose transportation vehicles used by combat, combat support and combat service support units. This system is designed to be rapidly deployable worldwide and operate on primary and secondary roads, trails, and cross-country terrain in all climatic conditions. In FY1998, Project DH07 funds the Army's portion of the Medium Tactical Truck Remanufacture Program (MTTR). The new funds will support continuous product improvements, technological upgrades and new capabilities for FMTV. In FY00 and FY01, Project DH07 funds the development, prototype build and test of a FMTV 5 ton water tanker to support an approved requirement to help execute the Army's potable water support concept for Force XXI. In FY01, a Limited User Test will be performed on the MT fuel tanker and expansible van to demonstrate the operational effectiveness and suitability of these models prior to production. The development and testing of these models as prototypes were funded by this project prior to FY98. Procurement of the fuel tanker and expansible van as production vehicles is planned in FY01.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 1360 Developmental Testing (MTTR) • 1448 Support Costs (Engineering/Quality/Matrix) (MTTR) • 109 Technical Support Contract (MTTR) <p>Total 2917</p> <p>FY 1999 Planned Program: Project not funded in FY 1999</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 1791 Water Tanker Prototype Design/Build (FMTV) • 182 Government Engineering (FMTV) <p>Total 1973</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 1002 Test Support & Performance Specification/Drawing Development (FMTV)--1 Test Article • 483 Development Testing (FMTV) • 215 Government Engineering (FMTV) • 271 MTV Fuel tanker/Expansible Van Limited User Test (LUT) (FMTV)--4 Test Articles <p>Total 1971</p>										
Project DH07			Page 1 of 4 Pages				Exhibit R-2 (PE 0604604A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604604A Medium Tactical Vehicles	PROJECT DH07
---	--	-------------------------------

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	3614	0	0	1613
Appropriated Value	3729			
Adjustments to Appropriated Value				
a. Congressional General Reductions	-115			
b. SBIR / STTR	-90			
c. Omnibus or Other Above Threshold Reduction	-30			
d. Below Threshold Reprogramming	-577			
e. Rescissions	0			
Adjustments to Budget Years Since FY 1999 PB	-812		+1973	+358
Current Budget Submit (FY 2000/2001 PB)	2917	0	1973	1971

Change Summary Explanation: FY2000 and FY 2001 funding increased to support Water Tanker development.

C. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To Compl</u>	<u>Total Cost</u>
OPA1 2 1/2 Ton Extended Svc Pgm (ESP)DV0009		38290							Cont	Cont
OPA1 5 Ton Extended Svc Pgm (ESP) DV0010		10789							Cont	Cont
OPA1 Family of Medium Tactical Vehicles (D15500)	201550	331148	425855	510215	643573	698682	752070	725541	Cont	Cont
OPA4 FMTV Initial Spares (DS1010)		4332			3553	3532	3898	3925	Cont	Cont

D. Acquisition Strategy: The acquisition strategy for the FMTV Water Tanker program is to award a sole source cost plus fixed fee contract to the current FMTV contractor. Based on test results, the water tanker can be procured as a production vehicle under a multiyear contract for FMTV planned in FY03.

E. Schedule Profile	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2004</u>	<u>FY 2005</u>
Award Prototype Contract				1 st Qtr						
Development Test					1 st Qtr					
Limited User Test					3 rd Qtr					
Award Production Contract							1 st Qtr			

Remark: Limited User Test for the Special Bodies (fuel tanker and expansible van) slipped one quarter because the Special Bodies Production award (OPA funded) slipped.

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604604A Medium Tactical Vehicles					PROJECT DH07		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Oshkosh Truck Corp. (Prototype MTTR)	C-CPFF	Oshkosh, WI	2411								2411	
b. AM General (Prototype MTTR)	C-CPFF	South Bend, IN	2902								2902	
c. Stewart & Stevenson, Inc. (FMTV)	SS-CPFF	Sealy, TX				1791	Nov 99	1002	Nov 00		2793	
Subtotal Product Development:			5313			1791		1002			8106	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. In-house Eng		TACOM, MI	1810			182		215			2207	
b. Gov't Eng		All Other Field Act	5								5	
c. Source Selection Evaluation Board		TACOM, MI	199								199	
Subtotal Support Costs:			2014			182		215			2411	
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TECOM (MTTR)		Aberdeen Proving Ground (APG), Yuma Proving Grounds (YPG)	2525								2525	
b. TECOM (FMTV)		APG						483	Dec 00		483	
c. TECOM (FMTV)		Ft. Hood, TX						271	Apr 01		271	
Subtotal Test and Evaluation			2525					754			3279	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604604A Medium Tactical Vehicles	PROJECT DH07
--	---	------------------------

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Camber (Tech Spt Contract) (MTTR)	C-CPPF		98								98	
b. Science Applications International Corp. (SAIC) (MTTR)	C-FP		109								109	
Subtotal Management Services:			207								207	
Project Total Cost:			10059			1973		1971			14003	

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604609A Smoke, Obscurant and Target Defeating System - Engineering Development
---	--

COST (In Thousands)	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	0	701	918	2480	4654	7993	6980	11578	Continuing	Continuing
D198 Target Defeating System	0	0	0	0	0	0	0	8434	Continuing	Continuing
D200 Smoke/Obscurant System	0	701	918	2480	4654	7993	6980	3144	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program element supports the conduct of Engineering and Manufacturing Development (EMD) of logistically supportable, high performance smoke and obscurant agents, munitions and devices to improve the survivability of the combined arms force and complement combined weapons systems. Improvements are sought across the entire multi-spectral range from visual through infrared (IR) and millimeter wavelengths (MMW) radar for incorporation into self-protection large area and projected smoke systems. The smoke obscuration technologies supported by this program element enhance smoke systems as force multipliers.

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	0	706	947	2593
Appropriated Value		706		
Adjustments to Appropriated Value				
a. Congressional General Reductions		-5		
b. SBIR / STTR				
c. Omnibus or Other Above Threshold Reductions				
d. Below Threshold Reprogramming				
e. Rescissions				
Adjustments to Budget Years Since FY 1999 PB			-29	-113
Current Budget Submit (FY 2000/ 2001 PB)	0	701	918	2480

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604609A Smoke, Obscurant and Target Defeating System - Engineering Development	PROJECT D200
---	--	-------------------------------

COST (<i>In Thousands</i>)	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
D200 Smoke/Obscurant System	0	701	918	2480	4654	7993	6980	3144	Continuing	Continuing

A. Mission Description and Budget Item Justification: This project supports the conduct of Engineering and Manufacturing Development (EMD) in smoke and obscurant agents, munitions, and devices to improve survivability of the combined arms force, complement combined weapons systems, and enhance force effectiveness and combat power. Funding supports (1) Motorized Dual Purpose Mechanical Smoke Generator, M56 mounted on the High Mobility Multi-Purpose Wheeled Vehicle (HMMWV) to provide large area visual, infrared (IR) and millimeter wavelength (MMW) radar obscuration; and (2) Vehicle Engine Exhaust Smoke System (VEESS) which provides on-board obscuration of heavy armor systems.

FY 1998 Accomplishments: Program not funded in FY 1998

FY 1999 Planned Program:

- 100 VEES – Integrate M6 Grenade Dischargers and Vehicle Integrated Defense System
 - 300 VEES – Design and construct two test articles for initial evaluation of function and fit
 - 282 VEES – Initiate engineering study/proof of principle and modification work order
 - 19 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 701

FY 2000 Planned Program:

- 306 VEES – Complete development and conduct milestone review
 - 512 VEES – Conduct customer test, safety of use and pre-production qualification tests using two FY99 test articles
 - 100 VEES – Prepare contract plan for modification work order
- Total 918

FY 2001 Planned Program:

- 700 MMW – Initiate engineering study/proof of principle and modification work order
 - 1780 MMW – Contract for engineering, design and prototype system construction
- Total 2480

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604609A Smoke, Obscurant and Target Defeating System - Engineering Development	PROJECT D200
---	--	-------------------------------

B. <u>Other Program Funding Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
RDTE,A Budget Activity 2, PE 0602622A, Project A552 Smoke/Novel Effects Munitions	3500	5078	3996	4042	4068	4110	4600	4845	Cont'd	Cont'd
RDTE,A Budget Activity 4, PE 063627A, Project DE79 Smoke, Obscurant and Equipment Defeating Systems	0	0	0	0	0	0	2918	13597	Cont'd	Cont'd
RDTE,A Budget Activity 4, PE 0603627A, Project DE78 Target Defeating Systems	0	0	0	0	0	4877	9442	5930	Cont'd	Cont'd
Other Procurement Army, Activity 3, (OPA-3)										
M99103, M56 Smoke Generator	12099	15069	6286	3798	20877	18651	26574	26752	Cont'd	Cont'd
M99107 M58 Smoke Generator	8415	10594	3420	5625	10781	9190	12060	12349	Cont'd	Cont'd

C. Acquisition Strategy: Project D200 – Smoke/Obscurants: The Vehicle Engine Exhaust Smoke System (VEESS) will be developed in-house and will be applied to systems via modification work order. Beginning in FY 2001, the Millimeter Wave smoke generation system will be developed with the assistance of a full and open competitive contract for engineering design and construction of prototype systems.

D. <u>Schedule Profile</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
VEESS – Milestone I/II Letter Decision				1Q						
VEESS – Construct RDTE test articles				4Q						
VEESS – Combined DT/OT and other tests					3-4Q					
VEESS – System Acceptance (Milestone III)					4Q					
MMW – Milestone I/II Program initiation						1Q				
MMW – Initiate RDT&E contract						3Q				
MMW – System acceptance (Milestone III)									4Q	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604609A Smoke, Obscurant and Target Defeating System - Engineering Development					PROJECT D200		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. VEES -Development	In-House	SBCCOM; APG, MD		701	2Q	406	1Q			1107	2214	
b. MMW -Hardware Dev	CPFF	To Be Determined						1780	3Q	Cont'd	1780	Cont'd
Subtotal Product Development:				701		406		1780		1107	3994	
Remark: The FY2001 contract effort for MMW will include training development, ILS and technical data.												
II. Support Costs: None												
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. VEES -User, technical and PPQT	In-house	SBCCOM; APG, MD				512	3Q				512	
Subtotal Test and Evaluation						512					512	
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. MMW - Prog Mgt Personnel	In-House	SBCCOM; APG, MD						650			650	
b. MMW -Program Mgt Support	CPFF	To Be Determined						50			50	
Subtotal Management Services:								700			700	
Project Total Cost:				701		918		2480		1107	5206	

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)									DATE February 1999	
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604611A Javelin				PROJECT D499	
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D499 Javelin	7512	5242	493	493	492	492	983	981	0	637488
<p>A. <u>Mission Description and Budget Item Justification:</u> This program provides for the continuation of Engineering and Manufacturing Development (EMD) of a manportable antitank weapon system for the combined arms team employment. The infantry must have the capability to defeat numerically superior armored forces. The present medium infantry antitank weapon is DRAGON. The system developed within this program element will replace the DRAGON to provide enhanced lethality for the early entry force. It will have a high kill rate against all known armor threats at extended ranges under day/night, adverse weather conditions and in the presence of battlefield obscurants. This system will be hardened against countermeasures and will not require extensive training for effective employment. Active protection system developments will be considered and modifications studied to defeat these devices if necessary. Software improvements to maintain lethality against evolving targets and countermeasures and increase robustness of system performance in all environments will be pursued. Integration of Alternate Main Charge Warhead (AMCW) Guidance Section into Baseline Main Charge Warhead (BMCW), Lethality Improvement Tracker Enhancement (LITE), and Counter Active Protection System (CAPS)/Tracke software will be pursued.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 852 Program Management • 1924 Test Support • 1308 Lethality Improvement Tracker Enhancement • 1400 10 LITE Telemetry Rounds for FY1999 DT&E • 1400 Advanced Main Charge Warhead • 314 4 AMCW/Common ESAFQUAL/Full-Up Rounds for FY1999 DT&E • 314 4 AMCW/Live Fire/Full-Up Rounds for FY1999 LFT&E <p>Total 7512</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 1492 Program Management • 2122 Test Support BMCW • 339 Lethality Improvement Tracker Enhancement • 1150 Counter Active Protection System /Tracker Software • 139 Small Business Innovative Research/ Small Business Technology Transfe <p>Total 5242</p>										
Project D499			Page 1 of 3 Pages			Exhibit R-2 (PE 0604611A)				

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604611A Javelin	PROJECT D499
--	--	------------------------

FY 2000 Planned Program:

- 25 Program Management
 - 468 Counter Active Protection System/Tracker Software
- Total 493

FY 2001 Planned Program:

- 25 Program Management
 - 468 Counter Active Protection System/Tracker Software
- Total 493

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	7771	5277	0	0
Appropriated Value	8018	5277		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-247	-35		
b. SBIR / STTR	-195			
c. Omnibus or Other Above Threshold Reductions	-64			
d. Below Threshold Reprogramming				
e. Rescissions				
Adjustments to Budget Years Since FY 1999 PB			+493	+493
Current Budget Submit (FY 2000/ 2001 PB)	7512	5242	493	493

C. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To Compl</u>	<u>Total Cost</u>
Missile Procurement, Army, CC0007, Javelin	138208	338740	406083	372248	379987	371718	39058	51822	81000	3011653
Missile Procurement, Army, CA0269, Javelin	0	4688	4532	6659	7698	7889	8913	46	0	40425

D. Acquisition Strategy: Integration of the AMCW guidance section into the BMCW will be accomplished under a cost plus fixed fee contract. LITE efforts continue under a cost plus fixed fee contract. CAPS/Tracker software is in the research and development phase, as part of a PEO Tactical Missiles Horizontal Technology Insertion initiative.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604611A Javelin	PROJECT D499
---	---	-------------------------------

E. Schedule Profile	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
AMCW Final Design			1 st Qtr*							
Award LITE 1 Contract			1 st Qtr*							
LITE 1 Captive Flight Tests			2 nd /3 rd Qtr*							
Award AMCW Contract Option 1			1 st Qtr*							
AMCW Live Fire Test			2 nd Qtr*							
AMCW Tandem Test			3 rd Qtr*							
AMCW Lethality Assessment 1			1 st /2 nd Qtr*							
BMCW Tests Phase 2				2 nd Qtr						
BMCW Lethality Assessment 2			4 th Qtr*	3 rd Qtr	2 nd Qtr					
Qualification Tests				2 nd Qtr						
BMCW Flight Tests Phase 3				2 nd Qtr						
ECP Approval					2 nd Qtr					
CAPS/Tracker Software Contract/Options				2 nd Qtr	1 st Qtr	1 st Qtr	1 st Qtr	1 st Qtr	1 st Qtr	1 st Qtr

* Completed Milestones

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604619A Landmine Warfare				PROJECT D088		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D088 Wide Area Mine Engineering Development	21448	23036	13318	0	0	0	0	0	0	260420
<p>A. <u>Mission Description and Budget Item Justification:</u> The Wide Area Munition (WAM), a “smart,” remotely-reprogrammable antitank weapon, provides unique control and offensive capability for a variety of missions. WAM will significantly reduce Army losses by using advanced smart munitions technology on the battlefield. The program provides for Engineering and Manufacturing Development (EMD) of the Basic WAM deployed by hand emplacement with one-way communications. The pre-planned product improvement to Basic WAM provides a two-way command and control and redeployable capability.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 10354 Conducted WAM Product Improvement Program (PIP) preliminary design/functional configuration audit efforts • 2594 Completed Communication System preliminary design • 5400 Fabricated hardware (20 systems) and conduct WAM Basic Cold Region Test and Evaluation • 3100 Completed WAM Basic RDTE development <p>Total 21448</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 8625 Complete WAM PIP control board system critical design review, and simulation design • 4100 Complete fabrication of Technical Test/Initial Operational Test & Evaluation (TT/IOTE) hardware (20 systems) for WAM PIP • 500 Initiate contractor communication system testing • 9200 Complete communication system design • 611 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 23036</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 4700 Complete WAM PIP testing • 7418 Complete WAM PIP system engineering • 1200 Complete system performance analysis <p>Total 13318</p> <p>FY 2001 Planned Program: Project not funded in FY 2001</p>										
Project D088			Page 1 of 4 Pages				Exhibit R-2 (PE 0604619A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604619A Landmine Warfare	PROJECT D088
---	--	-------------------------------

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	19189	23189	0	0
Appropriated Value	19800	23189		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-611	-153		
b. SBIR / STT	-440			
c. Omnibus or Other Above Threshold Reduction	-145			
d. Below Threshold Reprogramming	+2844			
Adjustments to Budget Years Since FY 1999 PB			+13318	
Current Budget Submit (FY 2000/2001 PB)	21448	23036	13318	0

Change Summary Explanation:

Funding: In FY98 (+2844) was reprogrammed from Raptor (PE63619/D005) to fabricate Basic WAM test hardware.
 In FY00 (+13318) transferred from WAM production (SSN: E78100) in order to continue PIP EMD effort.

Schedule: Type Classification Standard for Basic WAM rescheduled from 3Q98 to 2Q99 due to requirement to do additional testing.

C. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To Compl</u>	<u>Total Cost</u>
Procurement of Ammunition, Army (PAA) And Other Procurement, Army (OPA)										
WAM, E78100 (PAA)	14745	9598	10387	23329	56438	56965	56907	56772	1398000	585141
WAM Remote Control Unit, G01000 (OPA)	0	0	0	918	3798	3915	3946	4464	20250	37273
WAM Individual Trainer, E78103 (PAA)	0	0	1840	1543	0	0	0	0	5443	8826
WAM Collective Trainer, E78104 (PAA)	0	0	0	0	1957	0	0	0	0	1957

D. Acquisition Strategy: The Basic WAM transitioned to Low Rate Production (LRP) in 3QFY96. A sole source Fixed Price Incentive Fee contract was awarded to the EMD contractor for the LRP quantity. Type classification standard is planned for 2QFY99. Production buys will be included under the LRP contract as Firm Fixed Price options. A sole source Cost Plus Incentive Fee contract for EMD of an improved WAM was awarded to the Basic WAM developer in FY 1996.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604619A Landmine Warfare	PROJECT D088
--	---	------------------------

E. Schedule Profile	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2004</u>	<u>FY 2005</u>
Complete WAM Basic TT/IOTE		2Q								
WAM Basic Milestone III			2Q							
Complete PIP IOT&E testing				2Q						
Complete PIP technical testing				3Q						
WAM PIP Milestone In-process-review (IPR)				4Q						

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE **February 1999**

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604619A Landmine Warfare

PROJECT
D088

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
PIP EMD	CPIF	Textron	22554	18995	Oct 98	8000	Oct 99	0		0	49549	50160
Basic EMD	CPIF	Textron	150614	0		0		0		0	150614	150614
Subtotal Product Development			173168	18995		8000					200163	200774

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Engineering Support		ARDEC	20942	2541	Oct 98	2800	Oct 98	0		0	26283	
Engineering Support		OGA (Misc.)	14045	189	various	518	various	0		0	14752	
Subtotal Support Costs:			34987	2730		3318					41035	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Test Support		TECOM	11262	300	Oct 98	1500	Dec 99	0		0	13062	
Subtotal Test and Evaluation			11262	300		1500					13062	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Program Management		PM-MCD	4649	400	Oct 98	5 00	Oct 99	0		0	5549	
SBIR/STTR				611							611	
Subtotal Management Services:			4649	1011		500					6160	

DATE **February 1999**

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604619A Landmine Warfare

Project Total Cost:			224066	23036		13318					260420
---------------------	--	--	--------	-------	--	-------	--	--	--	--	--------

--	--	--	--	--	--	--	--	--	--	--	--

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604622A Family of Heavy Tactical Vehicles
---	---

COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
Total Program Element (PE) Cost	4683	8244	0	0	0	0	0	10791	Continuing	Continuing
D659 Family of Heavy Tactical Vehicles	4683	993	0	0	0	0	0	0	0	5676
E49 HEMTT	0	0	0	0	0	0	0	10791	Continuing	Continuing
E50 Trailer Development	0	3477	0	0	0	0	0	0	0	3477
E51 Forward Repair System, Heavy	0	3774	0	0	0	0	0	0	0	3774

A. Mission Description and Budget Item Justification: Program element funds various heavy tactical vehicle capabilities to support combat and combat support missions. These missions include the following: line haul, local haul, unit resupply; and transporting water, ammo, and general cargo. FY98 Project D659 and FY99 Project E50 funding supports requirements for a Trailer R&D program to demonstrate technologies that support the Army's objectives to minimize operational and support costs, while modernizing trailer systems that provide significant benefits to the Army warfighting capability. FY99 Project E50 funding also supports the Heavy Equipment Transporter System highway use Engineering & Manufacturing Development. FY99 Project D659 funding supports the Palletized Load System (PLS) safety enhancements. FY99 Project E51 funding supports Low Rate Initial Production and Testing on the Forward Repair System (FRS) Warfighter Rapid Acquisition Program. In FY05, Project E49 will begin the RDTE funding to support a competitive procurement to begin replacement of the current HEMTT fleet.

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	4845	0	0	0
Appropriated Value	5000	8300		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-155	-56		
b. SBIR / STT	-122			
c. Omnibus or Other Above Threshold Reductions	-40			
d. Below Threshold Reprogramming				
e. Rescissions				
Adjustments to Budget Years Since <u>FY 1999 PB</u>				
Current Budget Submit (FY 2000/2001 PB)	4683	8244	0	0

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604633A Air Traffic Control				PROJECT D586		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D586 Air Traffic Control	6750	1724	1981	2035	2204	2306	2594	2698	0	Continuing
<p>A. Mission Description and Budget Item Justification: This program element funds continuous efforts for the development of modernized tactical and fixed base Air Traffic Control (ATC) systems that will enhance and ensure total aviation safety in both the tactical and strategic ATC domains. Primarily funds the total system integration and qualification for the Air Traffic Navigation Integration Coordination System (ATNAVICS), which provides urgently needed, highly mobile precision/non-precision approach and landing capability, reliable communications, and extensive flight following capability in adverse and hostile weather conditions. ATNAVICS supports the tactical aviation warfighter at remote landing zones, pickup zones and temporary fixed wing and helicopter operating/landing areas worldwide. This program element ensures the completion of the EMD phase for ATNAVICS. Also funded in this program element is the development of the Mobile Tower System (MOTS), a tactical mobile tower designed to replace an antiquated and obsolete legacy system. A Non-Developmental Item (NDI), MOTS will be equipped with modernized and secure avionics to ensure highly reliable and consistent tactical aircraft communications at semipermanent landing areas.</p> <p>FY 1998 Accomplishments: ATNAVICS</p> <ul style="list-style-type: none"> • 6479 Finalized hardware and software prototype development and completed system integration • 271 Developmental and Operational Testing <p>Total 6750</p> <p>FY 1999 Planned Program: ATNAVICS</p> <ul style="list-style-type: none"> • 1586 Close out EMD phase, conduct final operational testing, transition to production phase <p>MOTS</p> <ul style="list-style-type: none"> • 50 Conduct Market Analysis • 50 Suitability Study, evaluate cost savings data • 38 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs. <p>Total 1724</p> <p>FY 2000 Planned Program: MOTS</p> <ul style="list-style-type: none"> • 1733 Procure prototype MOTS Test Article for Developmental Testing • 248 Conduct developmental/operational testing <p>Total 1981</p>										
Project D586			Page 1 of 5 Pages				Exhibit R-2 (PE 0604633A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604633A Air Traffic Control	PROJECT D586
--	--	------------------------

- FY 2001 Planned Program:**
MOTS
- 1822 Complete EMD phase for MOTS
 - 213 Transition to Production Phase
- Total 2035

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1998 PB)	4533	1737	2048	2113
Appropriated Value	4705	1737		
Adjustments to Appropriated Value		-		
a. Congressional General Reductions	-172	-13		
b. SBIR / STT	-109			
c. Omnibus or Other Above Threshold Reduction	-36			
d. Below Threshold Reprogramming	+2362			
e. Rescissions				
Adjustments to Budget Years Since FY 1998 PB			-67	-78
Current Budget Submit (FY 2000/2001 PB)	6750	1724	1981	2035

Change Summary Explanation: Funding: (FY 98) +2362 was reprogrammed from Project D496 to cap ATNAVICS EMD contract.

C. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To</u>	<u>Total</u>
APA AA0050 - Air Traffic Control	7801	5675	8760	38068	29015	34077	35249	20542	Cont'd	Cont'd

D. Acquisition Strategy: Procure an ATNAVICS prototype through a Cost Plus Fixed Fee (CPFF) contract for integration of electronic/radar components to include design, development, and testing of an integrated prototype over a three year period. Furthermore, the strategy allows continued concept exploration and design definition of the MOTS.

E. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
ATNAVICS System Performance	1-4 Qtr							
ATNAVICS Developmental and Operational Testing	3-4 Qtr	1-2 Qtr						
Close out ATNAVICS EMD, Prepare for Production Phase		1-2 Qtr						

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604633A Air Traffic Control	PROJECT D586
--	--	------------------------

E. Schedule Profile	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
MOTS Market Analysis (State of Art Syst Solution)		1-2 Qtr						
MOTS Evaluation and Suitability Study/Cost Savings Data		1-4 Qtr						
Procure Prototype MOTS			1 Qtr					
Conduct MOTS Developmental and Operational testing			1 Qtr					
Complete EMD Phase for MOTS				1 Qtr				
P3I Initiatives/Programs for Tactical Systems (ATNAVICS, TAIS, MOTS)					1-4 Qtr	1-4 Qtr	1-4 Qtr	1-4 Qtr

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE **February 1999**

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604633A Air Traffic Control

PROJECT
D586

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. ATNAVICS	CPFF	Raytheon *	26100							0	26100	26100
b. MOTS	Various	Various		58	3 Qtr	1435	1Qtr	1472	1 Qtr	0	2965	
c. ATNAVICS GFE	Reqn	Various	392							0	392	
Subtotal Product Development:			26492	58		1435		1472			29457	26100

Remark: * Full address is: Raytheon Co., Raytheon Electronics Systems, 1001 Boston Post Rd., Marlborough, MA 01752

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. ATNAVICS	MIPR	AMCOM/CECOM	2155	643	1-2 Qtr					0	2798	
b. MOTS	Various	Various		25	3 Qtr	148	1 Qtr	213	1 Qtr	0	386	
Subtotal Support Costs:			2155	668		148		213			3184	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. ATNAVICS	MIPR	TEXCOM/TECOM *	271	800	1-2 Qtr					0	1071	
b. MOTS	TBD	TBD				248	1 Qtr	200	1 Qtr	0	448	
Subtotal Test and Evaluation			271	800		248		200			1519	

Remark: * TEXCOM is located at Fort Hood, TX. TECOM is located at Aberdeen Proving Ground, MD.

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. ATNAVICS	T&M	AMCOM	988	143	1 Qtr					0	1131	
b. MOTS	TBD	TBD	0	55	3 Qtr	150	1 Qtr	150	1 Qtr	0	355	
Subtotal Management Services:			988	198		150		150			1486	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604633A Air Traffic Control	PROJECT D586
--	--	------------------------

	Total PYs Cost	<u>FY 1999</u> Cost		<u>FY 2000</u> Cost		<u>FY 2001</u> Cost		Cost To Complete	Total Cost	Target Value of Contract
Project Total Cost:	29906	1724		1981		2035			35646	26100

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604640A Advanced Command and Control Vehicle					PROJECT DG27	
<i>COST (In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DG27 Future Command and Control Vehicl	9382	0	0	0	0	0	0	19610	85000	217136
<p>A. <u>Mission Description and Budget Item Justification:</u> The Command and Control Vehicle (C2V) is a highly mobile, survivable and responsive tracked platform designed for use by battalion through corps battle staffs in heavy force operations. The C2V provides a reconfigurable (tailorable) command and control capability able to host both current and future command, control, communications, computer and intelligence (C4I) systems. The C2V supports the Army's Force XXI/Digitization efforts and will be compatible with Army Tactical Command and Control Systems. The C2V began as a Desert Storm initiative in response to shortcomings in the current M577 Command Post Vehicle.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 2004 Contractor Test Support; Perform Refurbishment/Rework of Test Vehicles • 2441 Continue Vulnerability/Survivability/Live Fire Testing • 2320 Complete Production Verification Testing • 200 Project Management • 537 Mission Module Support/Refurbishment/Rework • 1880 Test Program Set (TPS) Development <p>Total 9382</p> <p>FY 1999 Planned Program: Project not funded in FY 1999</p> <p>FY 2000 Planned Program: Project not funded in FY 2000</p> <p>FY 2001 Planned Program: Project not funded in FY 2001</p>										
Project DG27			<i>Page 1 of 2 Pages</i>				Exhibit R-2 (PE 0604640A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604640A Advanced Command and Control Vehicle	PROJECT DG27
---	--	-------------------------------

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	10532	0	0	0
Appropriated Value	10867			
Adjustments to Appropriated Value				
a. Congressional General Reductions	-335			
b. SBIR/STT	-248			
c. Omnibus or Other Above Threshold Reduction	-82			
d. Below Threshold Reprogramming	-820			
e. Rescissions				
Adjustments to Budget Years Since <u>FY 1999 PB</u>				
Current Budget Submit (FY 2000/2001 PB)	9382	0	0	0

C. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To Compl</u>	<u>Total Cost</u>
G84200 Command & Control Vehicle	29575	47992	57104	77895	75713	77349	62093	13565	Cont.	507821
GE0173 Spares (Initial) C2V	901	2475	2567	680	1477	1322			Cont.	9531

D. Acquisition Strategy: C2V was approved for type classification and Low Rate Initial Production (LRIP) in fourth quarter FY 1996. The Army will procure 102 C2V vehicles. Follow-on Sole-Source/Firm Fixed Price & Cost Plus Incentive Fee contracts and Fixed Price with Options contracts are in place for C2V Low Rate Initial Production (LRIP). C2V LRIP is focused on testing and production planning to meet Initial Operational Test and Evaluation (IOTE) and First Unit Equipped (FUE) in FY 2000.

E. Schedule Profile	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2004</u>	<u>FY 2005</u>
Award LRIP Contracts	4Q*									
Complete Developmental/Technical Tests	4Q*									
Support to Task Force XXI	4Q*									
Complete Production Verification Test			3Q							
Complete Live Fire Test.				1Q						
Complete Live Fire Test Report				1Q						

* Milestone Completed.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604641A Tactical Unmanned Ground Vehicle				PROJECT DE47		
COST (In Thousands)	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
DE47 Tactical Unmanned Ground Vehicle (TUGV)	2397	2452	0	0	0	0	0	0	0	0
<p>A. Mission Description and Budget Item Justification: The Army is the lead for this joint service program. The development of a Tactical Unmanned Ground Vehicle (TUGV) provides commanders the ability to see the battlespace while at the same time reducing soldiers' exposure during dangerous reconnaissance, surveillance, target acquisition (RSTA) and Nuclear Biological and Chemical (NBC) detection missions. Performs as a force multiplier, eliminates trickle-down combat information, reduces the "fog-of-war" and fills the brigade intelligence gap. Most importantly, the TUGV will remove brigade and battalion commanders from the bottom of the combat intelligence food chain. Unmanned systems, operating out front, provide a force multiplication capability where TUGVs report the nature of the terrain, find the enemy, locate obstacles, acquire targets, detect chemical vapors, and provide this information directly to those who need it the most –the battalion commander's battle staff. There will be two versions of the TUGV. A medium version, Tactical Unmanned Vehicle-Medium (TUV-M), will be developed for emerging requirements such as those from the U.S. Army Armor Center and United States Marine Corps Light Strike Vehicle. Tactical Unmanned Vehicle-Light (TUV-L) will be a man-packable unit for intelligence collection and dissemination, and conducting remote/area/building reconnaissance. The platform will include a minimum day/night audio/video, and accept a family of modular multi-sensor capabilities such as through-wall and countersniper sensors. Data will be produced in a format compatible with higher level communications architecture. This PE supports the critical transition of Defense Advanced Research Project Agency (DARPA) developed technologies to the Project Manager (PM) Unmanned Ground Vehicles/Systems so that they can be assessed (maturity, supportability, operationally) during user appraisals and, packaged and readied for incorporation into the TUV Engineering and Manufacturing Development (EMD) performance specifications.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 344 Completed transfer of mature technologies from DARPA Demo II Program • 1523 24 upgrades along with additional improvements were made to the SARGE systems. • 330 Modeling and Simulation • 200 Completed User Appraisals with the 2-69 Armor Battalion scout platoon <p>Total 2397</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 868 Concept Exploration/Design – TUV – Light/Participate MOUT ACTD • 659 Modeling and simulation (e.g. High Fidelity/Multiple Level of Detail Terrain Database Dev., APEX Simulator, Target & Background Signature Database) • 200 Assess Demo III technology for insertion into specification • 660 Datalink Testing (e.g. Characterize Performance of 4 GHz SARGE Video Link, Antenna Pattern Testing, Electromagnetic Environmental Effects Program) • 65 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 2452</p>										
Project DE47			Page 1 of 4 Pages				Exhibit R-2 (PE 0604641A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604641A Tactical Unmanned Ground Vehicle	PROJECT DE47
---	--	-------------------------------

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	2604	2465	2428	2380
Appropriated Value	2687	2468		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-83	-16		
b. SBIR / STTR	-66			
c. Omnibus or Other Above Threshold Reductions	-22			
d. Below Threshold Reprogramming	-119			
e. Rescissions				
Adjustments to Budget Years Since FY 1999 PB			-2428	-2380
Current Budget Submit (FY 2000/ 2001 PB)	2397	2452	0	0

Change Summary Explanation: Funding - FY00 and FY01: Funds realigned to higher priority requirements.

C. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To Compl</u>	<u>Total Cost</u>
OSD funding in PE 0604709D8Z				2929						
OPA III, M8040, Mini-Flail Robotics				3622	4660					
OPA III,R8050, Kit, Std Teleoperating			3972							

D. Acquisition Strategy: The Joint Project Office is following a disciplined Evolutionary Acquisition strategy. This strategy requires Horizontal Technology Integration (HTI) of emerging sensors, lasers, and command and control data link technologies so that the first generation TUGV will enable soldiers to perform dangerous RSTA, biological and chemical detection, and targeting missions from remote and safer locations. This program differs from traditional acquisition programs by incorporating an in-house Program Definition and Risk Reduction phase. TUV-M prototype systems are being built during this phase using state-of-the-art sensors, controlling actuators, low bandwidth communications, mission planning, and off-road navigation technologies. The program utilizes a TUGV Integrating Integrated Product Team (IPT) approach. TUV-L concept exploration and design will be performed simultaneously, with a projected Milestone I decision in FY 2001.

E. Schedule Profile	<u>FY1996</u>	<u>FY1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
ACTD Participation				3-4Q						
Demonstration Alpha (Demo III)				4Q						
Demo III IPRs				3Q						
Demo III CDRs				3Q						
Participate in Demo III Communications IPT				1-4Q						
Datalink Testing				1-4Q						

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604641A Tactical Unmanned Ground Vehicle					PROJECT DE47		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TUV-L/ACTD	TBD	TBD		534	3Q						534	550
Subtotal Product Development:				534							534	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. USAIS Support ACTD	TBD	TBD		150	3Q						150	150
b. Gov Eng Support	MOA	RDEC	300	118	2Q						418	
c. Demo III Tech Assess	MOA	RDEC		200	2Q						200	
Subtotal Support Costs:			300	468							768	
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Terrain Database Dev	MOA	RDEC		190	2Q						190	
b. Signature Dev	MOA	RDEC		88	2Q						88	
c. Vehicle Model Dev	MOA	RDEC		75	2Q						75	
d. Target Database Dev	MOA	RDEC		60	2Q						60	
e. APEX Simulator	MOA	RDEC		130	2Q						130	
f. Electromagnetic Enviro Effects Prog	MOA	RTTC		30	2Q						30	
g. 4 GHz Video Link	TBD	SAIC		187	4Q						187	200
h. Antenna Pattern Testing	MOA	RTTC		140	2Q						140	
i. FO Bobbin Design/Test	MOA	RDEC		75	2Q						75	
j. FO Bobbin Turns Counter/Shroud Improv	MOA	RDEC		70	2Q						70	
k. FO ARTS Prog/Alt FO	CPFF	Morgan Research		90	1Q						90	100
l. FO ARTS Prog/Alt FO	MOA	RDEC		50	2Q						50	
Subtotal Test and Evaluation				1185							1185	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604641A Tactical Unmanned Ground Vehicle	PROJECT DE47
--	---	------------------------

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Prog Mgmt/Eng	MOA	RDEC/CAD	265	265	2Q						530	
Subtotal Management Services:			265	265							530	

Project Total Cost:			565	2452							3017	
---------------------	--	--	-----	------	--	--	--	--	--	--	------	--

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604642A Light Tactical Wheeled Vehicle
---	--

COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
Total Program Element (PE) Cost	0	0	7498	9954	985	0	0	0	18437	18437
DE40 High Mobility Multi-Purpose Wheeled Vehicl (HMMWV) Prototype	0	0	4538	7490	985	0	0	0	13013	13013
DE46 HMMWV Recapitilization Program	0	0	2960	2464	0	0	0	0	5424	5424

A. Mission Description and Budget Item Justification: This Program Element supports all Light Tactical Wheeled Vehicles such as the High Mobility Multi-Purpose Wheeled Vehicle (HMMWV), HMMWV Recapitilization Program and the Armored Security Vehicle (ASV). In FY 2000 through FY 2002, Project DE40 funds the RDT&E effort leading to the HMMWV Modernization Program through technology integration into the HMMWV. Project DE46 funds the RDT&E effort for the HMMWV Recapitalization Program, which will provide operational and safety improvements to the current fleet of vehicles by component refurbishment, replacement and enhanced performance characteristics.

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	0	0	0	0
Appropriated Value	0	0		
Adjustments to Appropriated Value				
a. Congressional General Reductions				
b. SBIR / STT				
c. Omnibus or Other Above Threshold Reductions				
d. Below Threshold Reprogramming				
e. Rescissions				
Adjustments to Budget Years Since FY 1999 PB			+7498	+9954
Current Budget Submit (FY 1999 / 2000 PB)	0	0	7498	9954

Change Summary Explanation: Funding added in FY 2000/2001 to support the HMMWV modernization effort and the HMMWV Recapitalization Program.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999			
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604642A Light Tactical Wheeled Vehicle					PROJECT DE40		
COST (In Thousands)		FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DE40 High Mobility Multi-Purpose Wheeled Vehicl (HMMWV) Prototype		0	0	4538	7490	985	0	0	0	13013	13013
<p>A. <u>Mission Description and Budget Item Justification:</u> The HMMWV is a light weight, high performance, four-wheel drive, air transportable and air droppable, high mobility tactical wheeled vehicle. The HMMWV consists of a single chassis that can be adapted to any one of four models at Direct Support (DS) or General Support (GS) level. The four models include Cargo/Utility, Armor, Ambulance and Shelter Carrier. FY 2000 through FY 2002 funds the HMMWV modernization effort. This effort will modernize the vehicles through technology integration into the HMMWV. Examples include: data bus integration, flat panel display, night vision system, adaptive suspension, four wheel steering, exhaust brake, increased wheel travel, central tire inflation, new engine and transmission for better fuel economy, four door enclosure instead of canvas, noise insulation, integrated seat belt system, adjustable caster camber, improved ball joints, improved idler arm, corrosion improvements, extended fou door cargo body and Anti-Lock Brake System (ABS). This modernization will incorporate, where appropriate, commercial light truck technology now being evaluated in National Automotive Center (NAC) programs. New commercial technology combined with greater achievement of user requirements will result in a block-improved HMMWV which will allow for future growth of a combat platform to meet Joint Vision XXI requirements. Developmental testing in FY 2001 will be required. Testing will include Reliability and Maintainability (RAM), Environmental, Transportability and Ballistic testing. This RDT&E effort will lead to open competition based on a performance specification for improved HMMWV.</p> <p>FY 1998 Accomplishments: Project not funded in FY 1998</p> <p>FY 1999 Planned Program: Project not funded in FY 1999</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 3738 HMMWV Modernization Contract(s) • 300 Support Costs (Engineering/Quality/Matrix) • 500 Assemble and test up to five prototype vehicles <p>Total 4538</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 5090 HMMWV Modernization Contract(s) • 2100 Assemble and test up to nineteen prototype vehicles • 300 Support Costs (Engineering/Quality/Matrix Support) <p>Total 7490</p>											
Project DE40				Page 2 of 7 Pages				Exhibit R-2A (PE 0604642A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604642A Light Tactical Wheeled Vehicle	PROJECT DE40
--	---	------------------------

B. <u>Other Program Funding Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
OPA1 Hi Mob Multi-Purp Whld Veh (HMMWV) D15400	126216	66683	92092	119801	111304	111254	135078	135834	Cont	Cont
OPA4 Initial Spares – TSV DS1030		89	72						161	161

C. Acquisition Strategy: The acquisition strategy for the HMMWV modernization is to award up to four (4) prototype contracts leading to a single down select fo production award.

D. <u>Schedule Profile</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2004</u>	<u>FY 2005</u>
Award HMMWV Modernization Contract				2Q00	1Q					
Developmental Test & Evaluation					2Q01					
IPR Decision					3Q01					
Award Production Contract						1Q02				

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604642A Light Tactical Wheeled Vehicle	PROJECT DE40
--	---	------------------------

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Modernization Contract	C/CPIF	TBD				4238	2Q00	5090	1Q01	835	10163	10163
b. In-House Support (TACOM)	N/A	Warren, M				300	1Q00	300	1Q01	150	750	750
Subtotal Product Development:						4538		5390		985	10913	10913

Remark: Modernization Contract includes cost of a Technical Data Package (TDP) upon completion of the R&D Phase.

II. Support Costs: Not applicable

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Developmental Testing	N/A	APG, MD						2100	2Q01		2100	2100
Subtotal Test and Evaluation								2100			2100	2100

Remark: Testing will include RAM, Environmental, Transportability, Automotive, and Ballistic testing.

IV. Management Services: Not applicable

Project Total Cost:						4538		7490		985	13013	13013
---------------------	--	--	--	--	--	------	--	------	--	-----	-------	-------

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604642A Light Tactical Wheeled Vehicle					PROJECT DE46	
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DE46 HMMWV Recapitalization Program	0	0	2960	2464	0	0	0	0	5424	5424
<p>A. Mission Description and Budget Item Justification: The HMMWV Recapitalization Program is a remanufacture program for the over age HMMWVs. These HMMWVs with high mileage, unaffordable O&S costs, excessive wear, or corrosion which are in need of replacement/remanufacture, include the Cargo/Utility, Armor, Ambulance and Shelter Carrier. The HMMWV Recapitalization Program will provide operational and safety improvements to the current fleet of vehicles and will correct imbalances in required vs on hand quantities in shelter carriers and cargo/utility vehicles. The remanufactured HMMWVs will include enhanced performance characteristics. This will be achieved by a combination of component refurbishment and replacement. Components, which have been improved during the evolution of the HMMWV and the COMBATT demonstration of commercial technology, will be incorporated in the remanufactured vehicles where technically and economically feasible. The objective of the HMMWV Recapitalization Program is to extend the useful service life of the vehicles. In FY 2005, 60% of the HMMWV fleet will be over age. Recapitalization will integrate requirements for Joint Vision XXI onto a refurbished vehicle. Technical insertion opportunities will be developed targeted on reducing overall O&S costs and improving performance. Examples are corrosion protection, digitization requirements, data bus integration and other O&S cost drivers.</p> <p>FY 1998 Accomplishments: Project not funded in FY 1998</p> <p>FY 1999 Planned Program: Project not funded in FY 1999</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 2200 Prototype Contract(s) • 175 Test and Evaluation • 360 Support Costs (Engineering/Quality/Matrix) • 225 Remanufacture and test up to nine prototype vehicles <p>Total 2960</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 2109 Prototype Contract(s) • 225 Remanufacture and test up to nine prototype vehicles • 130 Support Costs (Engineering/Quality/Matrix) <p>Total 2464</p>										
Project DE46			Page 5 of 7 Pages				Exhibit R-2A (PE 0604642A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604642A Light Tactical Wheeled Vehicle	PROJECT DE46
--	---	------------------------

B. <u>Other Program Funding Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
HMMWV Recapitalization Program (DV0230)				6647	25859	46185	45345	143753	Cont	Cont

C. Acquisition Strategy: The HMMWV Recapitalization program acquisition strategy consists of three parts leading to award of a competitive contract for Prototype and Test (PAT) and including a priced option for production. Part one leverages the value of the current fleet by assessing its condition, developing rates and schedules, and completing risk assessments. Part two gains input from industry by using a Government-prepared Statement of Objectives (SOO) to solicit contractor-prepared Scopes of Work (SOW) and proposals. Proposals will include data for both the PAT effort and the production option, and will be evaluated using best value source selection procedures. This phase will use Cost as An Independent Variable (CAIV) principals to establish cost thresholds. Based on source selection results, award of up to three contracts will be made. Upon award, each contractor will be provided six candidate HMMWVs to build recapitalized prototype vehicles. Part three consists of evaluating test results to ascertain the vehicles ability to meet program performance objectives. Following evaluation of test results, the Government will exercise the appropriate option to enter into production with the winning vehicle. The production option will be a five-year requirements type contract.

D. <u>Schedule Profile</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2004</u>	<u>FY 2005</u>
Award Prototype Contract				1Q00	1Q01					
Developmental Test & Evaluation				4Q00						
Production Contract Awar					3Q01					

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604642A Light Tactical Wheeled Vehicle	PROJECT DE46
--	---	------------------------

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Prototype Contract	C/CPIF	TBD				2200	1Q00	2184	1Q01		4384	4384
b. In-House Support	N/A	Warren, M				360	1Q00	130	1Q01		490	490
Subtotal Product Development:						2560		2314			4874	4874

Remark: Prototype contract includes cost of Technical Data Package (TDP) upon completion of the R&D Phase.

II. Support Costs: Not applicable

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Test & Evaluation	N/A	APG, MD				400	4Q00	150	1Q01		550	550
Subtotal Test and Evaluation						400		150			550	550

IV. Management Services: Not applicable

Project Total Cost:						2960		2464			5424	5424
---------------------	--	--	--	--	--	------	--	------	--	--	------	------

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604645A Armored Systems Modernization (ASM) - Engineering Development
---	---

COST (<i>In Thousands</i>)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
Total Program Element (PE) Cost	0	4470	2899	6064	52560	120989	134217	184331	Continuing	Continuing
D022 Future Scout Vehicle (FSV) - Engineering Development	0	0	0	3850	52560	120989	118692	159315	Continuing	Continuing
D175 Multi-Option Fuze Advanced Field Artillery System	0	4470	2899	2214	0	0	0	0	0	48281
D426 Advanced Colt System	0	0	0	0	0	0	15525	25016	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program element supports the Engineering and Manufacturing Development efforts for the Multi-Option Fuze for Artillery (MOFA) and the Future Scout and Cavalry System (FSCS), formerly known as Future Scout System (FSV) MOFA will provide proximity, time, delay, and point detonation functions for 105mm and 155mm bursting projectiles. The FSCS will replace the current ground scout systems in the scout platoon, company/troop, battalion/squadron, brigade/regimental units.

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (<u>FY 1999 PB</u>)	0	4500	3000	6300
Appropriated Value		4500		
Adjustments to Appropriated Value				
a. Congressional General Reductions		-30		
b. SBIR/STT				
c. Omnibus or Other Above Threshold Reductions				
d. Below Threshold Reprogramming				
e. Rescissions				
Adjustments to Budget Years Since <u>FY 1999 PB</u>			-101	-236
Current Budget Submit (<u>FY 2000 / 2001 PB</u>)	0	4470	2899	6064

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604645A Armored Systems Modernization (ASM) - Engineering Development					PROJECT D022	
<i>COST (In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D022 Future Scout Vehicle (FSV) - Engineering Development	0	0	0	3850	52560	120989	118692	159315	Continuing	Continuing
<p>A. <u>Mission Description and Budget Item Justification:</u> Project D022, Future Scout and Cavalry System, funds the Engineering and Manufacturing Development phase of the Future Scout and Cavalry System (FSCS). The FSCS will replace the current ground scout systems in the platoon, company/troop, battalion/squadron, brigade/regiment and division/regiment levels. This project transitions the FSCS from the science and technology base, where it is funded as an advanced technology demonstration (ATD) in PE 0603005A, Project D440. The EMD phase will start in FY 02. The FY 01 funding will complete establishment of the program management office (PMO) within the Program Executive Officer, Ground Combat and Support Systems (PEO, GCSS). In FY 01, the PMO will make preparations for the pending milestone I/II decision review and prepare and release the request for proposal for the EMD phase. FY 01 funding will also ensure continuity of effort in the programs risk reduction initiatives/efforts.</p> <p>FY 1998 Accomplishments: Project not funded in FY 1998</p> <p>FY 1999 Planned Program: Project not funded in FY 1999</p> <p>FY 2000 Planned Program: Project not funded in FY 2000</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 2640 In-house Support • 650 Other Government Agency Support • 560 Management Support <p>Total 3850</p>										
B. <u>Other Program Funding Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To Compl</u>	<u>Total Cost</u>
PE 603645A, D018- Future Scout Vehicle (FSV) Advanced Development	1130								0	1130
PE 603005A, D440-Advanced Combat Vehicle Technology	5942	24283	55470	65487	26843				0	157309
Project D022		Page 2 of 9 Pages					Exhibit R-2A (PE 0604645A)			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604645A Armored Systems Modernization (ASM) - Engineering Development	PROJECT D022
--	--	------------------------

C. Acquisition Strategy: Plans call for the competitive award of one 52 month contract to a US/UK consortium selected from the two US/UK consortia who participated in the ATD phase. A 50/50 cost sharing of all common development costs will be maintained in the EMD phase. EMD phase will encompass preparation for the Milestone Stone reviews, preparation and release of the EMD Request For Proposal, award of the EMD contract, and early user and technical testing of EMD prototypes.

D. Schedule Profile	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Harmonization efforts & preparation for MS I/II					4Q				
Harmonize CORD & Release EMD RFP					4Q				
Program MS I / II						4Q			
Award EMD contract						4Q			
EMD Contract CDR (projected)							4Q		
Begin Early User & technical testing of EMD prototypes								4Q	
Complete Early User testing of prototypes									1Q
LRIP									4Q

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604645A Armored Systems Modernization (ASM) - Engineering Development	PROJECT D022
---	---	-------------------------------

I. Product Development: Not applicable

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PMO Support		PEO-GCSS						2640		Cont.	2640	
b. Matrix Support		USATACOM						560		Cont.	560	
c. OGAs		Various OGAs						650		Cont.	650	
Subtotal Support Costs:								3850			3850	

III. Test and Evaluation: Not applicable

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Mgmt Sup Contract										Cont.		
Subtotal Management Services:										Cont.		

Project Total Cost:								3850			3850	
---------------------	--	--	--	--	--	--	--	------	--	--	------	--

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604645A Armored Systems Modernization (ASM) - Engineering Development	PROJECT D175
---	---	-------------------------------

COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D175 Multi-Option Fuze Advanced Field Artillery System	0	4470	2899	2214	0	0	0	0	0	48281

A. Mission Description and Justification This project finances the Engineering and Manufacturing Development phase of the Multi Option Fuze Artillery (MOFA). MOFA will provide proximity, delay, time and point detonation functions for 105mm and 155mm bursting projectiles. MOFA will be inductively set. This induction set feature is critical to the automated ammunition handling capability of the Crusader 155mm self-propelled howitzer, allowing Crusader to meet rate of fire (10 rounds/min) requirements. The Portable Inductive Artillery Fuze Setter (PIAFS) is being developed to allow non-Crusader equipped artillery units to inductively set the MOFA. A Low Cost Advanced Target Sensor (LCATS) is being developed for enhanced electronic countermeasures effects.

FY 1998 Accomplishments: Project not funded in FY 1998

FY 1999 Planned Program:

- 1116 Design enhancements and qualification builds, XM782 (Contract Task VI), this includes the cost for 500 XM782 fuzes for testing
 - 750 Low Cost Advanced Target Sensor (LCATS) development
 - 1240 Portable Inductive Artillery Fuze Setter (PIAFS) advanced development and testing
 - 300 Program management and management engineering services
 - 945 Conduct XM782 MOFA Pre-Production Qualification Testing (PPQT)
 - 119 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 4470

FY 2000 Planned Program:

- 721 Low Cost Advanced Target Sensor (LCATS) development and technology insertion
 - 241 Program management & management engineering
 - 757 Complete Portable Inductive Artillery Fuze Setter (PIAFS) development effort
 - 1180 Complete PIAFS testing and initiate LCATS testing
- Total 2899

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE February 1999
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604645A Armored Systems Modernization (ASM) - Engineering Development	PROJECT D175

FY 2001 Planned Program:

- 872 Low Cost Advanced Target Sensor (LCATS) development and technology insertion
 - 242 Program management and management engineering
 - 1100 Complete LCATS testing
- Total 2214

B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To Comp</u>	<u>Total Cost</u>
Procurement, Ammo, Army, ER 8017		1510	14061	45917	53257	53921	54032	56430	Cont	Cont
OPA-2, Army, AD3260			4137						0	4137
RDTE, BA4, Army, PE 0603854, D505	298012	311257	282937	120457	4	6			0	1241461
RDTE, BA5, Army, PE 0604854, D503			60577	315253	411143	258066	295415	23988	0	1364442
Procurement, WTCV, Army, G83500					41607	95543	382601	628003	9437130	10584884
Procurement, WTCV, Army, G83600					32967	80240	314331	499726	7633500	8560764

C. Acquisition Strategy: Intent is to award a sole source FFP contract to the RDTE developer for the XM782 MOFA for FY 1999 and FY 2000 buys. The FY 2001 buy will be awarded on a competitive basis. We anticipate that the Low Cost Advanced Target Sensor (LCATS) will be incorporated into the XM782 design during the FY 2001 buy. Beginning with the FY2002 buy a Multi-year contract will be awarded on a competitive basis. A competitive award will be made on the Portable Inductive Artillery Fuze Setter (PIAFS) using a FFP contract in FY 2000.

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
XM782 MOFA								
TC testing		2Q						
MS III XM782		4Q						
EMD Contract Complete		2Q						
Portable Inductive Artillery Fuze Setter (PIAFS)								
Initiated PIAFS Program	4Q*							
PIAFS in-house Development Complete		2Q						
PIAFS Contract Award		2Q						
PIAFS TC testing			2Q					
PIAFS MS III			3Q					

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)							DATE February 1999	
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604645A Armored Systems Modernization (ASM) - Engineering Development			PROJECT D175	
D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Low Cost Advanced Target Sensor (LCATS)								
LCATS EMD Contract Award	4Q*							
LCATS Task VII Award		2Q						
LCATS Task VII Complete			3Q					
LCATS Insertion to Technical Data Package				1Q				
*Milestone Completed								
Project D175			<i>Page 7 of 9 Pages</i>			Exhibit R-2A (PE 0604645A)		

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604645A Armored Systems Modernization (ASM) - Engineering Development						PROJECT D175		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Primary Hardware Development	C-C	Alliant Techsystems Hopkins, MN	21197	800	Apr-99	400	Oct-99	500	Oct-00	0	22897	20739
b. Producibility Spt.	SS-CPFF	Raytheon/TI Joint Ventures, Tewksbury, MA	1788							0	1788	
c. PIAFS Development Contract	CPIF	TBD		420	May-99					0	420	
d. Engineering development		TACOM, ARDEC, Picatinny, NJ; Adelphi, MD	9232	1603	Oct-98	1078	Oct-99	372	Oct-00	0	12285	
e. Low Cost Advanced Target Sensor Contracts	SS-FFP	ICS, CA University of Florida, FL	385	50	Feb-99					0	435	
Subtotal Product Development:			32602	2873		1478		872			37825	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Documentation Spt.	C-FFP	PRC, NJ; ARDEC, Picatinny, NJ		95	Oct-98	26	Oct-99	27	Oct-00	0	148	
Subtotal Support Costs:				95		26		27			148	
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program testing		TECOM, Yuma, AZ; APG; ARL, MD; ARDEC, NJ; HAFB	2556	1083	Oct-98	1180	Oct-99	1100	Mar-01	0	5919	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604645A Armored Systems Modernization (ASM) - Engineering Development					PROJECT D175		
Subtotal Test and Evaluation				2556	1083		1180		1100		5919	
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Management and Management oversight		TACOM, ARDEC, Picatinny, NJ; Adelphi, MD	3540	300	Oct-98	215	Oct-99	215	Oct-00	0	4270	
b. SBIR/STTR				119							119	
Subtotal Management Services:			3540	419		215		215			4389	
Project Total Cost:			38698	4470		2899		2214			48281	

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604649A Engineer Mobility Equipment Development
---	---

COST <i>(In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
Total Program Element (PE) Cost	52388	70590	58321	37741	18499	0	0	0	0	353385
DG15 DG15	387	1482	0	0	0	0	0	0	0	3088
DG25 M1 Breache	40730	58027	58158	37741	18499	0	0	0	0	251392
DG26 Heavy Assault Bridg	11271	11081	163	0	0	0	0	0	0	98905

A. Mission Description and Budget Item Justification: This Program Element (PE) supports the development of new, advanced combat engineer systems that will have mobility characteristics comparable to the maneuver forces supported. The programs included in this PE are the Grizzly (M1 Breacher) and the Wolverine (Heavy Assault Bridge). The Grizzly base vehicle is an M1 Abrams Tank chassis whereas the Wolverine base vehicle is the M1A2 SEP Abrams Tank chassis. The Grizzly will integrate a versatile/survivable full-width mine clearing blade with automatic depth control, a power driven arm, and an armored commander's control station on the chassis. The Wolverine will integrate a bridge capable of supporting Military Load Class (MLC) 70 loads crossing a 24 meter gap (26 meter bridge) and a software controlled launching mechanism.

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (<u>FY 1999 PB</u>)	50585	63069	58914	39210
Appropriated Value	52196	71069		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-1611	-479		
b. SBIR / STT	-1270			
c. Omnibus or Other Above Threshold Reductions	-421			
d. Below Threshold Reprogramming	3494			
e. Rescissions				
Adjustments to Budget Years Since <u>FY 1999 PB</u>			-593	-1469
Current Budget Submit (<u>FY 2000 / 2001 PB</u>)	52388	70590	58321	37741

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604649A Engineer Mobility Equipment Development					PROJECT DG25	
<i>COST (In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DG25 M1 Breache	40730	58027	58158	37741	18499	0	0	0	0	251392
<p>A. <u>Mission Description and Justification:</u> The Grizzly (M1 Breacher) will provide the Combat Engineer with significantly improved mission effectiveness and crew/vehicle survivability while clearing minefields and removing complex natural and man-made obstacles at the forward edge of the battlefield. The Grizzly will be capable of moving with, and be as survivable as, the force it is supporting. The system provides a critical resource for executing in stride breaches, supporting the Force XXI maneuver commander's goals of information and maneuver dominance on the battlefield. The current method of breaching obstacles is to coordinate the employment of line charges, bridges, plows, rollers and even soldiers on the ground in a very dangerous and complex mission. The Grizzly replaces all of this with a single, survivable breach platform that gives the Combat Engineer a capability that does not currently exist in today's complex obstacle breaching operations, and will facilitate successful execution of ground combat mission requirements by maneuver forces. Funding in this phase supports vehicle system technical evolution to meet operational requirements prior to production, production planning, and government testing prior to a Milestone III decision. Additionally, funding supports the development of Training Aids, Devices, Simulators, and Simulations (TADSS). The Grizzly TADSS are the tools for life-cycle training of Grizzly operators, maintainers, and leaders. The Grizzly TADSS will support individual, collective and combined arms training at the institutional level and unit level. The computer-based TADSS will optimize training effectiveness at reduced institutional and unit OPTEMPO costs.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 32491 Completed EMD Vehicle Design, Conduct Critical Design Review (CDR), and Begin Rebuild of Two Prototype Vehicles • 5413 Performed Component Testing and Simulation and Accomplish Program Logistics Requirements • 2826 Provided Program Management to include Contract Administration, Sub-Contracts Administration, Program Analysis, and Earned Value Management (EVMS) <p>Total 40730</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 32901 Continue Refinement of Design to Support Vehicle Production Configuration and Complete Prototype Vehicles Rebuild • 662 Procure System Support Package • 17352 Perform Component Testing and Simulation, Production Planning, and Accomplish Program Logistics Requirements • 3169 Provide Program Management • 2454 Perform Design of TADSS • 1489 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs 										
Project DG25			Page 2 of 10 Pages				Exhibit R-2A (PE 0604649A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604649A Engineer Mobility Equipment Development	PROJECT DG25
---	---	-------------------------------

Total	58027									
FY 2000 Planned Program:										
•	6395	Complete Production Qualification Test I and Limited User Test in Support of a Low Rate Initial Production (LRIP) Contract Decision								
•	23586	Perform Design Refinement, Production Planning, and Accomplish Program Logistics Requirements								
•	260	Procure System Support Package								
•	22288	Begin Build of 7 LRIP Vehicles to be Used for Test: 1 Live Fire, 4 Production Verification Test (PVT), and 2 Operational Test (OT) LRIP Vehicles								
•	3991	Provide Program Management								
•	1638	Continue Design of TADSS								
Total	58158									
FY 2001 Planned Program:										
•	6000	Production Qualification Test II								
•	23657	Continue Build of 7 LRIP Vehicles, Production Planning, Component Testing and Simulation, and Accomplishment of Program Logistics Requirements								
•	4400	Perform Live Fire Test and Evaluation (LFTE)								
•	1186	Provide Program Management								
•	2498	Complete Design of TADSS								
Total	37741									

B. <u>Other Program Funding Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To Compl</u>	<u>Total Cost</u>
PA, WTCV, GZ3200, Breacher MOD	0	0	19680	79395	81593	117475	148949	199361	Cont'd	Cont'd
PA, WTCV, G84000, Breacher Trng Dev	0	0	0	375	14770	1425	0	0	0	16570
PA, WTCV, GEO175, Breacher Spares	0	0	0	0	0	2488	4099	5213	Cont'd	Cont'd

C. Acquisition Strategy: Research and development efforts have leveraged the accomplishments of the Combat Mobility Vehicle Advanced Technology Transition Demonstrator (CMV-ATTD) contract. Design modifications were written into the Advanced Development contract for the powertrain and other chassis components/systems necessary to insure that the Grizzly meets the mission profile required by the Operational Requirements Document. Modeling and Simulation is an essential aspect of the program and is being used to avoid costs in all areas of the design and testing of this system. Through the production buy the vehicle will be sole

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604649A Engineer Mobility Equipment Development	PROJECT DG25
---	---	-------------------------------

sourced to United Defense Limited Partnership (UDLP), Ground Systems Division, York, PA. The contracts for training devices development and production will be awarded by STRICOM with maximum use of existing commercial off-the-shelf hardware and software.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
Complete Prototype Rebuild	4Q									
Award Contract for TADSS	4Q									
Begin Production Qualification Testing (PQT I)		4Q								
Complete PQT I		4Q								
Low Rate Initial Production (LRIP), Milestone IIIa Decision		4Q								
LRIP Contract Award: 7 LRIP Vehicles for Test		4Q								
Begin PQT II			4Q							
LRIP Contract Awar			4Q							
Conduct Logistics Demonstration/Verification			4Q							
Complete PQT II			4Q							
Begin Live Fire Test & Evaluation (LFTE)			4Q							
LRIP Contract Awar				4Q						
Perform Production Verification Test (PVT)				4Q						
Perform Operational Testing (OT)				4Q						
Complete LFTE				4Q						
Milestone III, Production Decision					4Q					
Production Contract Awar					4Q					
First Unit Equipped (FUE)						4Q				

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604649A Engineer Mobility Equipment Development					PROJECT DG25		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. EMD	SS-CPIF	United Defense, LP (UDLP) York, P	65164	47992	Oct 98	22693	Oct 99	4286	Oct 00		140135	140135
b. LRIP Vehicles for Test (7 Qty)	SS-CPFF	United Defense, LP (UDLP) York, P				22288	Jun 00	14368	Oct 00	5994	42650	42650
c. Armor	SS-CPFF	General Dynamics Land Systems (GDLS), Warren, M	3051					1310	Oct 00		4361	4361
d. Chassis Refurbishment	MIPR	Anniston Army Depot (ANAD), Anniston, AL	250					1909	Oct 00		2159	2159
e. Training Device Dev	MIPR	STRICOM, Orlando, FL		2454	May 99	1638	Oct 99	2498	Oct 00		6590	6590
f. Other Contracts	Various	Various	302	275	Dec 98	149	Various	159	Various	189	1074	1074
g. Chassis GFM	Requisition		1463	700							2163	2163
Subtotal Product Development:			70230	51421		46768		24530		6183	199132	199132
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Other Gov't Agencies	MIPR	TACOM, Warren, M Various	4288	3069	Oct 98	3227	Oct 99	1877	Oct 00	1489	13950	13950
SIBR/STTR				1489							1489	1489
Subtotal Support Costs:			4288	4558		3227		1877		1489	15439	15439

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604649A Engineer Mobility Equipment Development						PROJECT DG25		
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Soil Properties/Mine Blast	MIPR	Waterways Exp Station (WES), MS	396	146	Nov 99						542	542
b. PQT	MIPR	TECOM, APG, MD	471			6095	Dec 99				6566	6566
c. LUT	MIPR	Ft. Hood, Texas				300	Dec 99				300	300
d. Modeling & Simulation	MIPR	TARDEC, Warren, MI				244	Oct 99	570	Oct 00	199	1013	1013
e. System Support Package	Requisition	TECOM, APG, MD		662	Jan 99	260	Oct 99				922	922
e. PQT	MIPR	TECOM, APG, MD						6000	Oct 00		6000	6000
f. Live Fire Test & Evaluation (LFT&E)	MIPR	TECOM, APG, MD						4400	Dec 00	4000	8400	8400
g. Production Verification Testing										6550	6550	6550
Subtotal Test and Evaluation			867	808		6899		10970		10749	30293	30293
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PMO Support	NA	TACOM, Warren, M	2699	1140	Oct 98	1164	Oct 99	264	Oct 00	270	5537	5537
b. Contractor PM Support	CPIR	Camber, Sterling Hgts, MI	591	100	Oct 98	100	Oct 99	100	Oct 00	100	991	991
Subtotal Management Services:			3290	1240		1264		364		370	6528	6528
Project Total Cost:			78675	58027		58158		37741		18791	251392	251392

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604649A Engineer Mobility Equipment Development					PROJECT DG26	
<i>COST (In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DG26 Heavy Assault Bridg	11271	11081	163	0	0	0	0	0	0	98905
<p>A. <u>Mission Description and Justification:</u> The Wolverine will provide Military Load Class (MLC) 70 vehicles the capability to cross 24-meter gaps (26-meter bridge). The Wolverine will have mobility characteristics comparable to the maneuver forces it will support. The basis for the Wolverine is an M1A2 SEP Abrams Tank chassis. The launch time for the bridge will be five minutes or less; the retrieval time will be a total of ten minutes or less which includes five minutes to engage plus five minutes to place the vehicle in a travel mode. The Wolverine Training Aids, Devices, Simulators, and Simulations (TADSS) are the tools for life-cycle training of Wolverine operators, maintainers, and leaders. The Wolverine TADSS will support individual, collective, and combined arms training at the institution and unit level. The computer-based TADSS will optimize training effectiveness at reduced institutional and unit OPTEMPO costs.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 1262 Provided Contractor Support For Test • 4456 Continued Developmental Contract • 483 Program Management • 3728 Started Live Fire Test and Purchase System Support Package for Live Fire, combined DT/OT and IOT&E • 1342 Began TADSS Development Effort <p>Total 11271</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 1431 Contractor Support of Test • 2592 Developmental Contract and Refurbishment of Test Vehicles • 528 Program Management • 5365 Conclude Live Fire Test, Conduct Production Verification Test, and Support IOT&E • 884 Continue TADSS Development Effort • 281 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 11081</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 163 Complete TADSS Effort 										
Project DG26			<i>Page 7 of 10 Pages</i>				Exhibit R-2A (PE 0604649A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604649A Engineer Mobility Equipment Development	PROJECT DG26
---	---	-------------------------------

Total 163

B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Compl	Total Cost
PA, WTCV, GZ3250, HAB MOD	40372	50271	67312	84893	104494	114123	192788	200136	Cont'd	Cont'd
PA, WTCV, GE0177, HAB Spares	893	858	1343	1392	1752	2044	3547	3545	Cont'd	Cont'd
PA, WTCV, G84600 HAB Training Devices	0	385	14910	1239	1033	0	0	0	0	17537

C. Acquisition Strategy: Side-by-side Comparison Testing was completed in FY 1993 on three different prototype bridges and launchers for Phase I of Engineering and Manufacturing Development (EMD). As a result of the testing and submission of proposals, one contractor, General Dynamics Land Systems Division (GDLS), was selected to complete Phase II of EMD with a Cost-Plus-Award-Fee contract. A contract was awarded in FY 1996 for two Wolverine systems, with an option for four additional systems exercised in December 1996 that will complete combined developmental and operational testing. A Fixed Price contract was awarded in April 98 for LRIP and initial fielding requirements. STRICOM is the executive agent for TADSS and will award contracts in for the development and production of TADSS hardware.

D. Schedule Profile	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>
Begin Combined DT/OT	4Q									
Complete Live Fire/Vulnerability Test	4Q									
Complete Combined DT/OT		4Q								
Production Readiness Review		4Q								
TADSS Development		4Q								
Milestone III		4Q								
FUE		4Q								

Project DG26 Page 8 of 10 Pages Exhibit R-2A (PE 0604649A)

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE
February 1999

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604649A Engineer Mobility Equipment Development

PROJECT
DG26

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. EMD	C-CPAF	Gen Dyn Land Sys Sterling Hgts, M	32766								32766	32766
b. Contract Engineering	SS-CPFF	Gen Dyn Land Sys Sterling Hgts, M	18066	2592	NOV 98						20658	20658
c. EMD	SS-FFP	SMS Corp St. Louis, MO	5798								5798	5798
d. Chassis Refurb	MIPR	ANAD, Anniston, AL	396								396	396
e. Training Device Dev	MIPR	STRICOM, Orlando, F	1909	884	MAY 99	163	OCT 99				2956	2956
f. Other Gov Agency Supt	MIPR	Various	1411								1411	1411
g. Gov Furnished Propert	Requisitions	Various	381								381	381
h. SBIR/STTR				281							281	281
Subtotal Product Development:			60727	3757		163					64647	64647

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Services Contracts	Various	Various	1008								1008	1008
Subtotal Support Costs:			1008								1008	1008

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Dev & Op Testing	MIPR	TECOM, APG, MD	7192	3016	JAN 99						10208	10208
b. Live Fire & Vul Testing	MIPR	ARL, MD	2230	1990	JAN 99						4220	4220
c. Nuclear Testing	MIPR	WSMR White Sands, NM	384	359	JAN 99						743	743

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)											DATE February 1999	
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604649A Engineer Mobility Equipment Development						PROJECT DG26		
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
d. Test Supt & System Support Package	SS-CPFF	Gen Dyn Land Sys Sterling Hgts, M	6257	1431	JAN 99						7688	7688
e. System Support Package	MIPR	ACALA, Rock Island, IL	516								516	516
Subtotal Test and Evaluation			16579	6796							23375	23375
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
b. PMO Support	NA	TACOM, Warren, M	7412	528	Oct 98						7940	7940
c. Award Fees		Gen Dyn Land Sys Sterling Hgts, M	1935								1935	1935
Subtotal Management Services:			9347	528							9875	9875
Project Total Cost:			87661	11081		163					98905	98905

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development
---	--

COST (<i>In Thousands</i>)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
Total Program Element (PE) Cost	33338	21167	30644	31270	32577	23440	18348	130844	Continuing	Continuing
DL69 Horizontal Technology Integration Second Generation FLIR (HTI SGF)	3555	0	11937	12023	13782	6691	0	113000	Continuing	Continuing
DL70 Night Vision Devices Engineering Development	11430	11256	13478	14418	16432	16749	18348	17844	Continuing	Continuing
DL74 Long Range Advanced Scout Surveillance System (LRAS3)	18353	9911	0	0	0	0	0	0	0	35386
DL75 Profiler	0	0	5229	4829	2363	0	0	0	5700	18121

A. Mission Description and Budget Item Justification: This program element provides night vision technologies required for U.S. defense forces to engage enemy forces twenty-four hours a day under conditions with degraded visibility due to darkness, adverse weather and battlefield obscurants. These developments and improvements to high performance night vision electro-optics, radar, laser, and thermal systems and integration of related multi-sensor suites will enable near to long range target acquisition identification and engagement to include significant fratricide reduction, which will improve battlefield command and control in “around the clock” combat operations. Project DL69 is focused on inserting key Horizontal Technology Integration Second Generation FLIR (HTI SGF) thermal sensor technology into common battle groups. Project DL70 focuses on night vision electro-optical, laser, and other target identification and location equipment for use by individual soldiers and a variety of platforms. In addition to the Lightweight Laser Designator Rangefinder (a Warfighter Rapid Acquisition Program) this project includes HTI laser evaluation and assessment, and integrates individual sensors into a common architecture. It also funds development and qualification of critical upgrades for Thermal Weapons Sight and Drivers Vision Enhancer production programs, and funds activities associated with image and sensor fusion capabilities. Project DL74 focuses on a long range multi-sensor system utilizing HTI SGF thermal sensor and other technologies, for use by US Army scouts at extended ranges beyond the Abrams and Bradle capabilities. The LRAS3 will provide the scouts with their first reconnaissance and surveillance system with a twenty-four hour, all weather capability which is mounted or man-portable. Project DL75 focuses on development of the Profiler upgrade to the AN/TQM-41 Meteorological Measuring Set by integrating radar and microwave satellite technology to provide “on demand” surface, trajectory, and target area weather conditions. This will increase the accuracy of deep fire weapons.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE
February 1999

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604710A Night Vision Systems - Engineering Development

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (<u>FY 1999</u> PB)	35052	21311	19022	18992
Appropriated Value	36256	21311		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-1204	-144		
b. SBIR / STT	-861			
c. Omnibus or Other Above Threshold Reductions	-193			
d. Below Threshold Reprogramming	-660			
e. Rescissions				
Adjustments to Budget Years Since <u>FY 1999</u> PB			11622	12278
Current Budget Submit (<u>FY 2000 / 2001</u> PB)	33338	21167	30644	31270

Change Summary Explanation: Funding - FY 2000/2001 increases due to initiation of aviation FLIR and Profiler development.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development				PROJECT DL69		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DL69 Horizontal Technology Integration Second Generation FLIR (HTI SGF)	3555	0	11937	12023	13782	6691	0	113000	Continuing	Continuing
<p>A. <u>Mission Description and Justification-</u> Horizontal Technology Integration Second Generation FLIR (HTI SGF) will enable the Army to insert key thermal senso technology into the highest priority forces [the M2A3/M3A3 Bradley Fighting Vehicle System (BFVS), the Long Range Advanced Scout Surveillance System (LRAS3), the M1A2 System Enhancement Package (SEP) Abrams, and the AH-64 Apache Helicopter.]. The HTI SGF will allow all vehicles in a common battle group to see the same thermal image. The HTI SGF development is in two parts, an "A" kit, which is specific to the vehicle, and includes integration and installation, and a "B" kit, which includes the common FLIR sensor and display. Funds in this project will develop the "B" kit for all weapon systems employing the HTI SGF.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 408 Supported M1A2 System Enhancement Package (SEP) Vehicle Testing • 682 Supported M2A3/M3A3 Vehicle Testing. • 531 Fabricated SGF "B" Kits for LRAS3 test units. • 1934 Finalized Ground SGF "B" Kit Interface Control Document/final specifications and conducted verification tests. <p>Total 3555</p> <p>FY 1999 Planned Program: Project not funded in FY 1999</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 960 Milestone I/II Approval for HTI Aviation Second Generation FLIR (SGF) • 10977 Initiate design and development of Aviation SGF <p>Total 11937</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 5042 Continue development of Aviation SGF • 6981 Initiate prototype manufacturing <p>Total 12023</p>										
Project DL69			Page 3 of 17 Pages				Exhibit R-2A (PE 0604710A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development	PROJECT DL69
---	--	-------------------------------

B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Compl	Total Cost
6.4 RDTE 0604710A, "A" Kit LRAS3 (DL74)	18353	9911	0	0	0	0	0	0	0	35386
6.7 RDTE 0203735A, "A" Kit Abrams (D330)	20444	0	0	0	0	0	0	0	0	58597
6.7 RDTE 0203735A, "A" Kit Bradley (D371)	70264	65479	1257	0	0	0	9508	9761	Continue	Continue
OPA2 K38300 LRAS3 "A" & "B" Kit	0	0	43223	47988	45584	50336	51741	53910	Continue	Continue
WTCV G80717 M2A3/M3A3 Bradley "A" Kit	96651	229640	286316	331521	345581	307491	352306	349581	Continue	Continue
WTCV G80717 M2A3/M3A3 Bradley "B" Kit	16072	39850	46917	68476	72109	57426	54680	57314	Continue	Continue
WTCV GA0750 Abrams Upgrade "A" and "B" Kit	84300	92168	65485	54736	52732	34034	7761	0	0	391216
WTCV GA0700 M1A2 SEP "A" & "B" Kit	0	0	0	16813	29233	41054	60229	69216	Continue	Continue
ACFT AA6607 Longbow Apache Mods	0	0	0	0	0	0	65603	86082	Continue	Continue

The 0203735A program element funds the development of the "A" Kit portion of the HTI SGF for the M1A2 SEP Abrams Tank and Bradley Fighting Vehicle System. WTCV funds the production tails for the Bradley and Abrams platforms. ACFT funds the production tail for the Apache FLIR upgrade program.

C. Acquisition Strategy: The common Second Generation FLIR "B" Kit is being developed and fabricated using a competitively awarded cost plus award fee contract.

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Initiate M2A3 and M3A3 Vehicle Tests	1Q							
Initiate M1A2 SEP Vehicle Test	3Q							
Award LRAS3 HTI "B" Kit	1Q							
Accept LRAS3 HTI "B" Kit	4Q							
IOT&E *		3Q-4Q						
M/S III **		4Q						
Milestone I/II for Aviation HTI SGF EMD Pgm			2Q					
Conduct EMD Program for Aviation HTI SGF			2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q		
IOT&E for Aviation HTI SGF EMD Program						3Q-4Q		
Milestone III for Aviation HTI SGF						4Q		

* All operational tests are funded by the host platforms.
 ** The HTI SGF program is currently in LRIP and is procurement funded through M/S III.

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development					PROJECT DL69		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Producibility Contracts	Various	Various	3876							0	3876	3876
b. EMD Contract	C/CPAF	Texas Instruments, McKinney, TX	62100							0	62100	62100
c. SADA II	C/FP	SBRC, Santa Barbara, CA	2116							0	2116	2116
d. T&M	SS/T&M	Hughes, El Segundo, CA	3556							0	3556	3556
e. LRAS3 "B" Kits	C/CPAF	Texas Instruments, McKinney, TX Hughes, El Segundo, CA	477							0	477	477
f. Trade Studies (3)	C/CP	Various	900							0	900	900
g. Aviation EMD Contract	C/CPAF	To Be Selected				10977	2Q	11056	1Q	Continue	Continue	Continue
Subtotal Product Development:			73025			10977		11056		Continue	Continue	Continue
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. ASARC Support	MIPR	CECOM NVESD, Ft. Belvoir, V	250							0	250	
b. Matrix Support	MIPR	CECOM NVESD	7958			672	1Q	677	1Q	Continue	Continue	
Subtotal Support Costs:			8208			672		677		Continue	Continue	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development	PROJECT DL69
---	--	-------------------------------

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. DT/OT	Various	To Be Selected										
Subtotal Test and Evaluation												

Remark: For the HTI SGF ground platforms, technical and qualification tests performed by the contractor and all Operational Tests were funded by the Host Platforms. Testing costs for the SGF Aviation program will commence in FY03 and are expected to be funded by OPTEC and host platform(s).

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Management		PM-NV/RSTA, Fort Belvoir, V	1790			288	1Q	290	1Q	Continue	Continue	
Subtotal Management Services:			1790			288		290		Continue	Continue	

Project Total Cost:			83023			11937		12023		Continue	Continue	
----------------------------	--	--	-------	--	--	-------	--	-------	--	----------	----------	--

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development				PROJECT DL70		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DL70 Night Vision Devices Engineering Development	11430	11256	13478	14418	16432	16749	18348	17844	Continuing	Continuing
<p>A. <u>Mission Description and Justification:</u> Night Vision Devices Engineering Development: This project develops and improves high performance night vision electro-optics, thermal and laser systems, and systems integration of related multi-sensor suites to enable near to long range target acquisition and engagement as well as improve battlefield command and control in “around-the-clock” combat operations. The Lightweight Laser Designator Rangefinder (LLDR) was approved as a Warfighting Rapid Acquisition Program (WRAP) initiative and entered a thirty month Engineering and Manufacturing Development Phase in FY 1997. LLDR is a day/night manportable modular target location and laser designator system. The target location system combines a state-of-the-art “See Spot” Forward Looking Infrared (FLIR), eyesafe laser rangefinder, compass and vertical angle measurement, and global positioning system (GPS) and required processing capability to export target location data through a digital interface. The modular laser designator will be able to target enemy assets for laser-guided ground and air-launched munitions. LLDR will provide the artillery light forces with the capability to detect, recognize, identify, determine location and either digitally pass this information on to coordinate indirect fire or designate the target for precision destruction by smart munitions. Improvements to the Thermal Weapon Sight (TWS) and the Driver’s Vision Enhancer (DVE) are developed under this project. TWS improvements are focused on the integration of target location and digital data transfer capabilities. DVE improvements focus on achieving a dual wavelength capability, leading to image fusion. Both TWS and DVE will benefit from MANTECH improvements to focal plane array and optics. The architecture for interoperability of sensors [Mini Eye-Safe Laser Infrared Observation Set (MELIOS), LLDR, Lightweight Video Reconnaissance System (LVRS), TWS, DVE, Long Range Advanced Scout Surveillance System (LRAS3), Synthetic Aperture Radar (SAR), Infrared Line Scanner (IRLS), Forward Looking Infrared (FLIR), visible imagers, hyperspectral cameras and Moving Target Indicator (MTI) radars] on the digital battlefield will be developed through an integrated sensor suite program. This will facilitate the merging of existing sensor data for digital distribution within the Joint Technical Architecture-Army. Sensor data distribution activities include the development and promulgation of a common device architecture, and a computer-based system which will test the flow of data from the sensor, through a variety of computing devices and then out over the communications network. The dual wavelength target acquisition capabilities will be developed, evaluated and inserted incrementally into ongoing production efforts. Efforts include Image Intensified photo cathode development in support of an eye-safe laser system, and evaluation of the suitability and technology supporting a common, HTI, laser system which could be used in a variety of ground and air platforms. Manufacturing technology activities in optics and focal plane arrays are also being supported. Targeting aid development will upgrade the AN/TQM-41 Meteorological Measuring Set by integrating radar and microwave satellite technology to provide “on demand” trajectory and target area weather conditions. This will increase the ability of artillery/rocket forces to project accurately lethal munitions further into the battlespace.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 3644 Continued development and integration of ten LLDR EMD models. • 1959 Conducted integration, test and evaluation of the sensor architecture to include data dissemination for multiple applications (USMC Target Location, Designation and Hand-off System (TLDHS), Bradley Fire Support Team (BFIST) and STRIKER). 										
Project DL70	Page 7 of 17 Pages					Exhibit R-2A (PE 0604710A)				

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE February 1999
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development	PROJECT DL70
<ul style="list-style-type: none"> 756 Developed and integrated HTI tactical laser, including laser illumination, into multispectral target acquisition capabilities. 		
FY 1998 Accomplishments: (continued)		
<ul style="list-style-type: none"> 965 Conducted Trade Studies to determine alternatives for the upgrade of the AN/TQM-41 (Meteorological Measuring Set). 		
<ul style="list-style-type: none"> 1303 Conducted thermal systems upgrade activities. 		
<ul style="list-style-type: none"> 2803 Procurement and integration of LLDR WRAP systems on to HMMWV Striker platforms (TRADOC managed). 		
Total 11430		
FY 1999 Planned Program:		
<ul style="list-style-type: none"> 3547 Complete development of ten EMD models for test/evaluation and conduct technical tests and user operational evaluation. 		
<ul style="list-style-type: none"> 2217 Conduct integration and technical tests of the sensor architecture on various platforms [USMC TLDHS, BFIST, STRIKER, Future Battlefield Command and Brigade and Below (FBCB2)] including Ft. Bragg demonstration. 		
<ul style="list-style-type: none"> 2487 Continue development and integration of prototype HTI tactical laser onto Army platforms with focus on performance specifications and interface requirements supporting modular laser design. 		
<ul style="list-style-type: none"> 1969 Conduct preliminary hardware evaluation and demonstration of Thermal Upgrade activities (TWS Target Location, DVE Dual Wavelength and MANTECH improvements covering both systems). 		
<ul style="list-style-type: none"> 750 Conduct evaluation of upgrade alternatives for the AN/TQM-41 (MMS) to include program/technical requirements definition. 		
<ul style="list-style-type: none"> 286 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs 		
Total 11256		
FY 2000 Planned Program:		
<ul style="list-style-type: none"> 1336 Complete LLDR EMD activities, reports and equipment refurbishment for transition of the program into production. 		
<ul style="list-style-type: none"> 5568 Fabricate prototypes and evaluate Thermal Upgrade activities (TWS Target Location, DVE Dual Wavelength and MANTECH improvements covering both systems). 		
<ul style="list-style-type: none"> 3700 Continue integration and technical tests of the sensor architecture for a variety of platforms, including efforts leading to participation in the Light Forces Army Warfighting Experiment (AWE). 		
<ul style="list-style-type: none"> 2874 Conduct modeling and simulation efforts in support of modular laser design; Initiate dismounted application for the HTI tactical laser (i.e. reduced cost, size, weight and power consumption). 		
Total 13478		
FY 2001 Planned Program:		
<ul style="list-style-type: none"> 2639 Continue Thermal Upgrade activities (prototype test and evaluation, eight items) to enhance combat effectiveness of TWS and DVE. 		
<ul style="list-style-type: none"> 3595 Continue integration and technical tests of the sensor architecture, including implementing results from the Light Forces AWE. 		
Project DL70	Page 8 of 17 Pages	Exhibit R-2A (PE 0604710A)

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development	PROJECT DL70
---	--	-------------------------------

- 3471 Continue dismounted HTI laser activity to reduce cost, size, weight and power consumption.
- FY 2001 Planned Program: (continued)**
- 4713 Initiate Image Fusion of Image Intensification and Thermal technologies to enhance the effectiveness of combat and combat served platforms.
- Total 14418

B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Compl	Total Cost
Night Vision AN/PVS-7 Aid K36400 OPA2	37351	37532	19017	26953	27977	27172	32096	42708	Continue	Continue
Infrared Aiming Light K35000	16398	5984	1960						0	24342
Lightweight Video Recon Sys K30800 OPA2	4757	8341	3436	1207	1345	1385	1364	2747	Continue	Continue
Night Vision TWS K22900 OPA2	40774	36110	35901	35603	35332	37154	36889	49233	Continue	Continue
Night Vision DVE K31300 OPA2	0	0	0	1957	1953	1951	24847	29010	Continue	Continue
Night Vision LLDR K31100 OPA2	0	0	6262	7145	7099	7280	9940	15402	Continue	Continue

A. Acquisition Strategy: The development programs in this project are currently all based on competitive awards and under cost reimbursement type contract. A dual source/approach will be pursued for the DVE image fusion effort scheduled for FY 2001.

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Complete HTI Laser Trade Studies	1Q							
HTI laser prototype design, modeling and simulation	4Q	1Q-4Q	1Q-3Q					
Develop Prototype Multifunction Tactical HTI Laser for Dismounted Application			2Q-4Q	1Q-4Q				
HTI Laser Demo on Dismounted Platfor				4Q	1Q			
HTI Laser Milestone I/II					2Q			
HTI Laser EMD Program for Dismounted Platform					2Q-4Q	1Q-4Q		
HTI Laser Development Test/Operational Test						4Q	1Q	
HTI Laser Milestone III							2Q	
LLDR Vehicle Integration effort conducted	2Q-4Q	1Q-4Q						
LLDR Technical Test		2Q						

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)							DATE February 1999	
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development			PROJECT DL70	
D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
LLDR User Operational Tests		3Q-4Q						
LLDR Milestone III			2Q					
Sensor Architecture Interoperabilit Implementation on individual platfor	2Q							
Sensor Architecture Interoperability Integration between multiple platforms	3Q-4Q							
Sensor Architecture platform demonstration and evaluation		2Q-4Q	1Q-3Q					
Sensor Architecture Validation/Test (LLDR)		3Q						
Sensor Architecture demonstration for Light Forces AWE			4Q					
Sensor Architecture integration based on AWE results				1Q-4Q				
AN/TQM-41 Upgrade Trade Studies	2Q-3Q							
AN/TQM-41 Upgrade Alternatives Evaluation and Requirements Definition		2Q-4Q						
Thermal Upgrade MANTECH for Focal Plane Array and optics		1Q-4Q	1Q-3Q					
Thermal Upgrade target location capabilit demonstration and evaluation for TWS		2Q-4Q	1Q-4Q	1Q				
Thermal Upgrade dual wavelength capabilit demonstration and evaluation for DVE		3Q-4Q	1Q-4Q	1Q				
Image Fusion Activities for DVE				1Q-4Q	1Q-4Q			
Image Fusion Activities for soldier carried systems					1Q-4Q	1Q-4Q		
Sensor Fusion Activities for Driving and Soldie carried systems						1Q-4Q	1Q-4Q	1Q-4Q

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development	PROJECT DL70
---	--	-------------------------------

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. DVE Development	C/CPIF	Various	19845	0		0		0		0	19845	19845
b. Various Prototypes and Studies	C/CPIF	Various	2947	0		0		0		0	2947	2947
c. LLDR Engineering Development	C/CP	Litton Laser, Apopka, FL	2556	0		0		0		0	2556	2556
d. LLDR WRAP	C/CP	Various	4253	0		0		0		0	4253	4253
e. LLDR EMD	C/CP	Litton Lasers, Apopka FL	10600	2787	1Q	880	1Q	0		0	14267	14030
f. Sensor Architecture and integration	C/CPIF & C/CP	Various	5492	1927	1Q-2Q	3395	1Q	2948	1Q	Continue	13762	Continue
g. HTI Laser Trade Studies (3)	C/CP	Various	1020	0		0		0		0	1020	1020
h. HTI Laser MFS3 design and prototype activities	C/CPIF	Raytheon, Dallas,TX	270	1650	1Q	0		0		0	1920	1920
i. Eyesafe Laser Upgrade	C/CP	To Be Selected	0	0		2647	2Q	3056	1Q	Continue	5703	Continue
j. AN/TQM-41 Trade Studies and related activities	C/CP	Various	600	750	1Q-2Q	0		0		0	1350	1350
k. MANTECH Focal Plane Array and optics	C/CP	To Be Selected	0	1000	1Q	500	1Q			0	1500	1500
l. Thermal Upgrades for TWS (target location)	OT	To Be Selected	0	570	2Q	2575	1Q	1312	1Q	0	4457	4457
m. Thermal Upgrades for DVE (Dual wavelength)	OT	To Be Selected		300	3Q	1780	1Q	850	1Q	0	2930	2930
n. Image Fusion for DVE	OT	To Be Selected	0	0		0		2500	2Q	Continue	2500	Continue
o. Image Fusion for DVE	OT	To Be Selected	0	0		0		2150	2Q	Continue	2150	Continue
p. SBIR/STTR	Various	To Be Selected		286	2Q						286	286
Subtotal Product Development:			47583	9270		11777		12816			81446	Continue

Remark: "OT" refers to National Defense Authorization Act, Section 845 Other Transaction Authorit

UNCLASSIFIED

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development					PROJECT DL70		
II. Support Costs												
	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Matrix Support	MIPR	Various	9718	581	1Q	753	1Q	786	1Q	Continue	11838	
Subtotal Support Costs:			9718	581		753		786			11838	
III. Test and Evaluation												
	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. DT/IOT&E	MIPR	OPTEC	6048	783	2Q	365	2Q	247	2Q	Continue	7443	
b. Other Test Support	MIPR	Various	2636	297	2Q	245	2Q	187	2Q	Continue	3365	
Subtotal Test and Evaluation			8684	1080		610		434			10808	
IV. Management Services												
	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Project Mgmt			3180	325	1Q	338	1Q	382	1Q	Continue	4225	
Subtotal Management Services:			3180	325		338		382			4225	
Project Total Cost:			69165	11256		13478		14418			108317	
Project DL70												

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development				PROJECT DL74		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DL74 Long Range Advanced Scout Surveillance System (LRAS3)	18353	9911	0	0	0	0	0	0	0	35386
<p>A. <u>Mission Description and Justification</u> Project DL74 - Long Range Advanced Scout Surveillance System (LRAS3): This project will develop the Long Range Advanced Scout Surveillance System (LRAS3), a long range multi-sensor system for US Army scouts which will provide the capability to detect, recognize, identify, range and determine the location of potential targets. Currently, US Army scouts do not have the necessary equipment to perform these functions “around the clock.” LRAS3 will utilize the Horizontal Technology Integration Second Generation FLIR (HTI SGF) thermal sensor and will enable scouts to function “around the clock” in adverse weather and penetrate battlefield obscurants.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 17445 Continued EMD contract Development, Fabrication (seven systems), integration and test of LRAS3. • 908 Initiated development of enhanced Built In Test (BIT) development <p>Total 18353</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 6972 Complete EMD contract and Fabrication (six systems), integration and test of LRAS3. • 754 Conduct and complete Developmental Tests. • 957 Conduct and complete Operational Test. • 969 Completion of enhanced Built In Test (BIT) development. • 259 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 9911</p> <p>FY 2000 Planned Program: Project not funded in FY 2000</p> <p>FY 2001 Planned Program: Project not funded in FY 2001</p>										
Project DL74	Page 13 of 17 Pages					Exhibit R-2A (PE 0604710A)				

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development	PROJECT DL74
---	--	-------------------------------

B. <u>Other Program Funding Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Compl	Total Cost
0603774A D131 Budget Activity 4	2152	2664	3188	4036	4790	4773	5424	5395	Continue	Continue
6.4 RDTE 0604710A, B Kit (DL69)	3555	0	11937	12023	13782	6691	0	113000	Continue	Continue
LRAS-3 K38300 OPA2	0	0	43223	47988	45584	50336	51741	53910	Continue	Continue

C. Acquisition Strategy: This project was awarded via competitive acquisition utilizing oral presentations and Cost as An Independent Variable (CAIV) for the Engineering and Manufacturing Development contract. The current objective for the production contract is to competitively award on a fixed price basis utilizing CAIV.

D. <u>Schedule Profile</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Fabrication, integration and test of LRAS3	2Q-4Q	1Q-2Q						
Conduct Development Test *		1-2Q, 4Q						
Conduct Operational Test **		3Q-4Q						
Milestone III IP			1Q					
Award Production Contract			1Q					

* Development test in 4QFY99 is remaining destructive testing.

** OPTEC is directly funded for the majority of costs for IOT&E.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development				PROJECT DL75		
COST <i>(In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DL75 Profiler	0	0	5229	4829	2363	0	0	0	5700	18121
<p>A. <u>Mission Description and Budget Item Justification:</u> Profiler is an upgrade of the AN/TQM-41 Meteorological Measuring Set (MMS) by integrating radar and microwave satellite technology to provide "on demand" information on surface, trajectory, and target area weather conditions. This Engineering and Manufacturing Development (EMD) effort will increase the accuracy of a wide range of deep fire weapons and munitions.</p> <p>FY 1998 Accomplishments: Project not funded in FY 1998</p> <p>FY 1999 Planned Program: Project not funded in FY 1999</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 5229 Initiate MMS Profiler (MMS-P) EMD upgrade effort, including hardware for two prototype units for both technical tests and operational evaluation and conduct design reviews. <p>Total 5229</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 4829 Continue MMS-P EMD upgrade effort and conduct technical and operational testing <p>Total 4829</p>										
B. <u>Other Program Funding Summary</u>										
	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
6.4 RDTE, Night Vision Devices Engineering Development 0604710A, (DL70)	11430	11256	13478	14418	16432	16749	18348	17844	Continue	Continue
Profiler K27900 OPA2	0	0	0	0	11136	15710	18125	37575	Continue	Continue
<p>C. <u>Acquisition Strategy:</u> The AN/TQM-41 MMS Profiler development and production contracts will be awarded competitively. EMD contract type will be Cost Plus Award Fee (CPAF) and the production contract will be Firm Fixed Price. The formal solicitations will include requirements for oral presentations and cost as an</p>										
Project DL75			Page 15 of 17 Pages				Exhibit R-2A (PE 0604710A)			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)							DATE February 1999	
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development			PROJECT DL75	
independent variable (CAIV). If the EMD contractor meets CAIV and technical Key Performance Parameters, the intent is to award the production contract to the developer.								
D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Milestone I/II			1Q					
Award EMD Contract			1Q					
Begin System Fabrication			3Q					
Conduct Technical Testing				3Q-4Q				
Conduct Operational Test				4Q				
Milestone III					1Q			
Award Production Contract					1Q			
First Unit Equipped (FUE)						3Q-4Q		
Initial Operational Capability (IOC)							1Q	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development					PROJECT DL75		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. EMD Contract	C/CPAF	To Be Selected				4733	1Q	4284	1Q	6138	15155	15155
Subtotal Product Development:						4733		4284		6138	15155	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Matrix Support	MIPR	CECOM IEWD, ARL, WSMR, NO				371	1Q	343	1Q	1028	1742	
Subtotal Support Costs:						371		343		1028	1742	
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Test Planning and Preparation	MIPR	OPTEC				72	1Q				72	
b. DT/OT	MIPR	OPTEC						153	1Q	852	1005	
Subtotal Test and Evaluation						72		153		852	1077	
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Project Management		PM-NV/RSTA, Ft. Belvoir, V				53		49		45	147	
Subtotal Management Services:						53		49		45	147	
Project Total Cost:						0		5229		4829	8063	18121

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment						
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
Total Program Element (PE) Cost	58579	67674	110829	136899	118142	82831	46424	46707	Continuing	Continuing
DC40 Soldier Support Equipment	1683	1705	4516	5872	9238	12601	14152	14558	Continuing	Continuing
DL40 Clothing and Equipment	3955	4320	3517	4287	4572	4597	5183	5187	Continuing	Continuing
D548 Military Subsistence System	829	1290	1625	1753	1867	1880	2006	2012	Continuing	Continuing
D667 Land Warrior	39004	45573	86559	109663	87696	49519	8501	8400	Continuing	Continuing
D668 Soldier Enhancement Program	11541	14602	14418	14390	14156	14234	16582	16550	Continuing	Continuing
D680 Mounted Warrior	1567	184	194	934	613	0	0	0	0	3518

A. Mission Description and Budget Item Justification: Project supports Engineering and Manufacturing Development (EMD) and Non-Developmental Item (NDI) evaluation of unit/organizational equipment, weapons/munitions, clothing and individual equipment, fabric shelters, field service equipment, food and food service equipment to enhance soldier efficiency, effectiveness, lethality, sustainability and survivability. New food items and food service equipment will be developed to reduce food service logistics requirements for all four Services. The organizational equipment program supports development of a new generation of field device support items: small, large and collective protective shelters; decontamination items; and improved space heaters to shelter and sustain the soldiers in the field and improve quality of life. The Land Warrior program will produce the first fully integrated fighting system for dismounted combat soldiers. The Soldier Enhancement Program provides soldier items that can be procured in three years or less.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE
February 1999

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604713A Combat Feeding, Clothing, and Equipment

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	60053	62218	39201	40651
Appropriated Value	61964	68218		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-1911	-544		
b. SBIR / STT	-1484			
c. Omnibus or Other Above Threshold Reductions	-490			
d. Below Threshold Reprogramming	+500			
e. Rescissions				
Adjustments to Budget Years Since <u>FY 1999</u> PB		+5456	+71628	+96248
Current Budget Submit (FY 2000 / 2001 PB)	58579	67674	110829	136899

Change Summary Explanation: FY99-FY01 increases due to program restructure and change in acquisition strategy for Land Warrior project (D667).

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment				PROJECT DC40		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DC40 Soldier Support Equipment	1683	1705	4516	5872	9238	12601	14152	14558	Continuing	Continuing
<p>A. <u>Mission Description and Budget Item Justification:</u> Develop and field soft shelters, showers, latrines, heaters, mortuary affairs, organizational equipment and othe combat service support equipment to improve unit sustainability and combat effectiveness. Develop and transition to procurement cargo and personnel parachutes, airdrop containers and other aerial delivery equipment to improve safety and efficiency of airborne operations. Develop a series of Rigid Wall Shelters (RWS) with added capabilities and enhanced survivability.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 1030 Completed prototype development and conducted Developmental Test/Operational Test (DT/OT) of Laundry Advanced System (LADS) prototypes. • 403 Awarded LRIP/Production contract for Modular General Purpose Tent System (MGPTS). Completed Production Verification Testing and shipped LRIP items to units for field evaluation. • 250 Fabricated Containerized Shower test unit and initiated technical manual and performance specification contracts. <p>Total 1683</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 300 Type Classify MGPTS. Build Modular General Purpose Tent System(MGPTS) P3I test prototype items and initiate testing/evaluation for following items (fabric flooring, frame system, liners). • 832 Prepare/award contract for commercial Aviation Maintenance Shelter (AMS) and associated support items. • 150 Type Classify Laundry Advanced System to transition to production phase. • 227 Conduct Technical and Operational Testing on the Containerized Shower and Type Classify the performance specification. • 182 Procure prototypes, conduct technical test, and develop performance specification for Space Heater Small. Conduct study of heating requirements fo new MGPTS. • 14 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 1705</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 296 Award Low Rate Initial Production (LRIP) contract for Space Heater Small, conduct testing and Type Classify standard. • 400 Complete testing/evaluation of Modular General Purpose Tent System P3I test items. 										
Project DC40			Page 3 of 26 Pages				Exhibit R-2A (PE 0604713A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment				PROJECT DC40		
<ul style="list-style-type: none"> • 1986 Complete Developmental Testing on Advanced Reserve Parachute System. <p>FY 2000 Planned Program: (continued)</p> <ul style="list-style-type: none"> • 1159 Complete field evaluation and Milestone III for the High Mobility Multipurpose Wheel Vehicle (HMMWV) Cargo Bed Cover (Type I) and 1.5 Ton trailer (Type II) variants and transfer to full production. • 275 Conduct market survey and develop prototypes of the Chaplain's Equipment • 400 Conduct market surveys and evaluate technologies for the TEMPER XXI <p>Total 4516</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 650 Conduct testing of the Chaplain's Logistic Support Package • 2523 Conduct Operational Testing of Advance Tactical Parachute System/Advanced Reserve Parachute System • 100 Conduct market survey on the 500' Low Velocity Air Delivery System • 400 Develop prototype and conduct field evaluation for TEMPER XXI technologies. • 1377 Integrate Modular General Purpose Tent System preplanned product improvement items into existing system • 500 Develop/Design prototype heater for a soldier back pack. • 322 Design/develop Semi-Rigid Wing Deployable prototypes <p>Total 5872</p>										
B. Other Program Funding Summary										
	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To Compl</u>	<u>Total Cost</u>
RDTE, 0603747.DC09, Unit/Org Equipment	1831	1598	5606	6745	8949	11960	13164	13341	Cont	Cont
M82701, Laundry Advance System		7206	7914	12671	13350	9101	9745	22565	Cont	Cont
M82702, 12 Head Shower				587		586	584	589		
M82703, Containerized Self-Service Laundry			980							
M82704, Containerized Shower			950	1245	1270	1171				
M82705, Maturing Theater Latrine				441						
M82706, Follow-On Latrine				880	914	671				
MA7801, Advanced Tactical Parachute System					24368	28189				
MA7802, Extraction Parachute Jettison Device			2391							
MA7805, Universal Static Line			980							
MA8050, Items Less Than \$5.0M		1866	2553	2261	9401	10286	21814	33836		
Project DC40										

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment	PROJECT DC40
---	---	-------------------------------

B. Other Program Funding Summary	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
MA8061, Lightweight Maintenance Enclosure			2128	2013	2931	6379				

C. Acquisition Strategy: Accelerated developments that incorporate Low Rate Initial Production (LRIP) contracts for earlier transition to procurement.

D. Schedule Profile	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2004	FY 2005
Completed Containerized Shower prototypes	4Q*									
Completed MGPTS PVT/FE	2Q*									
Conducted Technical Test and Operational Test (TT/OT) on LADS prototypes	4Q*									
Type classify LADS		2Q								
Conduct TT/OT on Containerized Shower		1Q*								
Develop frame and floor MGPTS P3I		2Q								
Award contract for AMS Shelte		3Q								
Type Classify Containerized Shower		2Q								
Type Classify MGPTS		3Q								
Award LRIP contract for SH			1Q							
Conduct Testing of SH			2Q							
Complete ARPS DT			4Q							
Complete Milestone III for CBC HMMWV (Type I) and 1.5 ton trailer (Type II) variants			2Q							
Conduct Testing of Chaplain's package				3Q						
Conduct OT of ATPS				2Q						

*Milestone Completed

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)											DATE February 1999	
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment						PROJECT DC40		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. SSCOM	In-House	NRDEC	1838	320		364		655		Cont.	3177	
b. Contracts	Various	Various	8063	795	Various	754	Various	1392	Various	Cont.	11004	Cont.
Subtotal Product Development:			9901	1115		1118		2047			14181	
<p>II. Support Costs: There are no efforts associated with the delivery of any of a fully integrated system that are in direct support of this project and essential to the development, training, operation, and maintenance of systems in this project.</p>												
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TECOM/OEC	MIPR	Various	3551	500	Various	3220	Various	3537	Various	Cont.	10808	Cont.
Subtotal Test and Evaluation			3551	500		3220		3537			10808	
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PM Office	In-House	PM-Soldier Support/SSCOM	1382	90		178		288		Cont.	1938	Cont.
Subtotal Management Services:			1382	90		178		288			1938	
Project Total Cost:			14834	1705		4516		5872			26927	
<p>Project DC40 Page 6 of 26 Pages Exhibit R-3 (PE 0604713A)</p>												

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment					PROJECT DL40	
<i>COST (In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DL40 Clothing and Equipment	3955	4320	3517	4287	4572	4597	5183	5187	Continuing	Continuing

A. Mission Description and Budget Item Justification: This project develop state-of-the-art individual clothing and equipment to improve the survivability, mobility, sustainment affecting the quality of life of the individual soldier. Funding shown does not reflect funding from OSD PE 0604384BP to support the Chemical/Biological Defense program in accordance with Public Law 103-60 Title XVII.

FY 1998 Accomplishments:

- 883 Awarded contract for initial prototype development and DT test items for BASIC P3I.
 - 1366 Fabricated test items and completed Developmental Testing and Operational Testing of the Modular Body Armor (MBA). MLS (Renamed: Interceptor/Modular Lightweight Load-Carrying Equipment System (MOLLE) completed DT/OT. Program will be realigned with USMC System.
 - 311 Completed design review awarded contract for test items for Improved Physical Fitness Uniform.
 - 446 Completed design modifications and procured prototypes and initiated a wear test and acceptability evaluation of the Maternity Utility Work Uniform and Coat, Men's Dress Coat and Trousers, Women's Coat, and the all-weather Coat (Men's and Women's), Physical Fitness Uniform .
 - 773 Completed redesign, conduct User Evaluation /Log Demonstration/Component Testing for ITAP.
 - 176 In house engineering support services, computer services, conduct technical and program reviews
- Total 3955

FY 1999 Planned Program:

- 620 Complete DT/OT and assessment reports for the MBA and MOLLE.
- 745 Conduct a wear test and acceptability evaluation of the Maternity Utility Work Uniform and Coat, Men's Dress Coat and Trousers, Women's Coat, and the All-Weather Coat (Men's and Women's) and Improved Physical Fitness Uniform.
- 155 Complete Basis of Issue, provisioning and training information for Improved Toxicological Agent Protective suite Conduct MSIII IPR, TC.
- 900 Modify designs, develop test prototypes, complete DT/OT, and obtain MS III approval of the BASIC P3I and the Conceivable Body Armor.
- 500 Complete test of the Disposable Emergency Ensemble, obtain MS III approval, and transition to procurement.
- 1072 Develop initial designs, conduct an early user evaluation, and refine designs for Climate Control Equipment (heating and cooling) for the individual soldier.
- 226 In house engineering support services, conduct technical and program reviews
- 102 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)							DATE February 1999			
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment				PROJECT DL40		
Total 4320										
FY 2000 Planned Program:										
<ul style="list-style-type: none"> • 165 Obtain MSIII BASIC P3I Cancelable Body Armor, Light Weight PASGT Helmet, TC and transition to production • 737 Modify designs, conduct prototype testing and early user evaluation for Lightweight Micro Cooling System, Individual Body Heating System. • 809 Conduct design reviews and seek new improved materials for evaluation of Military Uniform Items, Footwear, Physical Fitness Uniforms and improved boots and socks for the soldier of the next century. • 973 Initiate market surveys, continue evaluations on items to begin in FY2000. • 833 In house engineering support services, computer services, conduct technical and program reviews 										
Total 3517										
FY 2001 Planned Program:										
<ul style="list-style-type: none"> • 900 Continue evaluation/procure and/or test items from FY2000 programs • 300 Initiate MLS/MOLLE enhancements to improved configuration and frame with state-of-the-art materials • 500 Begin enhancements/improvements to the MEPS for improved laser protection, improved /lighter materials • 1870 Initiate market surveys and/or evaluations on new items that will commence in FY 2001. • 717 In house engineering support services, computer services, conduct technical and program reviews 										
Total 4287										
B. Other Program Funding Summary:										
	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To Compl</u>	<u>Total Cost</u>	
RDTE, 0603747.D669, Clothing & Equipment	3364	4088	3510	4844	4890	5557	5286	Cont	Cont	
OMA, 114092000, Central Funding and Fielding	51500	48130	94738	94127	77456	77456	77456	Cont	Cont	
C. Acquisition Strategy: Soldier modernization will be accomplished via integrated acquisition programs ranging from NDI/modified NDI through integrated programs. Acquisition strategies will vary from: 1) quick fixes in 36 months or less from concept to Type Classification (TC) such as Soldier Enhancement Programs (SEP), 2) modular improvements which require limited RDT&E and can be completed in more than 36 months from concept to TC.										
D. Schedule Profile										
	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	
Request for Programs FY99-05	2Q*	2Q	2Q	2Q	2Q	2Q	2Q	2Q	2Q	
Life Cycle Systems Reviews	4Q	2&4Q	2&4Q	2&4Q	2&4Q	2&4Q	2&4Q	2&4Q	2&4Q	
*Denotes a completed milestone										
Project DL40			Page 8 of 26 Pages				Exhibit R-2A (PE 0604713A)			

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment						PROJECT DL40		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Various	In House	SSCOM NRDEC	2000	1969		973		1470		Cont	6412	Cont
b. Contracts	Various	Various	1000	1500	TBD	1000	TBD	1000	TBD	Cont	4500	Cont
Subtotal Product Development:			3000	3469		1973		2470			10912	
<p>Remark: The Clothing and Equipment project develops and evaluates Non-Development Items (NDI) and Commercial Off-the-Shelf (COTS) items. New items are identified annually. Contractual efforts are very low dollar amounts – used to procure a few prototypes for testing.</p> <p>II. Support Costs: Support costs vary annually depending on the lattes state of the art technology inserts. RDEC’s support to evaluate items also varies annually depending on number and types of programs. We average approximately 50 programs annually.</p>												
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TECOM	MIPR	Various	86	164	TBD	178	TBD	250	TBD	Cont	678	Cont
b. ILS SPT	MIPR	Various	148	235	TBD	100	TBD	125	TBD	Cont	608	Cont
Subtotal Test and Evaluation			234	399		278		375			1286	
<p>Remark: Testing costs vary annually by item.</p>												
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
b. Program Management	In House	PM Soldier	176	226		633		698		Cont	1733	Cont
c. See Remark			176	226		633		744			1779	
Subtotal Management Services:			352	452		1266		1442			3512	
<p>Remark: Costs vary annually depending on number and type of items being evaluated</p>												

DATE
February 1999

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
**0604713A Combat Feeding, Clothing, and
Equipment**

Project Total Cost:			3586	4320		3517		4287		15710	Cont
---------------------	--	--	------	------	--	------	--	------	--	-------	------

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment					PROJECT D548	
<i>COST (In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D548 Military Subsistence System	829	1290	1625	1753	1867	1880	2006	2012	Continuing	Continuing
<p>A. <u>Mission Description and Budget Item Justification:</u> Project provides Engineering and Manufacturing Development (EMD) and Non-developmental Item (NDI) evaluation of food and food service equipment to enhance soldier efficiency and survivability. New food items and food service equipment will be developed to reduce food service logistics requirements for all four services. Development of Joint Service Food/Food Service Equipment to improve individual combat effectiveness and reduce logistics burden and operation and support costs of subsistence support for service men and women. Develop multi-fuel, rapidly deployable field food service equipment to support combat, humanitarian missions and operations-other-than-war. Improve equipment to enhance safety in food service, utilize battlefield fuels and decrease fuel and water requirements.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 374 Designed/fabricated new oven system and heat exchanger prototypes to improve heat transfer from Modern Burner Unit to upgraded components fo field kitchens. • 236 Conducted field evaluations of component improvements and installation procedures for the Modern Kitchen Trailer at multi field locations. • 110 Type Classified the Containerized Kitchen and transitioned to production and deployment phase. Developed production contract Request Fo Proposals. • 109 Conducted field evaluations of commercially available squad stoves to improve subsistence capability in the field and transition to procurement. <p>Total 829</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 360 Design and fabricate prototypes for remaining kitchen components and conduct technical testing of improved field kitchen equipment for use with the Modern Burner Unit. • 437 Complete fabrication and conduct development and user testing of Marine Corps Rapid Deployment Kitchen. • 62 Complete technical and user testing of Non-Electric Field Refrigerator and develop performance specification. • 408 Complete user evaluations of steam generator/power washer for field food sanitation centers and initiate integration of gray water treatment/handling system for on-site wastewater disposal. • 23 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 1290</p>										
Project D548			<i>Page 10 of 26 Pages</i>				Exhibit R-2A (PE 0604713A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment	PROJECT D548
---	---	-------------------------------

FY 2000 Planned Program:

- 349 Complete fabrication of remaining field feeding components to improve efficiency and integrate into complete kitchen for formal testing.
- 539 Integrate all components into full-up advanced food sanitation center and initiate development testing.
- 326 Develop kit components to allow use of Modern Burner Unit in extreme cold weather.
- 411 Prepare design concept for shelter/container and food service equipment. Conduct testing of prototype Air Force lightweight initial deployment kitchen.

Total 1625

FY 2001 Planned Program:

- 344 Conduct DT/OT field kitchen equipment efficiency upgrades.
- 397 Complete DT/OT of advanced food sanitation center.
- 341 Complete fabrication of HMMWV trailer based kitchen to increase mobility and deployability of company level kitchens and initiate DT/OT.
- 358 Complete fabrication and initiate testing of Air Force temporary lightweight initial deployment kitchen.
- 313 Conduct cold weather evaluations of extreme cold weather burner kit and transition to procurement.

Total 1753

B. <u>Other Program Funding Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Compl	Total Cost
RDTE, 0603747.D610, Food Adv Dev	2120	2560	3110	3387	3745	3722	3930	3956	Cont	Cont
OPA3, M65803, Kitchen, Containerized, Field		7425	7062	7087	5663	6581	8358	8649	Cont	Cont
OPA 3, M65802, Sanitation Center, Field Feeding			661	1843	1817	6481	5895	5838	Cont	Cont
OPA 3, M65802, Sanitation Center, Field Feeding		1361								
M65801, Refrigeration Equipment		1914	931	924	931	2384	2533	2551		

C. Acquisition Strategy: Complete engineering and manufacturing development of food items and equipment for transition to procurement.

D. <u>Schedule Profile</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2004</u>	<u>FY 2005</u>
Type Classified Containerized Kitchen	4Q*									
Test MKT prototypes	3Q*									

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment				PROJECT D548	
D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2004</u>	<u>FY 2005</u>
Conduct DT of improved Army Field Feeding Equipment for MBU		3Q								
Conduct testing on Rapid Deployment Kitchen		3Q								
Initiate developmental testing of Advanced Food Sanitation Center			4Q							
Design and Evaluate US Air Force Lightweight Initial Deployment Kitchen			2Q							
Conduct DT/OT on field kitchen equipment efficiency upgrades				2Q						
Complete DT/OT of Advanced Food Sanitation Center				3Q						
Initiate DT/OT on HMMWV trailer based kitche				2Q						
Initiate testing of Air Force temporary lightweight initial deployment kitchen				2Q						
* Milestone completed										
Project D548			<i>Page 12 of 26 Pages</i>				Exhibit R-2A (PE 0604713A)			

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment						PROJECT D548		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. SSCOM	In-House	SSCOM	6793	706		890		969		Cont.	9358	Cont.
b. Various	Various	Various	731	120	Various	158	Various	171	Various	Cont.	1180	Cont.
Subtotal Product Development:			7524	826		1048		1140			10538	
<p>II. Support Costs: There are no efforts associated with the delivery of any of a fully integrated system that are in direct support of this project and essential to the development, training, operation, and maintenance of systems in this project.</p>												
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TECOM/OEC	MIPR	Various	1581	400		490		525		Cont.	2996	Cont.
Subtotal Test and Evaluation			1581	400		490		525			2996	
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Project Ofc Management	In-House	SSCOM	449	64		87		88		Cont.	688	Cont.
Subtotal Management Services:			449	64		87		88			688	
Project Total Cost:			9554	1290		1625		1753			14222	
<p>Project D548 Page 13 of 26 Pages Exhibit R-3 (PE 0604713A)</p>												

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment				PROJECT D667		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D667 Land Warrior	39004	45573	86559	109663	87696	49519	8501	8400	Continuing	Continuing
<p>A. <u>Mission Description and Budget Item Justification:</u> Land Warrior (LW) is a first generation, modular, infantry fighting system providing combat overmatch to our soldiers by integrating night vision, information, communications, situational awareness, and personal protection technologies to improve the lethality, survivability, command and control, mobility, and sustainment of Ranger, Airborne, Air Assault, Light and Mechanized infantry on the digitized battlefield.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 33113 Built three prototypes and 18 subsystem sets; conducted preliminary airborne certification, safety, and immersion testing, fixed deficiencies, delivered and first software build. Delivered 2 systems and conducted Fightability (Phase I) assessment at Fort Benning. Modified Land Warrior EMD contract to incorporate Joint Technical Architecture-Army Version 5.0 compliance. Modified Land Warrior EMD contract to incorporate the Joint Variable Message Format (VMF) direction to achieve Joint Force Digital Common Interoperability. Conducted risk reduction activities. Prepared draft technical manuals and training documents. Started integration of hardware and software. • 5891 Supported engineering and support from other government agencies for overall program efforts. Established Land Warrior (Forward) base of operations at Fort Bragg. Conducted weapon tests and training. <p>Total 39004</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 26945 Conduct systems integration, deliver three systems to participate in Force XXI Battle Command Brigade and Below (FBCB2) demonstration at Fort Hood, Texas. Begin fabrication and integration of 49 systems for development and operational testing and Force XXI Land Warrior early use testing. Refurbish 18 systems for DT/OT. Develop software build (V1.0 and V1.5). Continue contractor configuration management effort. • 7460 Provide engineering and support from other government agencies for overall program efforts. Conduct technical and program reviews and briefings. Develop/coordinate documentation for release of Low Rate Initial Production Request for Proposals. • 1500 Conduct Fightability Assessment (Phases II/III) and begin Phase IV. Conduct airborne certification. • 4000 Conduct contractor Confidence Testing, Functional Qualification Testing (FQT), and Pre-production Qualification Testing (PPQT). • 4000 Evaluate and implement alternatives to reduce system weight to meet operational requirements. Incorporate ECPs resulting from test feedback. • 1668 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 45573</p>										
Project D667			Page 14 of 26 Pages				Exhibit R-2A (PE 0604713A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment	PROJECT D667
---	---	-------------------------------

FY 2000 Planned Program:

- 1000 Complete Fightability Assessment (Phases IV/V).
 - 12700 Build an integrate systems and obtain test supplies for development and operational testing. Complete software build (V2.0). Conduct airborne redesign/re-certification.
 - 10666 Conduct development testing, FQT, fix PPQT deficiencies, conduct PPQT Re-Test, training, configuration management, and initiate Operational Testing with software V2.0.
 - 23000 Procure long lead materials for first 500 Low rate Initial Production (LRIP) systems to be issued to an Airborne Battalion for IOTE.
 - 10198 Program Management, engineering and support from other government agencies for overall program efforts. Conduct technical and program reviews and briefings. Evaluate LRIP proposal and prepare documentation. Award fee for successful completion/delivery of prototypes.
 - 10995 Evaluate and integrate Force Twenty One Land Warrior (FXXILW) enhancements and weight reduction/CRS ECPs to meet operational requirements, Multiple Integrated Laser Engagement System (MILES) integration, and FBCB2 interoperability in accordance with operational requirements document.
 - 18000 Initiate production tooling and establish automated LW test bed.
- Total 86559

FY 2001 Planned Program:

- 12500 Complete Operational Testing with Version 2.0 software and conduct Operational Testing with Version 3.0 software.
 - 43000 Make LRIP decision, build first 500 LRIP systems, conduct First Article Test and deliver systems for IOTE. Award fee for successful completion of contract tasks.
 - 27600 Provide long lead materiel for next 800 LRIP systems for issue to Fort Hood Mechanized Battalion and an Airborne Brigade. Systems will be used to develop and validate tactics, training and procedures (TTPs) for Infantry Soldiers.
 - 8471 Continue to evaluate and integrate FXXILW enhancements and weight reduction/ECPs to meet operational requirements.
 - 10092 Provide logistic support for sustainment of 500 systems during IOTE. Initiate New Equipment Training.
 - 8000 Program management, continue engineering and support from other government agencies for overall program efforts. Conduct technical and program reviews.
- Total 109663

B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To Compl</u>	<u>Total Cost</u>
RDTE, 0603001.DJ50, Force XXI Land Warri	10582	6891	6305	6335	7526	7835			Cont	Cont
OPA3, M80500, Land Warrior				83464	122182	149584			Cont	Cont

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment	PROJECT D667
---	---	-------------------------------

B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Compl	Total Cost
OPA3, MS3610, Initial Spares-Land Warri						250	390	442	Cont	Cont
WTCV, GB3007, M4 Carbine Mods	6964	5136	5315	2528						
WTCV GZ2800 M16 Rifle Mods	4535	5227	7180	9685	2112	0	2452	2450		

C. Acquisition Strategy The Land Warrior program has a procurement objective of 34,000 systems that will field LW to Force Package 1 and 2 equivalents. An LRIP quantity of 1800 systems will establish an initial production base for the system and permit an orderly increase in the production rate for the system. Two additional options to the LRIP contract will be exercised annually to provide additional 4,155 systems from the current prime contractor. This will allow sufficient time to transition to a competitive procurement contractor after MSIII (1Q03). This will also allow time for the Government to release the LW RFP, evaluate proposals and hardware, and award the full production contract. It also includes time for the winner of the procurement contract to set up the production line, produce the first lot, undergo First Article Testing (FAT), and then ramp up to an economical production rate.

D. Schedule Profile	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2004</u>	<u>FY 2005</u>
Conduct preliminary testing		2Q								
Build three prototypes and 18 subsystem sets		4Q								
Deliver two systems for Fightability Assessment		4Q								
Conduct Fightability Assessment (All phases)		4Q	4Q	3Q						
Deliver three systems/participate in FBCB2 Interoperability.			1Q	4Q						
Conduct software IV&V (each version).			4Q	3Q	4Q	4Q	4Q			
Develop documentation and coordinate RFP fo LRIP contract awar			4Q							
Fabricate/integrate 49 systems; refurb 18 systems			4Q	1Q						
Contractor Confidence Testing/FQT/PPQT			4Q	3Q						
Conduct DT/OT				4Q	3Q					
Production Tooling and Procure LRIP long leads (Total LRIP)				4Q	4Q	3Q				
FXXILW insertions, MILES Integration, and Weight Reduction ECP's to meet requirements			4Q	4Q	4Q	3Q				
LRIP build, FAT, and automated test bed					4Q	4Q	4Q			
New Equipment Training (NET)					4Q	1Q				

DATE **February 1999**

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604713A Combat Feeding, Clothing, and Equipment

Sustainment for LRIP					4Q	4Q	4Q			
----------------------	--	--	--	--	----	----	----	--	--	--

--	--	--	--	--	--	--	--	--	--	--

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE **February 1999**

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604713A Combat Feeding, Clothing, and Equipment

PROJECT
D667

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Raytheon Systems	CPAF	McKinney, TX	33113	38413	3Q	74861	3Q	101163	3Q	Cont	247550	TBD
Subtotal Product Development:			33113	38413		74861		101163			247550	

Remark: Contract will be rebaselined in Oct 98 and total contract cost will be negotiated in early FY99.

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. RDEC'S	Multiple MIPRs		2780	2960	2Q	2398	2Q	3000	2Q		11138	
b. ARDEC		Picatinny, NJ										
c. NRDEC		Natick, M										
d. CECOM		Fort Monmouth, NJ										
e. ARL		Various										
Subtotal Support Costs:			2780	2960		2398		3000			11138	

Remark: Buys government engineering and logistical support for overall program support.

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Test Organizations	MIPR		750	200	4Q	1300	4Q	500	4Q		2750	
b. Aberdeen Test Center		Aberdeen PG, MD										
c. Electronics Proving Ground		Edgewood, MD										
d. TECOM		Edgewood, MD										
e. White Sands Missile Range		White Sands, NM										
f. Cold Regions Test Ctr		Fort Greeley, AK										
g. ARL/SLAD		Aberdeen, MD										
Subtotal Test and Evaluation			750	200		1300		500			2750	

Remark: Costs in FY99 are for test planning only. Testing will be conducted in FY00-01.

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment	PROJECT D667
---	---	-------------------------------

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PM Soldier	In-House		525	1000	4Q	2000	4Q	1000	4Q		4525	
b. Modern Technologies Corporation (MTC)	Task Order	Dayton, OH Springfield, VA Fullerton, C	676	3000		6000		4000			13676	
c. SSCOM	FAD	Natick, M	1160								1160	
Subtotal Management Services:			2361	4000		8000		5000			19361	

Remark: Support contract augments lack of on board, government TDA spaces.

Project Total Cost:			39004	45573		86559		109663			280799	
---------------------	--	--	-------	-------	--	-------	--	--------	--	--	--------	--

Remark:

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment				PROJECT D668		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D668 Soldier Enhancement Program	11541	14602	14418	14390	14156	14234	16582	16550	Continuing	Continuing
<p>A. <u>Mission Description and Budget Item Justification:</u> The Soldier Enhancement Program (SEP) increases the lethality, command and control, sustainability, mobility, and survivability of the soldier through accelerated acquisition of lighter, more lethal weapons and improved "soldier items" including lighter, more comfortable load-bearing equipment, field gear, survivability items, communications equipment, and navigation aids. For SEP purposes, soldiers are managed in three categories: dismounted soldiers, combat crews (air and ground), and other soldiers. Projects generally are completed in three years or less.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 2259 Completed evaluation/type classified for: XM25 Stabilized Binoculars, XM84 Stun Grenade, XM145 Telescope, Soldier Intercom, Midsize Riot Control Dispenser, XM1006 40mm Non Lethal Round, Anti Reflection Device, M249 Feed Tray Cover, Close Quarters Battle Sling, M240 Dismount Kit, Improved Underlying Insulating Layers for ECWCS, Knee and Elbow Pads, Ballistic Shin Guards, Ballistic/Non Ballistic Face & Body Shields, Fuel Bar, Low Profile Flotation Collar, MP Combat/Law Enforcement Ensemble, Disposable Restraint System, Safety Restraint Tether, and Intermediate Cold Wet Boot with Removable Liners. • 4199 Continued evaluation/procured prototypes and/or tested: Heavy Sniper Weapon System, 40mm High Velocity Canister Cartridge, Modular Weapon System Iron Sight, Short Squad Automatic Weapon, IR Illumination Hand Grenade, Weapon Flashlight Mount, XM95 Rifle Launched Non Lethal Munitions, 12 Gauge Non Lethal Point and Crowd Control, Fighting Position Revetment, Blast Protective Boots, and Helicopter Emergency Egress Device. • 2584 Initiated market surveys and/or evaluated: 12 Gauge Breaching Round, Fire Control for the M203, Long Range Tactical Sniper Cartridge, Lightweight Fragmentation Hand Grenade, Advanced Protective Eyewear System, Canteen Water Insert Purifier, Lightweight Low Profile Voice Amplifier, Collapsible Grappling Hook, Small Unit Multi-Purpose Trailer, Protective Gloves, and Improved Combat Shelter. • 2499 Conducted in house engineering support services, computer services, conduct technical and program reviews <p>Total 11541</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 2751 Complete evaluation/type classify/transition to production: Weapon Flashlight Mount, 40mm High Velocity Canister Round, Short Squad Automatic Weapon, Modular Weapon System Iron Sight, 12 Gauge Non Lethal Point and Crowd Control, XM95 Rifle Launched Non Lethal Munitions, Helicopter Emergency Egress Device, Advanced Protective Eyewear System, Lightweight Low Profile Voice Amplifier, and Improved Combat Shelter. 										
Project D668			Page 19 of 26 Pages				Exhibit R-2A (PE 0604713A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE February 1999
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment	PROJECT D668
<p>FY 1999 Planned Program: (continued)</p> <ul style="list-style-type: none"> • 6244 Continue evaluation/procure prototypes and /or test: Heavy Sniper Weapon System, IR Illumination Hand Grenade, 12 Gauge Breaching Round, Fire Control for the M203, Long Range Tactical Sniper Cartridge, Lightweight Fragmentation Hand Grenade, Blast Protective Boots, Canteen Water Insert Purifier, Collapsible Grappling Hook, Small Unit Multi-Purpose Trailer, and Protective Gloves. • 2727 Initiate market surveys and/or evaluations: 40mm Improved Munitions, Medium Sniper Rifle System, Micro Rappel System, Improved Entrenching Tool, Stab Body Armor, Individual Camouflage System, Thermal Camouflage Face Paint, Improved Pistol Holder/Harness for Aviators, POL Handlers Glove System, Tactical Search/Inspection Mirrors, and Individual Riot Control Agent Neutralizer. • 2500 In house engineering support services, computer services, conduct technical and program reviews. • 380 Small Business Innovative Research/Small Business Technology Transfer Programs <p>Total 14602</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 4649 Complete evaluation/type classify/transition to production: Heavy Sniper Weapon System, IR Illumination Hand Grenade, 12 Gauge Breaching Round, Fire Control for the M203, Tactical Sniper cartridge, Lightweight Fragmentation Hand Grenade, Blast Protective Boots, Canteen Water Insert Purifier, Collapsible Grappling Hook, Small Unit Multi-Purpose Trailer, Protective Gloves, Improved Entrenching Tool, Stab Body Armor, Improved Pistol Holster/Harness for Aviators, POL Handlers Glove System, and Tactical Search/Inspection Mirrors. • 2634 Continue evaluation/procure prototypes and/or test: 40mm Improved Munitions, Medium Sniper Rifle System, Individual Riot Control Agent Neutralizer, and Thermal Camouflage Face Paint. • 4635 Initiate market surveys and/or evaluations on new items to commence in FY2000. • 2500 In house engineering support services, computer services, conduct technical and program reviews. <p>Total 14418</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 3290 Complete evaluation/type classify/transition to production: 40mm Improved Munitions, Medium Sniper Rifle System, Individual Riot Control Agent Neutralizer, and Thermal Camouflage Face Paint. • 4125 Continue evaluation/develop prototypes and/or test FY2000 new starts. • 3975 Initiate market surveys and/or evaluations on new items to commence in FY2001. • 3000 In house engineering support services, computer services, conduct technical and program reviews <p>Total 14390</p>		
Project D668	Page 20 of 26 Pages	Exhibit R-2A (PE 0604713A)

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)							DATE February 1999
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment			PROJECT D668

B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Compl	Total Cost
OPA3, MA6800, Soldier Enhancement	1570	4819	3586	4012	3158	3146	5839	6174	Cont	Cont
OPA2, BA5300, Soldier Enhancement	966	4580	3326	4405	5146	6165	8283	8338	Cont	Cont
OPA2, K30800, Ltwt Video Recon System (LWVRS)	4757	8341	3436	1207	1345	1385	1364	2747	Cont	Cont
WTCV, GC0076, Small Arms (SEP)	4465	5219	5214	3541	305	2000	2452	1960	Cont	Cont
WTCV, GZ1290, Squad Automatic Weapon (MODS)			8326	10053	5486	4165	5000		Cont	Cont
WTCV, GZ2800, M16 Rifle Mods	4535	5227	7180	9685	2112	0	2450	2450	Cont	Cont
WTCV, GB3007, M4 Carbine Mods	6964	5136	5315	2528	4904					15514
WTCV, G01500 Sniper Rifle			1138	3115	2160					6521
WTCV, GC0925, Mods	1347	1125	1006	795	1268	858	1339	1338	Cont	Cont
PAA, F47500 7.62mm AP	1949	1921	1355							7738
PAA, F47600, 5.56mm AP	1933	1921	1891	1925						7731
PAA, F00900, 40mm Caniste						5558				5654
PAA, E84900, XM84 Stun Grenade		1261	1767	2373	2402					7908
PAA, E86400, 12 Gauge Non Lethal				950						964
PAA, E86500, Cartridge, 12 Gauge Crowd Dispersal			955							968
PAA, E91100, XM95 Cartridge, Non Lethal Crowd		3249	4250	6410	6545					20731
PAA, E89000, 40mm Non Lethal	1213	1634	1576	1899	1978					8389
OMA, 121017, Central Funding and Fielding	51500	48130	94738	85780	94127	77456	77456	77456	Cont	Cont

C. Acquisition Strategy: SEP procurement consists of Non-Developmental Items (NDI) or Commercial Off-the-Shelf (COTS) that can transition to production in three years or less. Items that are technologically challenging requiring more than three years development are pursued under the appropriate system area. New SEP items are reviewed and approved for evaluation annually. Procurement varies by appropriation.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE February 1999
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment	PROJECT D668

D. Schedule Profile	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>
SEP Requirements Reviews		2Q*	2Q	2Q	2Q	2Q	2Q	2Q	2Q	2Q
SEP Projects Reviews		4Q*	4Q	4Q	4Q	4Q	4Q	4Q	4Q	4Q

* Milestones Completed

Note: Numerous individual projects are ongoing under the Soldier Enhancement Program (SEP) and each project has its own milestone schedule.

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE **February 1999**

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604713A Combat Feeding, Clothing, and Equipment

PROJECT
D668

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
	In House	Various	6042	2996		1366		2495		Cont	12899	Cont
	Contracts	Various	1986	6575	Various	9584	Various	8065	Various	Cont	26210	Cont
Subtotal Product Development			8028	9571		10950		10560			39109	

Remark: Soldier Enhancement Programs are Non-Development Items (NDI) and Commercial Off-the-Shelf (COTS) items. New items are identified annually. Contractual efforts are ver low dollar amounts – used to procure a few prototypes for testing.

II. Support Costs: Support costs vary annually depending on the types of items we are evaluating. RDEC's support to evaluate items also varies annually depending on number and types of items.

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
	MIPR	TECOM/OPTEC	1014	2531		968		1330		Cont	5843	Cont
Subtotal Test and Evaluation			1014	2531		968		1330			5843	Cont

Remark: Testing costs vary annually by item.

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
	In House	PM-Soldier	1374	1250		1250		1250		Cont	5124	Cont
	Task Order		1125	1250		1250		1250		Cont	4875	Cont
Subtotal Management Services			2499	2500		2500		2500			9999	

Remark: Costs vary annually depending on number and type of items being evaluated.

DATE **February 1999**

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
**0604713A Combat Feeding, Clothing, and
Equipment**

Project Total Cost:			11541	14602		14418		14390			54951
---------------------	--	--	-------	-------	--	-------	--	-------	--	--	-------

--	--	--	--	--	--	--	--	--	--	--	--

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment				PROJECT D680		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D680 Mounted Warrior	1567	184	194	934	613	0	0	0	0	3518
<p>A. <u>Mission Description and Budget Item Justification:</u> Mounted Warrior (MW) is an integrated modular system that will enhance the combat crewman's fighting capabilities. The MW system will be used by a wide variety of combat crewmen and will be tailored based on Mission, Enemy, Terrain/weather, Troops Available and Time (METT-T). The physical burden imposed by cumbersome personal equipment can degrade a crewman's effectiveness by increasing rates of fatigue, reducing mobility and restricting their ability to perform mission functions. Consideration will be given to optimizing the balance between vehicle mounted and crewman mounted equipment and designing an overall system that will improve crewman's endurance, safety, mission performance and crewman/vehicle interface. The MW system will provide hands free, tetherless communications, increased laser eye protection, maximum individual protection from NBC contamination, spall, flame and heat, and will provide for better performance of crew tasks without reducing tactility and agility.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 197 Identified existing and mature technologies and potential candidates for new technology development through a request for information survey fo the MW system. • 900 Leveraged Land Warrior and Air Warrior technologies to procure prototypes which allows the user to conduct a Concept Experimentation Program (CEP). • 342 Procured hardware and contract support to support the Mounted Warrior CEP. • 128 Engineering support for program and requirements definition and documentation. <p>Total 1567</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 179 Program Management and engineering support for program and requirements definition and documentation. • 5 Small Business Innovative Research/Small Business Technology Transfer Programs <p>Total 184</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 194 In house engineering support services, computer services, conduct technical and program reviews for program execution. <p>Total 194</p>										
Project D680			Page 24 of 26 Pages				Exhibit R-2A (PE 0604713A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment	PROJECT D680
---	---	-------------------------------

FY 2001 Planned Program:

- 934 Program management and engineering support for program management.
- Total 934

B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
RDTE D668 Soldier Enhancement Program	11541	14602	14418	14390	14156	14234	16582	16820	Cont	Cont
OPA3, M80600, Mounted Warrior					1362	1656	1943	2012	Cont	Cont
OMA, 121017, Central Funding and Fielding	19059	48130	94738	85780	94127	77456	77456	77456	Cont	Cont

C. Acquisition Strategy: The MW program is designed to field currently existing/mature technologies to meet the needs of the Combat Vehicle Crewman (CVC).

D. Schedule Profile	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2004</u>	<u>FY 2005</u>
Capstone Requirement Document Approved by USAARMC		3Q								
Concept Experimentation Program (CEP)		4Q								
Operational Requirements Document			2Q							
Milestone I/II Decision			4Q							
Development Contract Awar				1Q						
LRIP IPR Decision					3Q					
IOTE						3Q				
Milestone III Decision							1Q			
Full Rate Production							3Q			

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment					PROJECT D680		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Contractor TBD								300			300	
Subtotal Product Development:								300			300	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Various	MIPR	NVESD	313					25			338	
b. Various	MIPR	CECOM C2ID	376					25			401	
c. Various	MIPR	NRDEC	398					25			423	
d. Various	MIPR	CECOM S&T	417					25			442	
e. Various	MIPR	PM Platforms	63					247			310	
Subtotal Support Costs:			1567					347			1914	
III. Test and Evaluation: Not applicable.												
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Various	In-house	PM-Soldier		74		73		62			209	
b. Various	Matrix Spt	NVESD		110		121		125			356	
c. Various	Task Order	Spt Contractor						100			100	
Subtotal Management Services:				184		194		287			665	
Project Total Cost:			1567	184		194		934			2879	
Project D680												

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604715A Non-System Training Devices - Engineering Development						
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
Total Program Element (PE) Cost	75977	63778	71034	51925	48474	61091	54518	43842	Continuing	Continuing
D241 Non-System Training Devices Combined Arms	56402	48564	49025	35622	34073	45876	41812	36035	Continuing	Continuing
D396 WARSIM Intel Module (WIM)	9307	4629	12412	8116	7797	8286	5433	175	Continuing	Continuing
D573 STRICOM and Naval Air Warfare Center Training Systems Division (NAWCTSD) Support	10268	10585	9597	8187	6604	6929	7273	7632	Continuing	Continuing

A. Mission Description and Budget Item Justification: Program Element funds engineering development of Non-System Training Devices to support force-on-force training at the Combat Training Centers (CTC), general military training and training on more than one item/system, as compared with system devices which are developed in support of a specific item/weapon system. Training devices and training simulations help to modernize the forces while providing force multipliers that improve combat effectiveness by providing realistic training. Training devices maximize the transfer of knowledge, skills, and experience from the training situation to a combat situation. Force-on-force training at the National Training Center (NTC), Ft. Irwin, CA; Joint Readiness Training Center (JRTC), Ft. Polk, LA, and Combat Maneuver Training Center (CMTC), Hohenfels, Germany; and battle staff training in Battle Command Training Program (BCTP) will provide increased combat readiness through realistic collective training in low, mid, and high intensity scenarios. Project D241, Non-System Training Devices-Combined Arms, develops simulation training devices for Army-wide use, including the CTCs. Project D396, WARSIM Intel Module, is the intelligence driver for Warfighter Simulation 2000 (WARSIM)/Joint Simulations (JSIMS) land component. Project D573, STRICOM Non-System Training Devices Support, funds in-house costs of project support by US Army Simulation, Training and Instrumentation Command (STRICOM) and support from Naval Air Warfare Center Training Systems Division (NAWCTSD).

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE
February 1999

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
**0604715A Non-System Training Devices -
Engineering Development**

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	82965	64035	60445	48945
Appropriated Value	85649	64035		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-2684	-257		
b. SBIR / STT	-1823			
c. Omnibus or Other Above Threshold Reductions	-601			
d. Below Threshold Reprogramming	-4564			
e. Rescissions				
Adjustments to Budget Years Since <u>FY 1999</u> PB			+10589	+2980
Current Budget Submit (FY 2000 / 2001 PB)	75977	63778	71034	51925

Change Summary Explanation: FY00 increase for WARSIM 2000 to support required functionality at Initial Operating Capability (IOC).

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604715A Non-System Training Devices - Engineering Development				PROJECT D241		
COST <i>(In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D241 Non-System Training Devices Combined Arms	56402	48564	49025	35622	34073	45876	41812	36035	Continuing	Continuing

A. Mission Description and Justification: This project is used to develop prototype training devices to support Combined Arms (Infantry, Armor, Aviation, Air Defense, Artillery, Engineer, Chemical, and Support troops) training and multi-system training within the Army, to include the Reserve Components. Corps Battle Simulation (CBS) is the Army's standard command and staff training simulation at the corps/division level. WARSIM will be the next generation battle simulation to replace CBS, Tactical Simulation (TACSIM) and Combat Service Support Training Simulation System (CSSTSS). WARSIM will utilize current technology to efficiently provide training support and linkage to other simulations and simulators. WARSIM will comply with Simulation Interoperability Standards Organization (SISO) standards and open architecture to meet the Army's training requirements into the next century, to include High Level Architecture (HLA) compliance. WARSIM is also the land component element of the Joint Simulation System (JSIMS), which is a joint initiative managed by the JSIMS Joint Program Office. The Fire Support Combined Arms Tactical Trainer (FSCATT) provides for initial and sustainment gunnery training and can be linked to the CATT family. FSCATT is designated as the Army's on-line Defense Acquisition Pilot Program IAW the Federal Acquisition Streamlining Act (FASTA). The Engagement Skills Trainer (EST) provides individual and squad level home station training with a deployable small arms engagement trainer, resulting in significant savings in ammunition costs. This project funds the development of training devices, simulators, simulations and instrumentation for the Combat Training Centers (CTCs); Joint Readiness Training Center Military Operations in Urban Terrain (JRTC MOUT) for instrumented training in a realistic MOUT environment; National Training Center Objective Instrumentation System (NTC OIS) to provide a completely digital based system for full tactical system connectivity and High Level Architecture (HLA) compatibility. The Army Battle Command System Integration (ABCSI) provides an interface for the current instrumentation systems to support digitized rotations at the maneuver Combat Training Centers (NTC, CMTC, and JRTC). The Combat Synthetic Training Assessment Range (CSTAR) is a battle command training system that provides collective training for brigade-sized organizations at the National Training Center (NTC) and Fort Hood. CSTAR was approved in FY 97 as a two year Warfighting Rapid Acquisition Program (WRAP) effort. Devices developed will enable the Army to train units collectively to obtain synergistic results through the employment of weapons and support systems in their respective battlefield roles. The Intelligence Electronic Warfare Tactical Proficiency Trainer (IEWTPT) provides realistic Battle Command training by creating a realistic intelligence information environment that is exploited and reported by Military Intelligence (MI) soldier operation to battle commanders and staff.

FY 1998 Accomplishments:

- 38877 Continued development of WARSIM 2000 Spiral Builds 1 and 2.
- 984 Continued development of Engagement Skills Trainer.
- 4039 Continued development of devices, simulators and simulations to support training at Combat Training Centers to include awarding advanced target systems contract for JRTC MOUT Phase II, completed collective task training requirements and awarded technical assessment contract for NTC OIS, CTC OPFOR Surrogate Vehicle, and developed MCTC design specification for ABCS Integration and initiated ABCSI HLA with Distributed Interactive Simulation gateway converter design and AFATDS interface module design for ABCSI.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE February 1999
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604715A Non-System Training Devices - Engineering Development	PROJECT D241
<p>FY 1998 Accomplishments: (continued)</p> <ul style="list-style-type: none"> • 2776 Continued limited enhancements to CBS and complete validation of Year 2000 (Y2K) compliance. • 3500 Integrated non-developmental simulators into Corps Distributive Simulation Facilities and Battle Labs, developed linkages and upgraded R&D tools to achieve high level architecture and DIS compliance. • 5226 Completed development of Combat Synthetic Training Assessment Range. • 1000 Completed FSCATT Howitzer Crew Trainer (HCT) development. <p>Total 56402</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 34284 Complete Spiral Build 1 and continue development of Spiral Build 2 software development for WARSIM 2000. • 4777 Complete development of Engagement Skills Trainer. • 1571 Continue limited enhancements to CBS and complete validation of Y2K compliance. • 7932 Continue development of devices, simulators and simulations to support training at the Combat Training Centers, to include completing non linea editing capability as part of the audio/visual instrumentation effort and vehicle targets development as part of the Advanced Target System for JRTC MOUT Phase II, complete development of system domain model for NTC OIS and initiate engineering development of ABCSI prototype convert for CTCs and interface module for tactical ABCS Systems at NTC, CMTC, and JRTC for ABCSI . <p>Total 48564</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 1000 Initiate IEWTPT integration with WARSIM-WIM program. • 40307 Complete Spiral Build 2 software development for WARSIM 2000 • 1000 Complete development of enhancements to CBS. • 6718 Continue development of devices, simulators and simulations to support training at the Combat Training Centers, to include complete assessment of system architecture with modeling and simulation for NTC OIS, NTC Live Fire Frequency Conversion, and initiate build of ABCSI interface modules for AFATDS, MCS, FAADC3I, CSSCS, ASAS, FBCB2 subsystems and subsystem testing and initiate fielding at NTC, Fort Irwin, fo ABCSI. <p>Total 49025</p>		
Project D241	Page 4 of 14 Pages	Exhibit R-2A (PE 0604715A)

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604715A Non-System Training Devices - Engineering Development	PROJECT D241
---	---	-------------------------------

FY 2001 Planned Program:

- 1400 Complete IEWTPT integration with WARSIM-WIM and start integration and engineering design with supported IEWTPT system devices.
 - 8502 Continue development of devices, simulators and simulations to support training at the Combat Training Centers (CTCs), to include award of EMD contract for NTC OIS and initiate fielding to CMTC and JRTC for ABCSI .
 - 25720 Develop Spiral Build 3 and release WARSIM 2000 Version 1.0 for Initial Operational Capability (IOC).
- Total 35622

B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Compl	Total Cost
OPA3, Appropriation NA0100 Training Devices, Non-System	55246	60592	67374	132405	114900	97420	81992	106881	Cont'd	Cont'd
OPA3, Appropriation MA6600 CTC Support	28139	47267	2450	10154	2140	24965	31418	36058	Cont'd	Cont'd
OPA3, Appropriation NA0174 Fire Support Combined Arms Tactical Trainer	5712	15957	24518	11396	0	0			0	107287

C. Acquisition Strategy: Competitive development efforts against performance specifications.

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2004</u>	<u>FY 2005</u>
Award WARSIM System Development Contract	1Q*	1Q*	1Q	1Q	1Q	1Q	1Q	1Q	1Q
WARSIM Software Spiral Build 1		4Q							
WARSIM Software Spiral Build 2			4Q						
WARSIM Software Spiral Build 3 and V1.0 release for JSIMS IOC				3Q					
EST Contract Awar		1Q*							
EST MS III		3Q							
JRTC MOUT Phase II PD	4Q*								
JRTC MOUT Phase CDR		2Q							
NTC OIS Concept Exploration	2Q*	1Q*	1Q						
NTC OIS MS II				1Q					

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604715A Non-System Training Devices - Engineering Development	PROJECT D241
--	--	------------------------

D. Schedule Profile	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2004	FY 2005
NTC OIS MS III					2Q				
IEWTPT CONTRACT AWARD			2Q						
IEWTPT MS III							3Q		

* Milestone Completed

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604715A Non-System Training Devices - Engineering Development					PROJECT D241		

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. WARSIM EMD	C/CPAF	LMIS, Orlando, FL	57859	28709	Nov 98	36337	Nov 99	21900	Nov 00	Cont	144805	Cont
b. WARSIM Functional Description of Battlefield	C/CPFF	Veda Inc, Alexandria, VA	2575	1400	Nov 98	600	Nov 99	0	N/A	0	4575	4575
c. WARSIM System Development Contractor Selection	Various	Multiple	4264							0	4264	4264
d. CBS EMD	MIPR	NASA/JPL	19547	1375	Dec 98	975	Dec 99			0	21897	21897
e. EST	C/FFP	ECC	761	4777	Nov 98					0	5538	5568
f. IEWTPT	TBS	TBS				1000	Dec 99	1400	Dec 00	Cont	2400	Cont
g. JRTC MOUT Phase	SS/FFP	SIGCOM, NC	1163	2300	Mar 99					Cont	3463	Cont
h. JRTC MOUT Phase II*	SS/FFP	TBS	1976	732	Mar 99					Cont	2708	Cont
i. NTC OIS	C/CPIF	TBS						4154	Mar 01	Cont	4154	Cont
j. ABCS	C/CPFF	ARL, Utah	774	1255	Dec 98	5669	Dec 99	4223	Dec 00	Cont	11921	Cont
k. NTC Live Fire Conv	TBS	TBS				659	Dec 99			0	659	659
Subtotal Product Dev:			88919	40548		45240		31677			206384	Cont

Remark: WARSIM System Development Contractor was competitively selected based on downselect of three competing contractors, TRW, LORAL, and Hughes.
IEWTPT: Full and open EMD contract to develop prototype. *JRTC MOUT Phase II - Advanced Target System.

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. WARSIM Engineering & Technolog	C/CPFF	MITRE FFRDC	1877	100	Jan 99	0	N/A	0	N/A	0	1977	1977
b. WARSIM Algorithms	MIPR	AMSAA, APG, MD	638	200	Nov 98	200	Nov 99	0	N/A	0	1038	1038
c. WARSIM Engineering Spt	Various	Multiple	2167	100	Nov 98	100	Nov 99	100	Nov 00	Cont	2467	Cont
d. WARSIM Data Mgt & Repositor	C/CPIF	Veda Inc., Alexandria, VA	1250	950	Nov 98	950	Nov 99	950	Nov 00	Cont	4100	Cont
e. WARSIM Software	C/CPFF	Nations Inc, Orlando,	2986	1500	Dec 98	1500	Dec 99	1500	Dec 00	Cont	7486	Cont

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604715A Non-System Training Devices - Engineering Development						PROJECT D241		
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Engineering		FL										
f. CBS Mgt	Various	Misc.	16	25	Dec 98	25	Dec 99			Cont	66	Cont
g. EST	MIPR	Various	223							Cont	223	Cont
h. JRTC MOUT Phase	MIPR	Various	1387							Cont	1387	Cont
i. NTC-OIS	C/BAA	ARL, Utah	1830	3691	Dec 98	212	Dec 99			Cont	5733	Cont
j. ABCS	C/FFP	Scientific Sys Corp	3440	125	Nov 98	125	Nov 99	125	Nov 00	Cont	3815	Cont
k. NTC Live Fire Conv	MIPR	Various				53	Dec 99			Cont	53	Cont
Subtotal Support Costs:			15814	6691		3165		2675			28345	Cont
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. WARSIM Verification, Validation/Accreditation	Various	Multiple	480	685	Nov 98	400	Nov 99	600	Nov 00	Cont	2165	Cont
b. WARSIM - IOTE	Various	Multiple						577	Nov 00	Cont	577	Cont
Subtotal Test and Evaluation			480	685		400		1177			2742	Cont
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. WARSIM IPT Spt	MIPR	NSC, Ft Leavenworth, KS	663	300	Nov 98	0	N/A	0	N/A	0	963	963
b. WARSIM Cost Analysis	C/CPAF	TASC, Orlando, FL	201	65	Jan 99	65	Jan 00	65	Jan 01	Cont	396	Cont
c. WARSIM Program Mgt	Various	Multiple	3954	275	Nov 98	155	Nov 99	28	Nov 00	Cont	4412	Cont
Subtotal Management Services:			4818	640		220		93			5771	Cont
Project Total Cost:			110031	48564		49025		35622			243242	Cont

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604715A Non-System Training Devices - Engineering Development					PROJECT D396	
COST (<i>In Thousands</i>)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D396 WARSIM Intel Module (WIM)	9307	4629	12412	8116	7797	8286	5433	175	Continuing	Continuing
<p>A. <u>Mission Description and Justification:</u> WIM is the intelligence driver for Warfighters' Simulation (WARSIM) 2000 and Joint Simulations (JSIMS) Development Agent for Intelligence. It provides simulated, raw intelligence data to drive the intelligence analysis function during major training exercises (i.e., Prairie Warrior, Ulchi Focus Lens, Atlantic Resolve, BCTP Warfighter Exercises and various Corps/Division and Joint exercises).</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 725 Verified and validated completed software. • 4845 Continued software development of Spiral Build 1 for the Version 1.0. • 3737 Initiated software development of Spiral Build 2 for the Version 1.0. <p>Total 9307</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 680 Verification and validation of completed software. • 3450 Complete development of Spiral Build 1 and the majority of Spiral Build 2 for the Version 1.0. • 376 Initiate development of Spiral Build 3 for the Version 1.0. • 123 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 4629</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 755 Verification and validation of completed software. • 5230 Complete development of Spiral Build 2 for the Version 1.0. • 6427 Continue system development and complete the majority of Spiral Build 3 for the Version 1.0. <p>Total 12412</p>										
Project D396			Page 9 of 14 Pages				Exhibit R-2A (PE 0604715A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604715A Non-System Training Devices - Engineering Development	PROJECT D396
---	---	-------------------------------

FY 2001 Planned Program:

- 1235 Verification and validation of completed software.
- 3680 Complete development of Spiral Build 3 for the Version 1.0.
- 2100 Complete development and release of Version 1.0 for Initial Operational Capability (IOC).
- 1101 Initiate development of Version 1.1.

Total 8116

B. <u>Other Program Funding Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
OPA3, Appropriation NA0103 Training Devices, Non-System	2950	0	0	19893	27435	26648	3347	488	Cont'd	Cont'd

C. Acquisition Strategy: Competitive development against performance specifications.

D. <u>Schedule Profile</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2004</u>	<u>FY 2005</u>
Award WIM System Development Contract	1Q*	1Q*	1Q	1Q	1Q	1Q	1Q	1Q	1Q
WIM Spiral Build 1		4Q							
WIM Spiral Build 2			4Q						
WIM Spiral Build 3 AND V1.0 release for JSIMS IOC				3Q					

* Milestone Completed

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604715A Non-System Training Devices - Engineering Development						PROJECT D396		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. WIM EMD	C/CPAF	MRJ, Orlando, FL	8911	2632	Nov 98	10687	Nov 99	6361	Nov 00	Cont	28591	Cont
b. Misc COTS Hardware and Software	Various	Multiple	672	0	N/A	0	N/A	0	N/A	0	672	Cont
Subtotal Product Development:			9583	2632		10687		6361			29263	Cont
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Software Engineering	C/CPFF	MITRE FFRDC	1109	465	Nov 98	465	Nov 99	465	Nov 00	Cont	2504	Cont
b. Software Engineering	C/CPFF	Nations, Orlando, F	0	300	Nov 98	0	N/A	0	N/A	0	300	300
c. Engineering	Various	Multiple	682	499	Nov 98	500	Nov 99	500	Nov 00	Cont	2181	Cont
Subtotal Support Costs:			1791	1264		965		965			4985	Cont
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Verification, Validation and Accreditation	Various	Multiple	182	527	Nov 98	523	Nov 99	553	Nov 00	Cont	1785	Cont
Subtotal Test and Evaluation			182	527		523		553			1785	Cont
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Mgt Support	Various	Multiple	1365	206	Nov 98	237	Nov 99	237	Nov 00	Cont	2045	Cont
Subtotal Management Services:			1365	206		237		237			2045	Cont
Project Total Cost:			12921	4629		12412		8116			38078	Cont

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604715A Non-System Training Devices - Engineering Development					PROJECT D573	
COST (<i>In Thousands</i>)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D573 STRICOM and Naval Air Warfare Center Training Systems Division (NAWCTSD) Support	10268	10585	9597	8187	6604	6929	7273	7632	Continuing	Continuing

A. Mission Description and Justification: In support of Non-System Training Devices (NSTD), this project funds the US Army Simulation, Training and Instrumentation Command (STRICOM) personnel salaries and support costs.

FY 1998 Accomplishments:

- 9018 Funded STRICOM personnel and support costs for Non-System Training Device programs.
- 1250 Funded NAWCTSD support costs for Non-System Training Device programs.

Total 10268

FY 1999 Planned Program:

- 9287 Funds STRICOM personnel and support costs for Non-System Training Device programs.
- 1250 Funds NAWCTSD support costs for Non-System Training Device programs.
- 48 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs

Total 10585

FY 2000 Planned Program:

- 8347 Funds STRICOM personnel and support costs for Non-System Training Device programs.
- 1250 Funds NAWCTSD support costs for Non-System Training Device programs.

Total 9597

FY 2001 Planned Program:

- 6937 Funds STRICOM personnel and support costs for Non-System Training Device programs.
- 1250 Funds NAWCTSD support costs for Non-System Training Device programs.

Total 8187

B. Other Program Funding Summary: Not Applicable.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE
BUDGET ACTIVIT	PE NUMBER AND TITLE	PROJECT
5 - Engineering and Manufacturing Development	0604715A Non-System Training Devices - Engineering Development	D573
<p>C. <u>Acquisition Strategy</u>: Not Applicable.</p> <p>D. <u>Schedule Profile</u>: Acquisition Milestones not applicable on this project</p>		
Project D573	Page 13 of 14 Pages	Exhibit R-2A (PE 0604715A)

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604715A Non-System Training Devices - Engineering Development	PROJECT D573
---	---	-------------------------------

I. Product Development: Not Applicable

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. STRICOM personnel and support costs to Non-System Training Devices (NSTD) Combined Arms	N/A	STRICOM, Orlando, FL.	50437	9335	N/A	8347	N/A	6937	N/A	Cont	75056	Cont
b. Navy Labor personnel and support to NSTD Combined Arms	MIPR	NAWC-TSD, Orlando, FL	6995	1250		1250		1250		Cont	10745	Cont
Subtotal Support Costs:			57432	10585		9597		8187			85801	Cont

III. Test and Evaluation: Not Applicable.

IV. Management Services: Not Applicable.

Project Total Cost:			57432	10585		9597		8187			85801	
---------------------	--	--	-------	-------	--	------	--	------	--	--	-------	--

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604716A Terrain Information - Engineering Development (TIARA)						
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
Total Program Element (PE) Cost	2831	6157	5348	6120	7194	5652	4766	5052	Continuing	Continuing
D579 Field Army Map System - Engineering Development	2831	2948	5348	5630	6376	4838	4766	5052	Continuing	Continuing
D598 High Volume Map Production Equipment (HVMPE)	0	0	0	490	818	814	0	0	0	2122
D653 Digital Topography Support System - WRAP	0	3209	0	0	0	0	0	0	0	3209

A. Mission Description and Budget Item Justification: The Project Director for Combat Terrain Information Systems (PD CTIS) is responsible for developing, procuring, and fielding of topographic support systems for the Army. Program Management responsibility and Milestone Decision Authority have been assigned to the Program Executive Officer for Command, Control, and Communications Systems (PEO C3S). CTIS systems provide automated terrain analysis and graphics reproduction in support of Intelligence Preparation of the Battlefield (IPB), Command and Control, Terrain Visualization, weapons and sensor systems, and other topographic information customers. CTIS consists of two versions of the Digital Topographic Support System (DTSS) [i.e., HMMWV (DTSS-Light (L)) and 5-ton (DTSS-Heavy (H))], DTSS-Deployable (DTSS-D) (formerly the DTSS-Multispectral Imagery Processor (MSIP), DTSS-Base (DTSS-B) (formerly the Topographic Imagery Integration Prototype (TIIP)) and the High Volume Map Production Equipment (HVMPE). A Pre-Planned Product Improvement (P3I) program will be conducted to address technology insertion, cyclic upgrade of Commercial Off-the-Shelf equipment and modernization initiatives for the Topographic Support System (TSS). The DTSS-L was a successful FY98/99 Warfighter Rapid Acquisition Program (WRAP)/Force XXI Initiative. Experimentation results from the Div XXI Army Warfighter Experiment (AWE) identified technological enhancements necessary to support the First Digital Division (FDD). WRAP funding supports the development of these enhancements. PD CTIS has management responsibility for planning system integration and execution of assigned products from development through hand-off to the Readiness Command. The DTSS-H, DTSS-L, DTSS-D, and DTSS-B fall under the Field Army Mapping System - Engineering Development (D579) project. The HVMPE falls under the D598 project. DTSS-L WRAP falls under the D653 project.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE
February 1999

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604716A Terrain Information - Engineering Development (TIARA)

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (<u>FY 1999</u> PB)	2825	2999	5059	3606
Appropriated Value	2942	6229		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-117	-72		
b. SBIR / STT	-71			
c. Omnibus or Other Above Threshold Reductions	-23			
d. Below Threshold Reprogramming	+100			
e. Rescissions				
Adjustments to Budget Years Since <u>FY 1999</u> PB			+289	+2514
Current Budget Submit (<u>FY 2000 / 2001</u> PB)	2831	6157	5348	6120

Change Summary Explanation: Funding - FY 1999 – (+3230) Funding increased through WRAP process to support an Army Force XXI Initiative.
FY 2001 – (+2514) Funding increased to support Pre-Planned Product Improvement (P3I) program.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604716A Terrain Information - Engineering Development (TIARA)					PROJECT D579	
<i>COST (In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D579 Field Army Map System - Engineering Development	2831	2948	5348	5630	6376	4838	4766	5052	Continuing	Continuing
<p>A. <u>Mission Description and Budget Item Justification:</u> This Project funds development of the DTSS-L (HMMWV), DTSS-H (5-ton), DTSS-D (COTS) and DTSS-(COTS). The current terrain analysis, topographic and reproduction support provided by Army Engineer Terrain Teams is a slow, labor intensive process that does not meet the needs of the Force XXI battlefield on which the commander must have the ability to rapidly obtain terrain information and topographic products. The DTSS will automate the updating and processing of terrain information into terrain analysis products, provide rapid reproduction of low volume, up-to-date, large format, full color imagery maps, situation overlays, special graphics (e.g. captured enemy maps) and other topographic and terrain products. The Combat Terrain Information Systems (CTIS) Modernization Plan (Sep 94) emphasized the development of a combined, integrated terrain analysis and graphics reproduction capability. With the advent of new technology these capabilities can be provided in an integrated and downsized configuration (DTSS-L). The DTSS-L is capable of supporting contingency operations, operations other than war, and split based operations. Previously fielded DTSS units will be upgraded to the DTSS-H configuration. The DTSS-H incorporates a terrain analysis and graphics reproduction capability into a single platform while preserving the Army's investment in the 5-ton system. Both the DTSS-L and DTSS-H have been Type Classified-Standard. The DTSS-D was procured in response to CSA direction to provide an image map generation capability in areas where standard map products did not exist or were outdated. The DTSS-D provides a digital capability to generate and print image maps from commercial and national imagery. The DTSS-D has been upgraded to a commercial configuration that operates all of the DTSS software, receives all of the same software upgrades that the DTSS receives and all new functionality provided to the DTSS. The DTSS-D has been Type Classified-Standard. The DTSS-B was procured in response to a USAEUR initiative to develop the capability to generate terrain information over sparsely mapped areas to support training, mission rehearsal and contingency operations. The DTSS-B is designed to augment NIMA capabilities at the EAC level by providing quick response, special purpose mapping, terrain analysis and data base generation. The DTSS-B includes a Top Secret – SCI component that is capable of handling national asset information in a secure environment. The DTSS-B has been Type Classified-Standard. CTIS systems will be deployed from Brigade through EAC. Products developed as part of the CTIS RDT&E program (e.g., improved Army Battle Command Systems (ABCS) interoperability, migration to Joint Technical Architecture – Army (JTA-A) and Defense Information Infrastructure Common Operating Environment (DII COE), improved data base management and distribution, automated feature extraction, improved tactical decision aid functionality, rapid terrain visualization, improved graphics reproduction) will be incorporated into all of the DTSS hardware and software architectures. Additionally, the TSS is outdated and must be modernized to keep pace with Army digitization. The modernization initiatives associated with the TSS include updating the Operations, Distribution and Photomechanical Sections with computer workstations, copiers and printers. The Survey section will be downsized to a HMMWV configuration and the Drafting section will be updated to include digital cartographic equipment.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 2831 Continued P3I development for DTSS – improved communications and ABCS interoperability <p>Total 2831</p>										
Project D579			Page 3 of 12 Pages				Exhibit R-2A (PE 0604716A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604716A Terrain Information - Engineering Development (TIARA)	PROJECT D579
---	---	-------------------------------

FY 1999 Planned Program:

- 2570 Continue P3I development for DTSS – improved ABCS interoperability, JTA-A/DII COE migration, Y2K compliance, map server architecture
 - 300 Conduct architecture analysis for FY00 COTS cyclic upgrade of DTSS-D
 - 78 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 2948

FY 2000 Planned Program:

- 5048 Continue P3I development for DTSS – continue JTA-A/DII COE migration, COTS upgrades, system architecture improvements, TSS upgrades
 - 300 Conduct architecture analysis for FY01 COTS cyclic upgrade of DTSS-
- Total 5348

FY 2001 Planned Program:

- 5012 Continue P3I development for DTSS – rapid terrain visualization, automated feature extraction, artificial intelligence applications, TSS upgrades
 - 618 Conduct evaluation of system upgrade alternatives for DTSS-
- Total 5630

B. <u>Other Program Funding Summary</u>	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA - KA2550 - DTSS	7191	21172	24500	20170	4503	4547	29623	64346	Cont	Cont

C. Acquisition Strategy: The Acquisition Strategy for the DTSS - Light EMD phase was to utilize Army standard equipment and the Common Hardware/Software (CHS) computer workstations in conjunction with non-development item (NDI) components to develop an integrated baseline hardware configuration. The previous Combat Terrain Information Systems (CTIS) System Engineering and Integration (SE&I) contractor (Lockheed Martin Corp) executed the EMD phase, performing system integration, and provided units for formal test and evaluation. Milestone III for the DTSS-L was successfully completed in Jan 98. Production of the DTSS-L will commence in second quarter FY 1999. Previously existing DTSS units are being upgraded to a 5-ton ISO 20-foot shelter configuration (DTSS-H). The upgraded DTSS-5-ton systems will provide an integrated topographic and graphics reproduction capability while preserving the Army’s investment in the DTSS. Funding to support cyclic upgrades to the DTSS-H has been programmed on a 5-yr. upgrade cycle. Acquisition of the DTSS-D and DTSS-B was completed in FY 1996. Based upon CINC, TRADOC and PEO C3S User Evaluation approvals, the DTSS-D was Type Classified - Standard and added to the gaining unit’s Table of Organization and Equipment. Funding to support a 5-yr. cyclic upgrade program for the DTSS-D will commence in FY 2001. The DTSS-B has also been Type Classified-Standard. The acquisition of the DTSS-D and DTSS-B relied upon existing contracts and commercial-off-the-shelf to the fullest extent possible. The Project Office will continue with this strategy for the cyclic upgrade program. The pre-planned product improvement program (P3I) will be executed with the current SE&I contractor (Litton/TASC, Inc.). The contracting

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604716A Terrain Information - Engineering Development (TIARA)	PROJECT D579
---	---	-------------------------------

strategy for the DTSS-Light program was to execute the EMD phase through the previous SE&I contractor, Lockheed Martin Corporation. A Competitive Cost Plus Fixed Fee (CPFF) contract was

awarded for both the previous and existing CTIS SE&I contracts. A competitively awarded, Firm Fixed Price (FFP) contract is anticipated for the Full Rate Production of the DTSS-Light. Production of the DTSS-H is being accomplished through Firm Fixed Price (FFP) production contracts with Lockheed Martin Corporation (5) and SFA Inc. (4). The computer workstations for CTIS programs are being procured through the project manager for CHS.

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	
Milestone III In-Process Review for DTSS-L	2Q								
Initiate Fielding of DTSS-	3Q								
Award DTSS-L Production Contract		2Q							
Complete Fielding of DTSS-		3Q							
Initiate Upgrade of TSS			1Q						
Initiate Fielding of DTSS-L (FUE)			3Q						
Initiate Cyclic Upgrade and Fielding of DTSS-D			3Q						
DTSS-L IOC				3Q					
Initiate Cyclic Upgrade and Fielding of DTSS-				3Q					
Complete Upgraded DTSS-D Fielding				3Q					
Initiate Cyclic Upgrade of DTSS-					2Q				
Complete Fielding of DTSS-					3Q				
Initiate Fielding of TSS Upgrade					3Q				
Initiate Fielding of Upgraded DTSS-						3Q			
Initiate Cyclic Upgrade of DTSS-L							2Q		
Complete Fielding of TSS Upgrade							3Q		
Complete Fielding of Upgraded DTSS-								3Q	
Initiate Fielding of Upgraded DTSS-L								3Q	

UNCLASSIFIED

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE **February 1999**

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604716A Terrain Information - Engineering
Development (TIARA)

PROJECT
D579

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Primary Hardware Development	C/CPFF C/CPFF	Loral Corp, OH Lockheed Martin, P	23280	0	N/A	0	N/A	0	N/	0	23280	
b. Primary Hardware Development	C/CPFF	TASC, Reston, VA	0	200	Dec 98	1000	Oct 99	1200	Oct 00	Cont	Cont	
Subtotal Product Development:			23280	200		1000		1200		Cont	Cont	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Software Development	C/CPFF C/CPFF	Loral Corp, OH Lockheed Martin, P	34919	0		0	N/A	0	N/A	0	34919	
b. Software Development	C/CPFF	TASC, Reston, VA	500	1322	Dec 98	3000	Oct 99	3012	Oct 00	Cont	Cont	
c. SBIR/STTR			71	78		0		0		0	149	
Subtotal Support Costs:			35490	1400		3000		3012		Cont	Cont	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. DT/OT*	MIPR	TECOM	685								685	
b. FOT&E**				20	Dec 98	20	Nov 99	50	Nov 00	Cont	Cont	
Subtotal Test and Evaluation			685	20		20		50		Cont	Cont	

Remark: *DT/OT = Combined Developmental and Operational Testing
**FOT&E = Follow-on Test and Evaluation

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604716A Terrain Information - Engineering Development (TIARA)					PROJECT D579		

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Contractor Eng Support	MIPR	MITRE, McLean, V	1200	352	Oct 98	308	Oct 99	308	Oct 00	Cont	Cont	
b. Government Eng Support	MIPR	CECOM, et.al.	1142	250	Nov 98	200	Nov 99	230	Nov 00	Cont	Cont	
c. Program Mgmt Support*	Requisition	TBD		16	Jan 99	20	Nov 99	30	Nov 00	Cont	Cont	
d. Program Mgmt Personnel	MIPR	TEC, Ft. Belvoir, V	2616	710	Oct 98	800	Oct 99	800	Oct 00	Cont	Cont	
Subtotal Management Services:			4958	1328		1328		1368		Cont	Cont	

Remark: *This category primarily covers Office Automation

Project Total Cost:			64413	2948		5348		5630		Cont	Cont	
---------------------	--	--	-------	------	--	------	--	------	--	------	------	--

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604716A Terrain Information - Engineering Development (TIARA)				PROJECT D598		
COST <i>(In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D598 High Volume Map Production Equipment (HVMPE)	0	0	0	490	818	814	0	0	0	2122
<p>A. <u>Mission Description and Budget Item Justification:</u> This Project funds the development of the High Volume Map Production Equipment (HVMPE). The current high volume graphics reproduction support provided by the Reproduction Subsection of the Topographic Support System is a time consuming labor intensive process. The HVMPE will provide a tactical capability to rapidly reproduce large volumes of graphics (maps, charts, situation overlays, imagery, etc.) material. The HVMPE will be capable of reproducing information from hardcopy as well as softcopy via a direct digital interface. It is envisioned that the HVMPE will be housed in tactical vehicles (e.g., HMMWV or 5-ton). A total of ten HVMPEs will be produced to support the printing squad of the engineer topographic company located at Corps and Echelons Above Corps.</p> <p>FY 1998 Accomplishments: Project not funded in FY 1998</p> <p>FY 1999 Planned Program: Project not funded in FY 1999</p> <p>FY 2000 Planned Program: Project not funded in FY 2000</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 490 Initiate Engineering and Manufacturing Development of the HVMPE <p>Total 490</p>										
B. <u>Other Program Funding Summary</u>										
	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
OPA – KA2590 – HVMPE	0	0	0	0	0	462	1559	2158	1650	5829
<p>C. <u>Acquisition Strategy:</u> The Acquisition Strategy for the HVMPE is to utilize Commercial Off-the-Shelf (COTS) and Non-developmental Item (NDI) components integrated with Army standard hardware (trucks, shelters, power equipment) to develop an integrated hardware baseline. The contracting strategy for the HVMPE is to execute the EMD phase through the current SE&I contractor, Litton/TASC, Inc.. A Cost Plus Fixed Fee contract was awarded to the CTIS SE&I contractor. A competitively awarded Firm Fixed Price contract is anticipated for the Full Rate Production.</p>										
Project D598			Page 8 of 12 Pages				Exhibit R-2A (PE 0604716A)			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE February 1999
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604716A Terrain Information - Engineering Development (TIARA)	PROJECT D598

D. Schedule Profile	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Initiate Engineering and Manufacturing Dev						1Q				
Initiate Production of HVMPE								3Q		

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604716A Terrain Information - Engineering Development (TIARA)				PROJECT D653		
COST <i>(In Thousands)</i>	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost t Complete	Total Cost
D653 Digital Topography Support System - WRAP	0	3209	0	0	0	0	0	0	0	3209
<p>A. <u>Mission Description and Budget Item Justification:</u> This project funds the Digital Topography Support System (DTSS) Warfighting Rapid Acquisition Program (WRAP) Force XXI Initiative. The Army believes the WRAP process represents an acquisition reform success story, linking warfighting experimentation results with systems acquisition. Several technological enhancements to the DTSS were identified during the Div XXI AWE that were determined to be necessary to support the First Digital Division. The DTSS is the only system that will provide digital topographic support to maneuver brigades. It provides the digital topographic support that is the underpinning for the entire digitization effort and will provide the topographic data required by all ABCS systems. DTSS products support mission planning and execution functions. WRAP will fund RDT&E efforts to address an improved digital interface with other ABCS systems, digital data communications using the Global Broadcast System (GBS), data subsetting/tailoring for ABCS, and data storage/interface with the ABCS digital geospatial data server (Map Server). WRAP funding provides for the acceleration of RDT&E efforts for required improvements by 2 years, significantly reducing the delay between availability of commercial technologies and integration/evaluation for fielding to the FDD.</p> <p>FY 1998 Accomplishments: Project not funded in FY 1998</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 3124 Development of technological enhancements (improved ABCS interoperability, GBS interface, data tailoring, Map Server interface) • 85 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 3209</p> <p>FY 2000 Planned Program: Project not funded in FY 2000</p> <p>FY 2001 Planned Program: Project not funded in FY 2001</p> <p>B. <u>Other Program Funding Summary:</u> Not Applicable</p> <p>C. <u>Acquisition Strategy:</u> The Acquisition Strategy for execution of the WRAP/Force XXI initiative is to accomplish the development effort through the current CTIS SE&I contractor (Litton/TASC, Inc.). A Cost Plus Fixed Fee contract was awarded to the CTIS SE&I contractor.</p>										
Project D653			Page 10 of 12 Pages				Exhibit R-2A (PE 0604716A)			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE February 1999
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604716A Terrain Information - Engineering Development (TIARA)	PROJECT D653

D. Schedule Profile	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Initiate development of technology enhancements				2Q						

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604716A Terrain Information - Engineering Development (TIARA)	PROJECT D653
---	---	-------------------------------

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Hardware Development	C/CPFF	TASC, Reston, VA		200	Feb 99					0	200	
Subtotal Product Development:				200						0	200	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Software Development	C/CPFF	TASC, Reston VA		2924	Feb 99					0	2924	
b. SBIR/STTR				85						0	85	
Subtotal Support Costs:				3009						0	3009	

III. Test and Evaluation: None

IV. Management Services: None

Project Total Cost:				3209						0	3209	
---------------------	--	--	--	------	--	--	--	--	--	---	------	--

Remark: Any work efforts not completed under this Project will be completed under Project D579.

UNCLASSIFIED

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604726A Integrated Meteorological System (IMETS) (TIARA)				PROJECT DD85		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DD85 Integrated Meteorological System (IMETS)	1823	1777	2318	1782	1918	1911	982	981	8008	29741
<p>A. <u>Mission Description:</u> This program element, Integrated Meteorological System (IMETS), funds the development of the IMETS evolving upgrades to the fielded IMETS, integrating the Defense Information Infrastructure (DII) and Common Operating Environment (COE). The IMETS is a mobile tactical automated weather data receiving, processing, and dissemination system designed to provide timely weather and environmental effect forecasts, observations, and decision aid support to the Army. The IMETS is an Army-furnished system consisting of a standard shelter and vehicle, and Army Common Hardware and Software of the Army Battle Command System (ABCS) which will be operated by Air Force weather personnel and maintained within planned Army support for systems and components IAW AR 115-10/AF 105-3. It is essential that the battlefield commander be provided the most accurate and timely weather data for his intelligence preparation of the battlefield. IMETS is the first link in providing this data.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 1147 Developed, investigated and applied advanced technologies to the IMETS prototype for expanded capabilities and performance in the areas of battlescale forecast modeling, Integrated Weather Effects Decision Aid, Vis5D, Target Area Met, thunderstorm and turbulence model, and weathe overlays on ATCCS SITMAP; supported ABCS 3.0, 3.1, 4.0, 4.1 software baseline deliveries • 676 Evaluated, configured and integrated high performance expanded tech base prototype capabilities into operational IMETS prototypes <p>Total 1823</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 872 Continue to investigate, develop, test and apply advanced software and hardware processing, storage, display and input/output (I/O) technologies to tech base prototypes of high performance expanded weather applications capabilities including continued battlescale forecast modeling; evaluation of the DoD Meteorological Satellite Program Special Sensor Data, environmental record data, for integration into the Weather Effects database; generate Down Wind Message from BFM; adapt AF EOTDA to Army Applications, Applications to support Aviation Mission Planning; develop heat/cold tactical decision aid; certify DII/COE level 5 compliance for UNIX operating system; preliminary investigation of laptop configuration. • 858 Continue to evaluate, configure and integrate tech base prototype capabilities into operational IMETS prototypes • 47 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 1777</p>										
Project DD85			Page 1 of 5 Pages				Exhibit R-2 (PE 0604726A)			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)		DATE February 1999
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604726A Integrated Meteorological System (IMETS) (TIARA)	PROJECT DD85

FY 2000 Planned Program:

- 470 Support to ABCS First Digitized Division (FDD)
 - 940 Complete initial neural network method for retrieval of wind profiles from meteorological satellite sounder data
 - 908 Conduct V&V of battlescale Forecast Model (predicts icing, low clouds, turbulence, precipitation and visibility for input to battlefield decision aids) and V&V of combined temperature retrieval methods that use data from ground-based microwave radiometer and meteorological satellite sounders; convert weather applications to laptop configuration.
- Total 2318

FY 2001 Planned Program:

- 470 Support ABCS Digitized Corps
 - 803 Conduct V&V of neural network method for retrieval of wind profiles from meteorological satellite sounder data; integrate combined temperature retrieval method for Mobile Profiler Processor for Area of Operation temperature; integrate joint weather impact on weapon systems into decision aids; port weather functional software applications to windows, portable environment; develop weather data server for distributing IMETS gridded meteorological data and weather impacts database information to ABCS clients at lower echelons where there is no full IMETS capability; certif DII/COE level five compliance for laptop configuration.
 - 509 Implement a capability for IMETS to participate with both live and synthetic weather scenarios in live, virtual and constructive simulation exercises leading to first digital Corps
- Total 1782

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	1887	1790	2192	1669
Appropriated Value	1946	1790		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-59	-13		
b. SBIR / STT	-48			
c. Omnibus or Other Above Threshold Reduction	-16			
d. Below Threshold Reprogramming				
e. Rescissions				
Adjustments to Budget Years Since FY 1999 PB			+126	+113
Current Budget Submit (FY 2000/2001 PB)	1823	1777	2318	1782

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604726A Integrated Meteorological System (IMETS) (TIARA)	PROJECT DD85
---	--	-------------------------------

C. <u>Other Program Funding Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
OPA 2 - SSN: BW0021-IMETS	1329	4876	5469	7069	1035	0	0	0	0	19778

D. Acquisition Strategy: The IMETS development program is an interactive technical initiative that includes integration of the Air Force, Army, DII COE and the Army C4I Technical Architecture. The IMETS NDI acquisition strategy has proven successful in the fielding of twenty systems since program initiation in FY 1992. This development strategy will be continued to include software modules as they mature and become part of the COE library. A common map server update is of primary focus along with increased user distributed communication environment interoperability. Weather tactical decision aid upgrades and updated forecaster aids will be developed to include products from Air Force initiatives called Quick Response Communication Terminal, Small Tactical Terminal for the Defense Meteorological Satellite Program (DMSP and high resolution domestic and foreign weather satellite data). Application modules from the Army Research Laboratory will be integrated and fielded as an upgrade to the current software baseline.

E. <u>Schedule Profile</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Expand Battlescale Forecast Model	2-4Q			1-4Q	1-4Q	1-4Q	1-4Q
Develop/Integrate Visualization 5D program	3-4Q	3-4Q	3-4Q				
Develop Thunderstorm and turbulence model	2-4Q						
AF Weather Effects re-engineering integration	1-4Q	1-4Q					
Convert weather effects apps to other platforms			1-4Q	1-4Q	1-4Q	1-4Q	
Integrated Weather Effects Decision Aid update (laptop integration)	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
DII/COE Level 5 segmentation	2-4Q	1-4Q					
Integrate DMSP Environmental Data Record, weather effects sounder data	2-4Q	1Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
Develop application for Aviation Mission Planning	2-4Q	1-4Q					
Develop heat/cold tactical decision aid	2Q						
Support ABCS effort	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE **February 1999**

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604726A Integrated Meteorological System
(IMETS) (TIARA)

PROJECT
DD85

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Product Integration	CPAF, Task Order	Logicon RD Tacoma, WA	8851	569	1Q 99	462	1Q 00	412	1Q 01	1851	12145	
b. Weather Application	MIPR	ARL, White Sands Missile Range, NM	750	687	None	869	None	770	None	6092	9181	
c. GFE	MIPR	PEO C3S Ft. Monmouth, NJ				287	1Q 00				287	
Subtotal Product Development:			9601	1256		1618		1182		7943	21613	

Remark: The target value of the contract is based on the total contract with task orders written against it. There is no target value associated with each task order.

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Documentation Coordination	MIPR	CECOM		200	2Q 99	300	2Q 00	200	2Q 01	1850	2550	
b. Program Office	MIPR	PMO Intel Fusion McLean, V	450	121	1Q 99	200	1Q 00	200	1Q 01	1696	2667	
Subtotal Support Costs:			450	321		500		400		3546	5217	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. ABCS	MIPR	ARL, White Sands Missile Range, NM		200	1Q 99	200	1Q 00	200	1Q 01	2311	2911	
Subtotal Test and Evaluation				200		200		200		2311	2911	

Remark: No target value associated with the MIPR.

IV. Management Services: None
Project DD85

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)		DATE February 1999
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604726A Integrated Meteorological System (IMETS) (TIARA)	PROJECT DD85

	Total PYs Cost	<u>FY 1999</u> Cost		<u>FY 2000</u> Cost		<u>FY 2001</u> Cost		Cost To Complete	Total Cost	Target Value of Contract
Project Total Cost:	10051	1777		2318		1782		13800	29741	

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604739A JTT/CIBS-M (TIARA)				PROJECT D702		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D702 Common Integrated Broadcast Service-Modules	4215	4400	4552	6096	1490	1374	1965	1962	Continuing	Continuing
<p>A. <u>Mission Description and Budget Item Justification:</u> The Integrated Broadcast Service (IBS) is the worldwide, DoD standard network for transmitting tactical and strategic intelligence and targeting data. The Common Integrated Broadcast Service - Modules (CIBS-M) Joint Program (all services and Special Operations Command (SOCOM) was created to consolidate and replace existing IBS receiver functionality/capability, inherent with the duplicative existing systems, with a “common family” of IBS modules (both hardware and software). This is required to implement the IBS plan and consolidate/eliminate duplication of effort previously spread across multiple PEs/SSNs DoD wide. This program funds design, development, test and evaluation of initial CIBS hardware and software modules, as well as implementing performance expanding modifications to the family of Joint Tactical Terminal(JTT) equipment.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 1103 Development of Cornfield Based Crypto Module • 637 Designed/Developed CIBS Interface to Commander’s Tactical Terminal (CTT) and Multi Mission Advanced Tactical Terminal (MATT) • 753 CIBS-Module prototype design • 666 Initiated Joint Tactical Control Client • 624 Reduced Size JTT Design Concept • 432 MATT/CTT Migration Plan <p>Total 4215</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 1343 CIBS-M Software Development (Continuous Phase Modulation, JTT Control Client) • 100 MATT/CTT Migration Support • 840 Operational Test (OT) Readiness Support, OT Host Integration Support, Training, Verification & Validation • 1700 CIBS-M Hardware Development (Stand Alone CIBS-M Cryptographic Module (SACM), Cornfield) • 300 SPAWAR Systems Center (Engineering & Test Support) • 117 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 4400</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 1935 Continue Common Integrated Broadcast Service (CIBS-M) Software Development (Integrated Broadcast Service (IBS) Interoperability) 										
Project D702			Page 1 of 5 Pages				Exhibit R-2 (PE 0604739A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604739A JTT/CIBS-M (TIARA)	PROJECT D702
---	--	-------------------------------

- 1832 Continuing CIBS-M Hardware Development (Cornfield)

FY 2000 Planned Program: (continued)

- 125 CIBS-M Interoperability Testing with Multi Mission Advanced Tactical Terminal and Tactical Receive Equipment (TRE)
 - 540 Initiate "Over the Air" Software Download Capabilit
 - 120 Conduct Initial Operational Test & Evaluation (IOT&E)
- Total 4552

FY 2001 Planned Program:

- 1625 IBS Format Implementation (Tactical Data Information Link, Version J (TADIL-J))
 - 1295 Global Broadcast Service (GBS) Interface
 - 1025 Joint Communication Information Terminal (JCIT) CIBS-M Development
 - 2151 Continue CIBS-M Software Development (IBS Interoperability)
- Total 6096

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	4360	4447	4426	4409
Appropriated Value	4499	4447		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-139	-47		
b. SBIR / STT	-109			
c. Omnibus or Other Above Threshold Reduction	-36			
d. Below Threshold Reprogramming				
e. Rescissions				
Adjustments to Budget Years Since FY 1999 PB			126	1687
Current Budget Submit (FY 2000/2001 PB))	4215	4400	4552	6096

C. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
V29600 JTT/CIBS-M (Tiara)	13808	10312	24262	26946	12115	12661	15104	13245	Cont	Cont
BA1081 Integrated Broadcast Terminal Mod (Tiara)	373	6469	0	0	0	0	0	0	0	5671

This Joint Program is also related to Air Force RDT&E/Production Funding

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604739A JTT/CIBS-M (TIARA)	PROJECT D702
--	---	------------------------

D. Acquisition Strategy: The CIBS-M family of modules will be the sole provider of IBS Modules to a variety of IBS receivers across all DOD component agencies. The Joint Program will competitively develop hardware and software modules and procure the required modules for integration into host receiver systems. Additionally, this line provides for necessary modifications to IBS modules as the broadcast networks continue to evolve and modify their formats and protocols. The R&D program will fund the design and development of P3I (priority to those objective requirements in the JTT ORD that have not been satisfied). It is intended that R&D funds will be used on Firm Fixed Price Time & Material contract vehicles.

E. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Award CIBS-M Development Mod	2Q							
CIBS-M S/W Development CCPM,JCC,IBS Interoperabilit		1Q,2Q	2Q	1Q				
CIBS-M H/W Development(SACM,Cornfield)		2Q	1Q					
JTT Developmental Test (DT)		3Q						
Initial CIBS-M Integration into other terminals		4Q						
JTT Initial Operational Test and Evaluation			1Q					
JTT Milestone III			2Q					
JCIT CIBS-M Development				1Q				
IBS Operational Test				2Q				

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE **February 1999**

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604739A JTT/CIBS-M (TIARA)

PROJECT
D702

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. P3I	FFP&C/PFF	RSC, St Petersburg, FL	2891	3143	2Q	3429	2Q	5029	2Q	CONT	14492	
a. Modeling & Simulation	FFRDC	MITRE, Eatontown, NJ	268	60	1Q	70	1Q	70	1Q	CONT	468	
b. SBIR/STTR				117							117	
Subtotal Product Development:			3159	3320		3499		5099			15077	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
c. Matrix Support	MIPR	Ft. Monmouth	159	114	1QTR	120	1QTR	125	1QTR	CONT	518	
d. Software Support	T&M	Ft. Monmouth	119	100	1QTR	120	1QTR	120	1QTR	CONT	459	
b. Network Support	MIPR	ABIO, Ft Huachuca, AZ	125	245	1Q	445	1Q	495	1QTR	CONT	1310	
Subtotal Support Costs:			403	459		685		740			2287	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. CTT 3 Upgrade	MIPR	DET 2	443								443	
b. Engineering Support	MIPR	SPAWAR Support Ctr	3984	500	2Q	120	1Q	120	2Q		4724	
c. IOT&E Support	MIPR	Various			1Q	120					120	
Subtotal Test and Evaluation			4427	500		240		120			5287	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604739A JTT/CIBS-M (TIARA)						PROJECT D702		
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Management		Ft. Monmouth	425	121	1Q	128	1Q	137	1Q	CONT	811	
Subtotal Management Services:			425	121		128		137			811	
Project Total Cost:			8414	4400		4552		6096			23462	

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604741A Air Defense Command, Control, Intelligence - Engineering Development						
COST (In Thousands)	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	20591	11458	7995	8942	14994	15413	16748	17045	Continuing	Continuing
D126 FAAD Command and Control Engineering Development	20591	6363	7502	8203	9186	9607	9674	9982	Continuing	Continuing
D146 Air & Missile Defense Planning & Control System (AMC PCS)	0	0	493	739	5808	5806	7074	7063	Continuing	Continuing
D169 Air & Missile Defense Planning & Control Sys - WRAP	0	5095	0	0	0	0	0	0	Continuing	Continuing

A. Mission Description and Budget Item Justification: The Forward Area Air Defense Command, Control and Intelligence (FAAD C2I) System provides critical forward area air defense automated information to support the command and control decision process at various levels of command. The mission is to collect, digitall process and disseminate real time target information, air threat warning, and command and control information to all FAAD weapons [Avenger, Bradley Stinger Fighting Vehicle (BSFV), Manportable Air Defense System (MANPADS), and combined arms]. Unique FAADC2I software will provide the mission capability by integrating FAAD C2 engagement operations software using Common Distribution System (JTIDS), Single Channel Ground and Air Radio System (SINCGARS), Light and Special Division Interim Sensor (LSDIS), Global positioning System (GPS), Airborne Warning and Control System (AWACS), Sentinel (Previously Ground Based Sensors (GBS)), and the Army Battle Command System (ABCS) architecture. Provides horizontal integration and joint interoperability with the ABCS and Short Range Air Defense (SHORAD) Weapons Systems.

WRAP dollars will fund the Air/Missile Defense Planning and Control System (AMDPCS) which provides command and control capability to Air Defense Artillery Brigades, the Army Air and Missile Defense Command (AAMDC), corps and above headquarters, and joint force command and control elements, such as the Battlefield Coordination Detachment. It provides ADA Brigades with a Fire Control System (FCS) via the Air Defense System Integrator (ADSI) for monitoring and controlling subordinate battalions and it provides a common defense/staff planning and situational awareness tool via Air and Missile Defense Workstation (AMDWS) to be fielded to all air and missile defense units at all echelons of command, battery through theater.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE **February 1999**

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
**0604741A Air Defense Command, Control,
 Intelligence - Engineering Development**

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (<u>FY 1999</u> PB)	21181	6476	7571	8500
Appropriated Value	22350	11606		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-1169	-148		
b. SBIR / STTR	-444			
c. Omnibus or Other Above Threshold Reductions	-146			
d. Below Threshold Reprogramming				
e. Rescissions				
Adjustments to Budget Years Since <u>FY 1999</u> PB			+424	+442
Current Budget Submit (<u>FY 2000</u> PB)	20591	11458	7995	8942

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604741A Air Defense Command, Control, Intelligence - Engineering Development	PROJECT D126
---	--	-------------------------------

COST <i>(In Thousands)</i>	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
D126 FAAD Command and Control Engineering Development	20591	6363	7502	8203	9186	9607	9674	9982	Continuing	Continuing

A. Mission Description and Budget Item Justification: Project D126 – FAAD Command and Control Engineering Development: The Forward Air Defense Command and Control (FAAD C2) System is an automated system deployed with SHORAD weapons to provide accurate and timely command, control and targeting information for the SHORAD weapon systems. The system utilizes non-development item sensors, computers, displays and interface hardware integrated with data communication equipment. It automates mission related functions and uses the Single Channel Ground and Airborne Radio Systems (SINCGARS) for voice and both SINCGARS and the Enhanced Position Location Reporting System (EPLRS) for data.

FY 1998 Accomplishments:

- 2499 Digitization integration
 - 14301 Continued Block III development
 - 3791 Sentinel GBS
- Total 20591

FY 1999 Planned Program:

- 100 Operational Assessment
 - 3019 Continue Block III SW development
 - 3000 Continue digitization integration
 - 100 Complete Critical Design Review VI/System Certification Test
 - 144 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 6363

FY 2000 Planned Program:

- 4202 Continue Block III SW development
 - 3200 Continue digitization integration
 - 100 System Certification Test
- Total 7502

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604741A Air Defense Command, Control, Intelligence - Engineering Development	PROJECT D126
---	--	-------------------------------

FY 2001 Planned Program:

- 7103 Continue Block III SW development
- 1000 Continue digitization integration
- 100 Complete Critical Design Review VII

Total 8203

B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
RDTE, 64820.DE10 – Sentinel GBS	0	6742	5128	8481	10067	0	0	0	Cont	Cont
OPA 2, WK5053 – Sentinel GBS	58858	57877	38379	24362	23769	26220	35079	37869	Cont	Cont
OPA 2, WK5057 – Sentinel MODS	0	0	0	7112	9484	20052	24674	26260	Cont	Cont
OPA 2, AD5050 – FAAD C2	12592	13556	10594	12537	12448	12398	25336	41401	Cont	Cont
OPA 2, AD5070 – Air and Missile Defense	0	0	2939	4894	6354	6449	6334	6377	Cont	Cont
Spares (BS9702) – FAAD C2	1205	837	389	390	268	389	1949	1962	Cont	Cont
Spares (BS9732) – SENTINAL GBS	5258	7161	4358	2070	3223	684	3897	2844	Cont	Cont

C. Acquisition Strategy: The acquisition strategy relies heavily on non-development items (NDI) and evolutionary software development to rapidly overcome our current air defense command, control and intelligence deficiencies and to keep pace with the technologies. The concept of evolutionary software development is being followed and will be accomplished in Block – I, II, III and IV. Blocks I and II have been completed. Block III is currently being developed.

D. Schedule Profile	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Critical Design Review				2Q		2Q		2Q		
System Certification Test				2Q	4Q					
First Unit Equipped – Objective System								3Q		
First Unit Equipped, Version 6.0										4Q

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE
February 1999

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
**0604741A Air Defense Command, Control,
Intelligence - Engineering Development**

PROJECT
D126

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TRW	C/CPIF	Dominquez Hills, CA	176461	0						0	176461	
b. TRW	SS/CPIF	Dominquez Hills, CA	32206	0						0	32206	
c. TRW	SS/CPIF	Dominquez Hills, CA	47848	4636		5532		6158		Cont	64174	
d. TRW	SS/T&M	Dominquez Hills, CA	6093	0						Cont	6093	
e. Matrix (RDEC	MIPR	Huntsville, AL	5427	532		620		685		Cont	7264	
f. Sentinel GBS	MIPR	Huntsville,AL	3791							0	3791	
g. CHS	MIPR	Ft. Monmouth, NJ	1000	200		200		200		0	1600	
h. JTIDS	MIPR	Ft. Monmouth, NJ	6000							Cont	6000	
i. In-house/Govt Spt	Various	Various	11367	895		1050		1160		Cont	14472	
Subtotal Product Development:			290193	6263		7402		8203			312061	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. SETA, CAS	SS/CPFF	Huntsville, AL	10879	0							10879	
b. SBIR/STTR			444								444	
Subtotal Support Costs:			11323								11323	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. ADATD, Ft. Bliss			9916	100		100				Cont	10116	
b. OPTEC			2000	0		0				0	2000	
Subtotal Test and Evaluation			11916	100		100					12116	

IV. Management Services: None

Project Total Cost:			313432	6363		7502		8203			335500	
---------------------	--	--	--------	------	--	------	--	------	--	--	--------	--

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604741A Air Defense Command, Control, Intelligence - Engineering Development				PROJECT D146		
COST (In Thousands)	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
D146 Air & Missile Defense Planning & Control System (AMC PCS)	0	0	493	739	5808	5806	7074	7063	Continuing	Continuing
<p>A. Mission Description and Budget Item Justification: Project D146 – Air and Missile Defense Planning and Control System: The Air/Missile Defense Planning and Control System (AMDPCS) provides command and control capability to Air Defense Artillery Brigades, the Army Air and Missile Defense Command (AAMDC), corps and above headquarters, and joint force command and control elements, such as the Battlefield Coordination Detachment. It provides ADA Brigades with a Fire Control System (FCS) via the Air Defense System Integrator (ADSI) for monitoring and controlling subordinate battalions and it provides a common defense/staff planning and situational awareness tool via Air and Missile Defense Workstation (AMDWS) to be fielded to all air and missile defense units at all echelons of command, battery through theater.</p> <p>FY 1998 Accomplishments: Project not funded in FY</p> <p>FY 1999 Planned Program: Project not funded in FY 1999</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 493 Continue Software Development Contract <p>Total 493</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 739 Continue Software Development Contract <p>Total 739</p>										
B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
OPA 2, AD5070 – Air and Missile Defense	0	0	2939	4894	6354	6449	6334	6377	Cont	Cont
<p>C. Acquisition Strategy: The acquisition strategy relies on non-development items (NDI) and evolutionary software development to rapidly overcome our current air defense command, control and intelligence deficiencies and to keep pace with the technologies. The concept of evolutionary software development will be accomplished in continuing development.</p>										

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604741A Air Defense Command, Control, Intelligence - Engineering Development	PROJECT D146
--	---	------------------------

D. Schedule Profile	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Y2K Certification Testing				3Q						
AMDWS Version 1.1 Release				4Q						
AMDWS Version 2.0 Release					3Q					
ABCS 5.0				4Q						
AMDWS Version 2.1 Release						2Q				
ABCS 6.0					4Q					
AMDWS Interoperability Tests					2Q	1Q				
AMDWS Operational Assessment					2Q	1Q				
ADSI SW Certification					3Q					
ADSI Materiel Release						1Q				

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604741A Air Defense Command, Control, Intelligence - Engineering Development				PROJECT D169		
COST <i>(In Thousands)</i>	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
D169 Air & Missile Defense Planning & Control Sys - WRAP	0	5095	0	0	0	0	0	0	Continuing	Continuing
<p>A. Mission Description and Budget Item Justification: Project D169 – Air and Missile Defense Planning and Control System: WRAP dollars will fund the Air/Missile Defense Planning and Control System (AMDPCS) which provides command and control capability to Air Defense Artillery Brigades, the Army Air and Missile Defense Command (AAMDC), corps and above headquarters, and joint force command and control elements, such as the Battlefield Coordination Detachment. It provides ADA Brigades with a Fire Control System (FCS) via the Air Defense System Integrator (ADSI) for monitoring and controlling subordinate battalions. It also provides a common defense/staff planning and situational awareness tool via Air and Missile Defense Workstation (AMDWS) to be fielded to all air and missile defense units at all echelons of command, battery through theater.</p> <p>FY 1998 Accomplishments: Project not funded in FY</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 3565 AMDWS Software Development • 1000 ADSI Software Development • 395 AMDWS and ADSI Software Certification • 135 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 5095</p> <p>FY 2000 Planned Program: Project not funded in FY 2000</p> <p>FY 2001 Planned Program: Project not funded in FY 2001</p>										
B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
OPA 2, AD5070 – Air and Missile Defense	0	0	2939	4894	6354	6449	6334	6377	Cont	Cont
<p>C. Acquisition Strategy: The acquisition strategy relies on non-development items (NDI) and evolutionary software development to rapidly overcome our current air defense command, control and intelligence deficiencies and to keep pace with the technologies. The concept of evolutionary software development will be accomplished in continuing development.</p>										
Project D169			Page 8 of 10 Pages				Exhibit R-2A (PE 0604741A)			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604741A Air Defense Command, Control, Intelligence - Engineering Development	PROJECT D169
--	---	------------------------

D. Schedule Profile	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Y2K Certification Testing				3Q						
AMDWS Version 1.1 Release				4Q						
AMDWS Operational Tests – Patriot System										
AMDWS Version 2.0 Release										
ABCS 5.0				4Q						
AMDWS Version 2.1 Release										
ABCS 6.0										
AMDWS Interoperability Tests				3Q						
AMDWS Operational Assessment				3Q						
ADSI SW Certification				3Q						
ADSI Materiel Release				4Q						

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604741A Air Defense Command, Control, Intelligence - Engineering Development					PROJECT D169		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TRW	C/CPFF	Huntsville, AL		3700							3700	
b. APC	T&M	Austin, TX		1000							1000	
Subtotal Product Development:				4700							4700	
II. Support Costs: None												
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. JTTC				150							150	
b. CTSF				95							95	
c. SED				150							150	
Subtotal Test and Evaluation				395							395	
IV. Management Services: None												
Project Total Cost:				5095							5095	

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604746A Automatic Test Equipment Development						
COST (<i>In Thousands</i>)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
Total Program Element (PE) Cost	7925	9962	10252	12632	8393	8639	51434	67955	Continuing	Continuing
DL59 Diagnostic/Expert System Development	7925	6981	7333	9626	7408	7655	50353	66777	Continuing	Continuing
DL65 Test Equipment Development	0	2981	2919	3006	985	984	1081	1178	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program element provides for the development of diagnostic/prognostic hardware and software to support the increasingly complex electronics of Army weapon systems. The program focuses on commercial state-of-the-art test technologies which are common to multiple weapon platforms to minimize the cost of troubleshooting and maintenance in the field. Expert systems and artificial intelligence applications are also being developed under this program element as part of the Army Diagnostics Improvement Program (ADIP) initiative to support the overall Army strategy of improving the self-diagnostic capability of weapon systems through use of embedded sensors and built-in diagnostics. The goal of embedding diagnostics is to minimize the need for external testers and to improve the troubleshooting abilities of soldiers in the field. Emphasis is also being placed on development of paperless maintenance manuals and procedures and on battlefield electro-optical displays which will reduce the Army's investment in test program sets and in maintenance publications and procedures. This program element further provides for the development of modular, reconfigurable automatic and semi-automatic systems to satisfy calibration and repair requirements of Army general purpose test, measurement, and diagnostic equipment (TMDE). The calibration mission covers all equipment commodities, including the most sophisticated TMDE, and requires capabilities to support state-of-the-art technologies. A rapidly deployable calibration set with emphasis on digital electronics and tailored to support Army field units is being developed to alleviate serious deployability and survivability shortfalls in the current systems.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE **February 1999**

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
**0604746A Automatic Test Equipment
 Development**

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	8220	7030	7424	6749
Appropriated Value	8582	10030		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-362	-68		
b. SBIR / STT	-194			
c. Omnibus or Other Above Threshold Reductions	-64			
d. Below Threshold Reprogramming	-37			
e. Rescissions				
Adjustments to Budget Years Since FY 1999 P			+2828	+5883
Current Budget Submit (FY 2000/2001 PB)	7925	9962	10252	12632

Change Summary Explanation: FY 1999 - Congressional increase for development of Integrated Family of Test Equipment preplanned product improvements For Electro-Optic Test Facilities development (+3000).
 FY 2000 - increase to support software development projects funded within current Army resources (+2828).
 FY 2001 - increase to expand embedded diagnostics projects and to initiate preplanned product improvement program for ne calibration set (CALSET2000) funded within current Army resources (+5883).

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604746A Automatic Test Equipment Development				PROJECT DL59		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DL59 Diagnostic/Expert System Development	7925	6981	7333	9626	7408	7655	50353	66777	Continuing	Continuing
<p>A. <u>Mission Description and Budget Item Justification:</u> This project funds development of diagnostic and prognostic systems and general purpose test and diagnostic equipment. These systems and equipment are required to overcome existing deficiencies and voids in organic test and diagnostic capabilities and to ensure the operational readiness, accuracy, and effectiveness of the Army's weapons and combat support systems. The project provides for development of diagnostic/prognostic technologies and state-of-the-art general purpose automatic test equipment to support the Army's weapon systems; improvement of general purpose automatic test equipment to meet ne testing and technological requirements; market surveys of commercially available test equipment, methods, and procedures to determine applicability to Arm requirements; and development and validation of test and diagnostic software. Applications of state-of-the-art technologies in expert systems and artificial intelligence, paperless maintenance and troubleshooting manuals, electro-optical displays for battlefield use, and soldier-friendly equipment will be developed to meet identified requirements.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 2359 Upgraded digital capability of Integrated Family of Test Equipment off-system tester to VXI (open architecture). • 3605 Modified Navy standard electro-optics (EO) module for use in Army EO tester; completed integration and continued testing of the EO Test Facility. • 1072 Rehosted/developed Improved Target Acquisition System test program sets. • 889 Completed development of the Failure Analysis and Maintenance Planning System for hosting on the Soldier Portable On-System Repair Tool. <p>Total 7925</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 165 Complete testing of the EO Test Facility. • 510 Test and evaluate anticipatory maintenance system for ground vehicles. • 2323 Develop interface software needed by developers to utilize Integrated Family of Test Equipment test capabilities. • 1023 Evaluate commercial diagnostics for application to Army helicopter system maintenance requirements. • 2786 Initiate preplanned product improvement program to expand test and diagnostic capabilities of the EO Test Facility. • 174 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 6981</p>										
Project DL59			Page 3 of 9 Pages				Exhibit R-2A (PE 0604746A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604746A Automatic Test Equipment Development	PROJECT DL59
---	--	-------------------------------

FY 2000 Planned Program:

- 1390 Expand ground vehicle-based anticipatory maintenance system to brigade level.
 - 1519 Develop initial helicopter-based anticipatory maintenance system.
 - 1675 Develop horizontal technology insertion interface for the Bradley Fighting Vehicle System.
 - 1755 Develop test software applications for execution on Integrated Family of Test Equipment systems.
 - 994 Continue preplanned product improvement program for EO Test Facility.
- Total 7333

FY 2001 Planned Program:

- 2175 Test and evaluate helicopter-based anticipatory maintenance system.
 - 840 Test follow-on candidates for the Army's standard on-system tester.
 - 2337 Evaluate new hardware and software upgrades for the Integrated Family of Test Equipment.
 - 2524 Develop embedded diagnostic structure for ground vehicle systems.
 - 1750 Develop initial anticipatory logistics system.
- Total 9626

B. <u>Other Program Funding Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
OPA3, MB2201, Electronic Repair Shelte	5416	3684	10462	12990	11821	10638	6821	5886	0	67718
OPA3, MB4001, Base Shop Test Facility	21561	16509	3518	3916	0	0	0	0	0	45504
OPA3, MB4002, Contact Test Set (SPORT)	11638	23496	25355	37349	34900	38940	17314	17545	Cont	Cont
OPA3, MB4003, Electro-Optic Equipment	0	26367	12729	14313	9679	10213	9354	9419	Cont	Cont
OPA3, N11100, Army Diagnostics Improvement Program	0	0	5194	10572	10354	0	0	0	0	26120

C. Acquisition Strategy: This project funds development and upgrade of general purpose automatic test equipment and development of diagnostic software to support Army weapon systems. The projects are managed by the Product Manager, Automatic Test Support Systems and are focused on ensuring maximum use of commercial technologies and equipment to satisfy the Army's test and diagnostic requirements. When the necessary expertise and capability are available within the Department of Defense, services required for this project are ordered from the government source; otherwise, commercial contracts are used. Equipment required for developmental projects is obtained by contract from the commercial supplier. Candidate commercial equipment is identified and evaluated through market research and government testing and evaluation.

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604746A Automatic Test Equipment Development					PROJECT DL59		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Systems Engineering	SS/CPAF	Northrop Grumman, Rolling Meadows, IL	0	2263	Jan 99	1026	Jan 00	1296	Jan 01	Cont	4585	34679
b. Software Development	SS/CPAF	Northrop Grumman, Rolling Meadows, IL	0	2073	Jan 99	700	Jan 00	971	Jan 01	Cont	3744	34679
c. Systems Engineering	Various	Various	32401	141		1695		1585		Cont	35822	
d. Software Development	Various	Various	23100	566		1930		3287		Cont	28883	
e. Testin	Various	Various	4107	675		451		912		Cont	6145	
f. Government Engineering		Various	6355	613		631		650		Cont	8249	
Subtotal Product Development:			65963	6331		6433		8701			87428	
Remark: Test and evaluation costs are included as part of the product development costs. Target value of contract reflects the total contract value including RDTE, procurement, and customer funded orders for engineering and technical services.												
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Contractor Technical Services	Various	Various	314	0		300		300		Cont	914	
b. Integrated Logistics Development	Various	Various	695	0		0		0		0	695	
Subtotal Support Costs:			1009			300		300			1609	
III. Test and Evaluation: See product development remark												
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Management Personnel			4392	485		500		525		Cont	5902	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)											DATE February 1999	
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604746A Automatic Test Equipment Development						PROJECT DL59	
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
b. Program Management Support			1992	165		100		100		Cont	2357	
Subtotal Management Services:			6384	650		600		625			8259	
Project Total Cost:			73356	6981		7333		9626			97296	

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604746A Automatic Test Equipment Development				PROJECT DL65		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DL65 Test Equipment Development	0	2981	2919	3006	985	984	1081	1178	Continuing	Continuing
<p>A. <u>Mission Description and Budget Item Justification:</u> This project funds development of the Army's next generation calibration set (CALSET2000). A redesigned, rapidly deployable calibration set is required to overcome existing deficiencies and voids in organic calibration and repair capabilities. Experiences/lessons learned from Desert Shield/Desert Storm and from operations in Somalia and Bosnia highlighted the need for a more mobile and upgraded calibration set. Primary needs are for an appropriate mobility footprint that will allow airlift via C-141 or C-130 aircraft, greatly reduced electromagnetic interference/radio frequency interference signature fo operations on the modern digital battlefield, and enhanced battlefield mobility. The downsized calibration set being developed under this project will emplo reconfigurable, open electronics architecture and computer-based calibration instrumentation wherever feasible and will be housed in transport configurations to allo airlift via C-141/C-130 aircraft. This project also funds identification and evaluation of commercial and nondevelopmental test, measurement, and diagnostic equipment (TMDE) with potential to meet weapon system maintenance requirements and to cost effectively migrate new, higher reliability, open architecture electronics test equipment into the Army's inventory. Studies, market research, inventory analyses, bid sample testing, prototyping, and other efforts required in the early phases of the acquisition cycle will be accomplished under this project to support TMDE and calibration standards acquisitions.</p> <p>FY 1998 Accomplishments: Project not funded in FY 1998.</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 1868 Initiate development of two prototypes combining the current AN/GSM-286 and AN/GSM-287 Calibration Sets into a downsized configuration. • 745 Acquire smaller, lighter, high-precision calibration standards for technology insertion into the downsized equipment configuration. • 290 Initiate development of software to link calibration set computers for interactive electronic technical manual, training, controls, and othe applications. • 78 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 2981</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 1739 Continue development of CALSET2000 downsized calibration set configuration. • 250 Perform field testing and user assessment of CALSET2000. • 250 Continue development of software/database linkages. • 680 Design and develop software to automate transponder/interrogator sets using the Identification Friend or Foe Radar Test Set. 										
Project DL65	Page 7 of 9 Pages						Exhibit R-2A (PE 0604746A)			

DATE
February 1999

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
**0604746A Automatic Test Equipment
Development**

Total 2919

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604746A Automatic Test Equipment Development	PROJECT DL65
---	--	-------------------------------

FY 2001 Planned Program:

- 550 Complete development and testing of CALSET2000 downsized calibration set.
- 1456 Implement preplanned product improvement program for CALSET2000.
- 300 Prototype and perform software integration of VXI test equipment system.
- 400 Perform market research and evaluation of commercial equipment and develop performance specifications for acquisitions.
- 300 Perform analyses to identify impending and future shortages of critical Army test equipment capabilities.

Total 3006

B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
OPA3, N10000, Calibration Sets Equipment	6129	9957	11407	18464	15553	16292	17394	18492	Cont	Cont
OPA3, N11000, Test Equipment Modernization	6230	13760	14257	18365	15282	16836	17394	18493	Cont	Cont

C. Acquisition Strategy: This project funds development and upgrade of general purpose test equipment and calibration standards and the associated support equipment and software. The projects are managed by the Product Manager, Test Equipment Modernization/Calibration Sets Equipment and provide state-of-the-art capabilities to satisfy test and diagnostic requirements of Army weapon systems. Projects are focused on use of commercial and nondevelopmental item technologies to reduce the Army's investments in test and calibration equipment and to reduce the logistics and operations and support cost burdens. When the necessary expertise and capability are available within the Department of Defense, services required for this project are ordered from the government source; otherwise, commercial contracts are used. Equipment required for developmental projects is obtained by contract from the commercial supplier. Candidate commercial equipment and nondevelopmental items are identified and evaluated through market research and government testing and evaluation.

D. Schedule Profile	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2004</u>	<u>FY 2005</u>
CALSET2000 ORD Approval, Milestone I/II			2Q							
CALSET2000 User Assessment				4Q						
CALSET2000 Milestone III					1Q					
CALSET2000 Initial Operational Capabilit						4Q				

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604746A Automatic Test Equipment Development					PROJECT DL65		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Systems Engineering	Various	Various	0	1996		1531		2170		Cont	5697	
b. Software Development/Engineering	Various	Various	0	290		810		150		Cont	1250	
c. Testin	Various	Various	0	200		250		250		Cont	700	
d. Government Engineering		Various	0	270		278		286		Cont	834	
Subtotal Product Development:				2756		2869		2856			8481	
Remark: Test and evaluation costs are included as part of the product development costs.												
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Technical Support Services	Various	Various	0	225		50		150		Cont	425	
Subtotal Support Costs:				225		50		150			425	
III. Test and Evaluation: See product development remark.												
IV. Management Services: Not applicable												
Project Total Cost:				2981		2919		3006			8906	

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604760A Distributive Interactive Simulations - Engineering Development						
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
Total Program Element (PE) Cost	19572	2727	7657	20646	31070	31862	29070	25737	Continuing	Continuing
DC73 Synthetic Theater of War	4468	0	779	1123	2205	1254	0	0	0	19658
DC74 Developmental Simulation Technolog	3281	0	0	0	2797	2630	1680	1728	Continuing	Continuing
DC77 Interactive Simulation	5076	1369	4294	4756	8750	7540	6419	6258	Continuing	Continuing
DC78 Computer Generated Forces	6747	1358	2584	14767	17318	20438	20971	17751	Continuing	Continuing

A. Mission Description and Budget Item Justification: Distributed Interactive Simulation (DIS) is a synthetic environment within which humans may interact through a systematic connection of different subcomponent simulations, simulators and/or instrumented live task forces. These components may be located together or distributed at geographically dispersed locations, yet can interoperate using various simulation hardware linked through use of standard communication architecture. This program element supports the Army's Advanced Simulation Program to enable operational readiness and support the development of concepts and systems for Force XXI and the Army After Next through the application of new simulation technology and techniques. This engineering development and application of simulation technology will provide the tools to electronically link all subcomponents together in a manner that is transparent to the user. The synthetic environment is used to verify the scenarios, tactics/techniques and procedures, train testers on new hardware/software and conduct trial test runs before costly live field tests. The tools developed are available fo reuse by developers and users of simulations throughout the Army. Project DC73, Synthetic Theater of War, supports engineering development and integration of the Synthetic Theater of War-Architecture (STOW-A). Project DC74, Developmental Simulation Technology, provides simulator equipment upgrades, network upgrades, software upgrades, and resolves interoperability issues in support of the Army's Core DIS Facilities (CDFs) at Fort Knox, Fort Benning, Fort Rucker and the Operational Support Facility in Orlando, Florida. Project DC77, Interactive Simulation, focuses on engineering development of advanced simulation technology and tools to provide a reusable synthetic environment. The project also develops and enhances reconfigurable simulators which are used as Advanced Concepts Research Tools (ACRT) that will allow the battlelabs to accomplish their mission in support of the Advanced Concept & Requirements (ACR), Research, Development and Acquisition (RDA), and Training Exercise and Military Operations (TEMO) domains. Project DC78 develops and upgrades computer generated forces software systems which support experimentation, concept evaluation, materiel development and training. The One Semi-Automated Forces (OneSAF) program will combine and improve the functionalit and behaviors of several current semi-automated forces to provide a single SAF for Army use in simulations. The Advanced Simulation Program will have benefit across the Army and DOD by providing standards for interoperability and software.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE **February 1999**

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
**0604760A Distributive Interactive Simulations -
 Engineering Development**

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	20249	2766	5890	6877
Appropriated Value	20895	2766		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-646	-39		
b. SBIR / STT	-509			
c. Omnibus or Other Above Threshold Reductions	-168			
d. Below Threshold Reprogramming				
e. Rescissions				
Adjustments to Budget Years Since <u>FY 1999 PB</u>			+1767	+13769
Current Budget Submit (FY 2000/2001 PB)	19572	2727	7657	20646

Change Summary Explanation: FY00/01 plus up for acceleration of OneSAF Test Bed Build 5.0 and additional terrain data collection infrastructure enhancements
 Funded within current Army resources.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604760A Distributive Interactive Simulations -				PROJECT DC73		
				Engineering Development						
<i>COST (In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DC73 Synthetic Theater of War	4468	0	779	1123	2205	1254	0	0	0	19658
<p>A. <u>Mission Description and Justification:</u> This project supports engineering development and integration of the Synthetic Theater of War (STOW). Development focuses on leveraging existing and emerging technology in a manner that produces substantial and continual improvements in combat readiness through the use of full spectrum, high fidelity, distributed simulation capability to support a large scale user based exercise/experiment for JOINT VENTURE training and analytical needs.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 2672 Continued development of software used to link live, virtual and constructive legacy simulations. • 1796 Developed software to support CCTT Tactical System Interface Unit interoperability within the STOW-A environment. <p>Total 4468</p> <p>FY 1999 Planned Program: Project not funded in FY 1999</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 779 Continue to develop the software required to link entity-based simulations and simulators to live tactical command and control systems in support of periodic releases of Army Battle Command Systems (ABCS) software. <p>Total 779</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 1123 Continue to develop the software required to link entity-based simulations and simulators to live tactical command and control systems in support of periodic releases of ABCS software. <p>Total 1123</p>										
B. <u>Other Program Funding Summary</u>										
	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
OPA3, KA6000, Reconfigurable Simulators	13316	1961	2408	2347	367	123	122	123	Cont	Cont
<p>C. <u>Acquisition Strategy:</u> Development and procurement through delivery orders to competitively selected contractors based on performance specifications.</p>										
Project DC73			Page 3 of 15 Pages				Exhibit R-2A (PE 0604760A)			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE February 1999
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604760A Distributive Interactive Simulations - Engineering Development	PROJECT DC73

D. Schedule Profile	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2004</u>	<u>FY 2005</u>
Award Engr & Integration Contract	1Q*	1Q*		1Q	1Q	1Q	1Q			

*Milestone Complete

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604760A Distributive Interactive Simulations - Engineering Development						PROJECT DC73		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. STOW-A Development	C/CPAF	Lockheed-Martin, Orlando, FL	3104	0						0	3104	3104
b. STOW-A Requirements Analysis	C/CPIF	Cubic Applications, Ft Levensorth, KS	1290	0						0	1290	1290
c. STOW-A Development	C/CPIF	Orlando, FL	4710	0						0	4710	4710
d. CCTT TSIU Interface	C/CPIF	Coleman Research, Huntsville, AL	1796	0						0	1796	1796
e. STOW-A Software development	TBD	TBD		0		576	Dec 99	604	Dec 00	2451	3631	3631
Subtotal Product Dev:			10900			576		604		2451	14531	14531
Remark: Each award is Delivery Order (DO) against CPIF.												
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Miscellaneous	Various	Various	1252	0		96	Nov 99	300	Nov 00	600	2248	2248
Subtotal Support Costs:			1252			96		300		600	2248	2248
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Miscellaneous	Various	Various	789	0		0		0		0	789	789
Subtotal Test and Evaluation			789								789	789
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Service Support	Various	Multiple	1295	0		107	Nov 99	219	Nov 00	450	2071	2071

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)							DATE February 1999			
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604760A Distributive Interactive Simulations - Engineering Development				PROJECT DC73		
Subtotal Mgt Services:			1295		107	219	450	2071	2071	
	Total PYs Cost	<u>FY 1999</u> Cost		<u>FY 2000</u> Cost		<u>FY 2001</u> Cost	Cost To Complete	Total Cost	Target Value of Contract	
Project Total Cost:		14236		779		1123	3501	19639	19639	
Project DC73			Page 6 of 15 Pages			Exhibit R-3 (PE 0604760A)				

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604760A Distributive Interactive Simulations - Engineering Development				PROJECT DC74		
COST <i>(In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DC74 Developmental Simulation Technolog	3281	0	0	0	2797	2630	1680	1728	Continuing	Continuing
<p>A. <u>Mission Description and Justification</u> : Project DC74 - Developmental Simulation Technology: This project supports the Core Distributed Interactive Simulation (DIS) Facilities (CDF) at Fort Knox, KY, Fort Rucker, AL, Fort Benning, GA and the Operational Support Facility in Orlando, FL, which provide a virtual combined arms battlefield with the warfighter-in-the-loop to evaluate weapon system concepts, tactics, doctrine and test plans.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 477 Continued development of Dismounted Warrior Network, expanding the current capabilities to include Military Operations Urban Terrain (MOUT) and C4I simulation and development of Dismounted Infantry Semi-Automated Forces (DI SAF) for future integration into Modular SAF (MODSAF). • 294 Completed development of tools, which provide improved capabilities for exercise generation and after-action analysis. • 2510 Successfully rehosted and upgraded both the Rotary Wing Aircraft Simulators and the M1A2 Tank simulators with low cost PC based COTS technology to increase reliability and interoperability with other simulation systems. Completed initial requirements for a Simulation/C4I Testbed capability to investigate simulation/C4I issues related to synthetic environments. <p>Total 3281</p> <p>FY 1999 Planned Program: Project not funded in FY 1999</p> <p>FY 2000 Planned Program: Project not funded in FY 2000</p> <p>FY 2001 Planned Program: Project not funded in FY 2001</p>										
B. <u>Other Program Funding Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Compl	Total Cost
OPA3, KA6000, Reconfigurable Simulators	13316	1961	2408	2347	367	123	122	123	Cont	Cont
<p>C. <u>Acquisition Strategy:</u> Competitive development leading to competitive procurement against performance specifications</p>										
Project DC74			Page 7 of 15 Pages				Exhibit R-2A (PE 0604760A)			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604760A Distributive Interactive Simulations - Engineering Development	PROJECT DC74
--	---	------------------------

D. Schedule Profile	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2004	FY 2005
Advanced Distributed Simulation Technolog (ADSTII) Delivery Order Contract Award	1Q*	1Q*				1Q	1Q	1Q	1Q	1Q
Award DIS Simulation Engineering Integration (SEI) Contract for Distributed Interactive Simulation Exercise Construct Tool (DISECT)		1Q*								

Milestones Completed*

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604760A Distributive Interactive Simulations - Engineering Development				PROJECT DC77		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DC77 Interactive Simulation	5076	1369	4294	4756	8750	7540	6419	6258	Continuing	Continuing
<p>A. <u>Mission Description and Justification:</u> Project DC77 - Interactive Simulation: This project focuses on engineering development of techniques and Distributed Simulation technology [e.g. Higher Level Architecture (HLA)] of wide area simulation networking in support of modeling and simulation, doctrinal development, training, and operations, utilizing live, virtual and constructive simulations. Development also supports related simulations and simulator efforts, including the Battlelab Reconfigurable Simulators.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 1174 Provided systems engineering and developed HLA environment and standards to support interoperability within the training domain. • 467 Completed development of tools, which provide improved capabilities for exercise generation and after-action analysis. • 314 Continued the development of a federation test suite, which serves as a validation tool for other simulation software developers. • 3121 Solicited and evaluated COTS candidate Advanced Concepts Research Tools. Developed linkages and upgraded R&D tools to achieve HLA and DIS compliance and resolved interoperability issues. Awarded contract to procure the initial commercially available reconfigurable simulators from various manufacturers. <p>Total 5076</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 880 Provide systems engineering and develop High Level Architecture environment and standards to support interoperability within the training domain. • 469 Develop the software required to link entity-based simulations and simulators to live tactical command and control systems in support of periodic releases of Army Battle Command Systems (ABCS) software in support of STOW-A. • 20 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 1369</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 3250 Award contract modification to integrate additional ground and aviation full fidelity Advanced Concepts Research Tools (ACRT) at the Core DIS facilities. Award contract modification to develop and acquire C4I variants of the ACRT. • 1044 Continue development of High Level Architecture technology and tools to support Simulation Object Modeling, Federation Object Model development and federation exercise management, data collection and after action review, and HLA compliance tools. <p>Total 4294</p>										
Project DC77			Page 9 of 15 Pages				Exhibit R-2A (PE 0604760A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604760A Distributive Interactive Simulations - Engineering Development				PROJECT DC77		
<p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 3250 Continue integration of ground and aviation full fidelity Advanced Concepts Research Tools (ACRT) at the Core DIS facilities and develop and acquire C4I variants of the ACRT. • 1506 Continue development of High Level Architecture technology and tools to support Simulation Object Modeling, Federation Object Model development and federation exercise management, data collection and after action review, and HLA compliance tools. <p>Total 4756</p>										
B. Other Program Funding Summary										
	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
OPA3, KA6000, Reconfigurable Simulators	13316	1961	2408	2347	367	123	122	123	Cont	Cont
C. Acquisition Strategy: Competitive development leading to competitive procurement against performance specifications.										
D. Schedule Profile										
	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2004</u>	<u>FY 2005</u>
Advanced Distributed Simulation Technology II Delivery Order Contract Awarded	1Q*	1Q*	1Q*	1Q	1Q	1Q	1Q	1Q	1Q	1Q
Milestone Completed*										
Project DC77			Page 10 of 15 Pages				Exhibit R-2A (PE 0604760A)			

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604760A Distributive Interactive Simulations - Engineering Development					PROJECT DC77		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Battlelab Reconfigurable Simulator development	C/CPIF	Hughes Training Inc., Orlando, FL	4144	0	0	0	0	0	0	0	4144	4144
b. ACRT Development and Integration	C/CPAF	NAWC-TSD Orlando, FL	2661	0	0	3250	Dec 99	3250	Dec 00	Cont	9161	Cont
c. DISECT Development	C/CPIF	TASC, Orlando, FL	464	0		0		0		Cont	464	Cont
d. HLA Tool Development	Various	Various	3228	1217	Nov 98	896	Nov 99	1329	Nov 00	Cont	6670	Cont
Subtotal Product Development:			10497	1217		4146		4579			20439	Cont
Remark: Battlelab Reconfigurable Simulator Program replaced by ACRT. Contract awards are Delivery Orders (DO) against CPIF.												
II. Support Costs: Not Applicable. Each award is DO of CPIF.												
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. ModSAF V&V	Various	Various	285							0	285	285
Subtotal Test and Evaluation			285								285	285
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. HLA Tools program mgt	Various	Various	271	152	Nov 98	148	Nov 99	177	Nov 00	Cont	748	Cont
Subtotal Management Services:			271	152		148		177			748	Cont
Project Total Cost:			11053	1369		4294		4756			21472	Cont

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604760A Distributive Interactive Simulations - Engineering Development	PROJECT DC78
---	--	-------------------------------

COST (<i>In Thousands</i>)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DC78 Computer Generated Forces	6747	1358	2584	14767	17318	20438	20971	17751	Continuing	Continuing

A. Mission Description and Justification: This project provides for the development of software systems to realistically represent activities of units and forces in simulation. This representation is used to support concept evaluation, experimentation, materiel acquisition and training communities. This project funds improvements, new functionality, enhancements and re-architecture of ModSAF. Other initiatives include the systems engineering and design for improvements to the architecture and interoperability of Army SAFs, and the evolution to an Army universal computer generated forces system, OneSAF. OneSAF is a composable next generation SAF which will represent a full range of operations, systems and control processes for support of training research, development and acquisition simulation applications including human-in-the-loop.

FY 1998 Accomplishments:

- 500 Developed and integrated expansion of ModSAF battlefield operating systems representation/upper echelon behavior capabilities.
 - 1540 Established the Integrated Product Team and developed the technical requirements, acquisition planning and concept for OneSAF.
 - 4364 Continued development of the OneSAF architecture to provide for composability and HLA compliance; incorporated ModSAF v4.0 functionality; and initiated development of OneSAF Testbed Baseline (OTB) Build 1.0.
 - 343 Verified and validated newly integrated software.
- Total 6747

FY 1999 Planned Program:

- 300 Continue the development of the OneSAF architecture to provide composability, HLA compliance and repeatabilit
 - 240 Continue OneSAF requirements definition.
 - 604 Complete development of OTB Build 1.0, integrate functionality of ModSAF V5.0, and initiate development of OTB Builds 2.0 and 3.0/4.0.
 - 180 Verification and validation of newly integrated software.
 - 34 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 1358

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)							DATE February 1999			
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604760A Distributive Interactive Simulations - Engineering Development			PROJECT DC78		
FY 2000 Planned Program:										
•	1300	Complete development of OTB Builds 2.0 and 3.0/4.0 and initiate development of OTB Build 5.0								
•	457	Complete development and issue OneSAF Version 1.0 (Alpha) for initial use, replacing ModSAF, and initiate development of Version 2.0.								
•	592	Continue development of the OneSAF synthetic natural environment and architecture development for scalability.								
•	235	Verification and validation of newly integrated software.								
Total	2584									
FY 2001 Planned Program:										
•	6995	Complete development of OTB Build 5.0 and continue development of Version 2.0.								
•	6987	Develop functionality to represent composable behaviors, opposing forces and provide terrain, editing and data collection tools and OneSAF infrastructure enhancements.								
•	785	Verification and validation of newly integrated software.								
Total	14767									
B. <u>Other Program Funding Summary:</u> No other related funding										
C. <u>Acquisition Strategy:</u> Competitive development leading to competitive procurement against performance specifications.										
D. <u>Schedule Profile</u>										
	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2004</u>	<u>FY 2005</u>
ADST II Delivery Order Contract Award	1Q*	1Q*	1Q*	1Q	1Q					
Test Bed Build 3.0 Complete				3Q						
Version 1.0 Alpha Release				4Q						
Award OneSAF New Competitive Development Contract					2Q					
Verification & Validation performed on continuous basis. 1 st Qtr annual award.						1Q	1Q	1Q	1Q	1Q
Milestone Completed*										
Project DC78			Page 13 of 15 Pages				Exhibit R-2A (PE 0604760A)			

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604760A Distributive Interactive Simulations - Engineering Development	PROJECT DC78
---	--	-------------------------------

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. ModSAF enhancement	C/CPAF	Lockheed-Martin Inc., Orlando, FL	500	0		0		0		Cont	500	Cont
b. OneSAF Systems architecture/development	C/CPAF	Lockheed-Martin Inc., Orlando, FL	2685	372	Nov 98	1500	Nov 99	3675	Nov 00	Cont	8232	Cont
c. OneSAF Systems architecture/development	Various	Various	2439	316	Dec 98	332	Dec 99	845	Dec 00	Cont	3932	Cont
d. OneSAF System Dev	C/CPAF	TBD						8602	Jan 01	Cont	8602	Cont
Subtotal Product Dev:			5624	688		1832		13122			21266	Cont

Remark: New Competitive Contract for OneSAF Development. Each award is DO against CPAF.

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Systems analysis	Various	Various	405	210	Dec 98	225	Dec 99	460	Dec 00	Cont	1300	Cont
Subtotal Support Costs:			405	210		225		460			1300	Cont

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Verification & Validation	Various	Various	343	180	Nov 98	235	Nov 99	785	Nov 00	Cont	1543	Cont
Subtotal Test and Evaluation			343	180		235		785			1543	Cont

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program management	Various	Various	375	280	Nov 98	292	Nov 99	400	Nov 00	Cont	1347	Cont
Subtotal Mgmt Services:			375	280		292		400			1347	Cont

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604760A Distributive Interactive Simulations - Engineering Development	PROJECT DC78
---	--	-------------------------------

	Total PYs Cost	FY 1999 Cost		FY 2000 Cost		FY 2001 Cost		Cost To Complete	Total Cost	Target Value of Contract
Project Total Cost:	6747	1358		2584		14767			25456	Cont

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE February 1999			
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604766A Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA)					PROJECT D909		
COST (In Thousands)		FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
D909 Tactical Exploitation of National Capabilities - Engineering Development		17221	43950	70940	57008	88953	71418	65472	61538	Continuing	Continuing
<p>A. <u>Mission Description and Budget Item Justification:</u> This project supports the engineering development/enhancement of the Electronic Tactical User Terminal (ETUT), Mobile Integrated Tactical Terminal (MITT), Forward Area Support Terminal (FAST), Advanced Electronic Processing Dissemination System (AEPDS) and Tactical Exploitation System (TES). The Army's emerging TES will incorporate the standards and protocols dictated by the Common Imagery Ground/Surface System (CIG/SS) program. TES brings all of the existing and emerging Army TENCAP capabilities (AEPDS, MIES, and ETRAC) into an integrated common baseline; downsized, modular and scaleable to meet a wide range of contingency requirements. TENCAP Common Baseline addresses common subsystems, planned improvements, ke activities and ongoing/planned initiatives determined to have potential application to multiple TENCAP systems. MIES, ETRAC, and the CIG/SS portion of TES are funded under PE 0305208A. Specific details are provided in the Tactical Intelligence and Related Activities (TIARA) Congressional Budget Justification Book, Volume II and in the Army TENCAP Master Plan.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 6401 Continued software upgrades and enhancements for the refinement of the TENCAP Common Baseline to fully exploit National capabilities such as integration of communications capabilities to meet changing architectures and implementation of software appliqué to provide the operational commander with enhanced battlefield intelligence products. In addition to staying current with National and Theater capabilities, will include integration of Global Broadcast System (GBS) and the Joint Tactical Terminal (JTT) into the TENCAP systems. • 8480 Continued engineering development of TES #1. • 2340 Continued support to TENCAP program management and administrative activities [e.g. FFRDC (Aerospace), ARL support, ASPO support, Arm Topographic Engineering Center (TEC)]. <p>Total 17221</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 16489 Continue software upgrades and enhancements for the refinement of the TENCAP Common Baseline to fully exploit National capabilities such as integration of communications capabilities to meet changing architectures and implementation of software appliqué to provide the operational commander with enhanced battlefield intelligence products. In addition to staying current with National and Theater capabilities, will include integration of Global Broadcast System (GBS) and the Joint Tactical Terminal (JTT) into the TENCAP systems. • 3000 Initiate engineering development of Tactical SIGINT Processor (TSP) for integration into TES to provide critical intelligence data to Tactical Commanders. 											
Project D909			Page 1 of 6 Pages				Exhibit R-2 (PE 0604766A)				

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)		DATE February 1999
BUDGET ACTIVIT	PE NUMBER AND TITLE	PROJECT
5 - Engineering and Manufacturing Development	0604766A Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA)	D909
<p>FY 1999 Planned Program: (continued)</p> <ul style="list-style-type: none"> • 17388 Continue engineering development of TES #1. • 5426 Continue support to TENCAP program management and administrative activities (e.g. FFRDC (Aerospace), ARL support, ASPO support, Arm Topographic Engineering Center (TEC)). • 1647 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 43950</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 24045 Continue software upgrades and enhancements for the refinement of the TENCAP Common Baseline to fully exploit National capabilities such as integration of communications capabilities to meet changing architectures and implementation of software appliqué to provide the operational commander with enhanced battlefield intelligence products. In addition to staying current with National and Theater capabilities, will include integration of Global Broadcast System (GBS) and the Joint Tactical Terminal (JTT) into the TENCAP systems. • 8000 Continue engineering development of TSP. • 6500 Develop prototype Division TES (DTES) • 10259 Complete engineering development of TES #1. • 16391 Begin engineering development of TES #2. • 5745 Continue support to TENCAP program management and administrative activities (e.g. FFRDC (Aerospace), ARL support, ASPO support, Arm Topographic Engineering Center (TEC)). <p>Total 70940</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 24825 Continue software upgrades and enhancements for the refinement of the TENCAP Common Baseline to fully exploit National capabilities such as integration of communications capabilities to meet changing architectures and implementation of software appliqué to provide the operational commander with enhanced battlefield intelligence products. In addition to staying current with National and Theater capabilities, will include integration of Global Broadcast System (GBS) and the Joint Tactical Terminal (JTT) into the TENCAP systems. • 8000 Complete engineering development of TSP. • 6500 Initiate integration of Tactical Downlink Collectors into TES • 6224 Complete engineering development of TES #2. • 5522 Initiate engineering development of TES #3. • 500 Test prototype DTES 		
Project D909	Page 2 of 6 Pages	Exhibit R-2 (PE 0604766A)

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)							DATE February 1999			
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604766A Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA)			PROJECT D909			
<p>FY 2001 Planned Program: (continued)</p> <ul style="list-style-type: none"> • 5437 Continue support to TENCAP program management and administrative activities (e.g. FFRDC (Aerospace), ARL support, ASPO support, Arm Topographic Engineering Center (TEC)). <p>Total 57008</p>										
B. Program Change Summary										
	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>						
Previous President's Budget (FY 1999 PB)	17807	44674	79740	56213						
Appropriated Value	19113	44674								
Adjustments to Appropriated Value										
a. Congressional General Reductions	-1306	-724								
b. SBIR / STTR	-441									
c. Omnibus or Other Above Threshold Reductions	-145									
d. Below Threshold Reprogramming										
e. Rescissions										
Adjustments to Budget Years Since FY 1999 PB			-8800	795						
Current Budget Submit (FY 2000/ 2001 PB)	17221	43950	70940	57008						
Change Summary Explanation: FY 2000 funds reprogrammed (-8800) for higher priority requirements.										
C. Other Program Funding Summary										
	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
RDTE, Budget Activity 4										
PE 0603766A	18957								0	18957
RDTE, Budget Activity 7										
PE 0305208A		8853	8066	7943	8276	8360	8525	8767	Cont	Cont
RDTE, Budget Activity 7										
PE 0305208D Project PD8Z DARP	29062								0	29062
Other Procurement Army, OPA-2										
BZ7315 TENCAP	1618	6073	4370	12946	13876	15713	3897	2943	Cont	Cont
BZ7316 CIGSS		2501	2791	2853	2624	2637	2683	2751	Cont	Cont
Procurement, Defense Wide										
PE 0305208D Project PD8Z DARP	91824								0	91824
Project D909										
Page 3 of 6 Pages										
Exhibit R-2 (PE 0604766A)										

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604766A Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA)	PROJECT D909
---	---	-------------------------------

D. Acquisition Strategy: As pioneers in streamlined acquisition, ASPO's success in delivering systems as those described above to warfighters can be directly attributed to an environment emphasizing stable funding, low density acquisition, minimal use of MILSPECS, and managed competition. By tailoring existing technology, leveraging the best commercial practices and using commercial and government-off the shelf software, ASPO minimizes risk while maximizing efficiency. Finally, dedicated cradle to grave Integrated Logistics Support (ILS) for TENCAP systems is accomplished through a coordinated effort by Government and contractor personnel and facilities.

E. Schedule Profile	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Complete and Field DAMA Applique into SUCCESS Radios			4 th QTR							
Complete TES Critical Design Review			3 rd QTR							
Initiate migration of JTT into AEPDS and TES				2 nd QTR						
Complete integration of GBS into AEPDS and TES				4 th QTR						
Complete Prototype development of TES-Forward				4 th QTR						
Complete Prototype development of TES-Main					4 th QTR					
Complete development and integrate TSP into TES						4 th QTR				
Complete development of TES #2						4 th QTR				
Complete development of TES #3							4 th QTR			
Complete development of TES #4									4 th QTR	
Complete development of TES #5										4 th QTR
Complete development of DTES prototype						1 st QTR				
Complete operational testing DTES prototype						3 rd QTR				

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604766A Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA)	PROJECT D909
---	---	-------------------------------

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TES #1 Prototype *	C/CPAF	CLASSIFIED	13111	17388	11/98	10259	11/99		0	0	40758	
b. Common Baseline **	SS/CPAF	CLASSIFIED	8321	16489	2/99	24045	2/00	24825	2/01	170828	244508	
c. TSP	SS/CPAF	CLASSIFIED	0	3000	11/98	8000	11/99	8000	11/00	0	19000	
d. TES #2 EDM*	SS/CPAF	CLASSIFIED	0			16391	3/00	6224	11/00	0	22615	
e. TES #3 EDM*	SS/CPAF	CLASSIFIED	0					5522	11/00	15525	21047	
f. DTES	SS/CPAF	CLASSIFIED	0			6500	4/00			47674	54174	
g. TDL Collector	TBD	TBD	0					6500	1/01		6500	
Subtotal Product Development:			21432	36877		65195		51071		234027	408602	

Remark: *TES development is also partially funded under PE 0305208A.
 **Common Baseline addresses common subsystems, planned improvements, key activities, and ongoing/planned initiatives determined to have potential application to multiple TENCAP systems (including MIES, ETRAC, and TES that have funding under PE 0305208A)

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. System Engineering (Government)				1235		1458		1504		CONT	4197	
b. ASPO In-house				2788		2610		2536		CONT	7934	
c. FFRDC				1403		1677		1397		CONT	4477	
d. SBIR/STTR				1647							1647	
Subtotal Support Costs:				7073		5745		5437			18255	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. DTES	TBD	TBD	0					500	3/01	0	500	
Subtotal Test and Evaluation								500			500	

IV. Management Services: Not applicable

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604766A Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA)	PROJECT D909
--	--	------------------------

	Total PYs Cost	FY 1999 Cost		FY 2000 Cost		FY 2001 Cost		Cost To Complete	Total Cost	Target Value of Contract
Project Total Cost:	21432	43950		70940		57008		234027	427357	

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition
--	---

COST <i>(In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
Total Program Element (PE) Cost	225241	128521	128026	112149	97579	75050	62027	18801	14465	1966045
D641 BAT	86123	17125	17006	0	0	0	0	0	0	1028410
D687 BAT P3I	56298	65458	81321	68889	45065	11318	5622	0	0	399655
D688 ATACMS BLK II	82820	41414	27528	14757	0	0	0	0	0	296576
D686 ATACMS BLK IIA	0	4273	0	28452	52440	63294	54887	18801	14465	236612
D2NT BAT Operational Test	0	251	2171	51	74	438	1518	0	0	4792

A. Mission Description and Budget Item Justification: The BAT is the submunition in the Block II missile system that supports the Army's deep fire doctrine calling for the destruction and disruption of threat forces and long range weapons at ranges in excess of 100 kilometers before they can influence the maneuver battle. In the past, the only options have been to engage these targets with attack helicopters or fixed wing aircraft. While effective, these options place critical resources and their air crews at risk. The BAT system significantly reduces this risk through its autonomous acquisition and terminal guidance capabilities to attack well-defended armored forces behind enemy lines. The BAT system includes the BAT submunition, a pre-planned product improvement (P3I) BAT submunition, the Army Tactical Missile System Block II (ATACMS BLK II) missile, and the ATACMS BLK IIA missile. BAT is a dual-sensor (acoustic and infrared) submunition that autonomously seeks out and destroys moving armored vehicles without human interaction. BAT and BAT P3I submunitions are carried deep into enemy territory by the two Army TACMS variants, then dispensed over a large target array to selectively attack and destroy individual targets. The BAT P3I program will improve the sensor and warhead subassemblies to increase lethality and to enable the BAT submunition to attack cold, stationary, armored targets and other critical high priority targets. The ATACMS BLK II missile is a version of the currently fielded and combat-proven Army TACMS Block I missile and is designed to carry 13 BAT or BAT P3I submunitions. The ATACMS BLK IIA missile is an extended range version of the ATACMS BLK II missile and will carry 6 BAT P3I submunitions out to ranges in excess of 200 kilometers.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE **February 1999**

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604768A Brilliant Anti-Armor (BAT) Submunition

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (<u>FY 1999</u> PB)	229389	134858	160363	120582
Appropriated Value	237302	128858		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-7913	-337		
b. SBIR / STT	-5750			
c. Omnibus or Other Above Threshold Reductions	-1898			
d. Below Threshold Reprogramming	+3500			
e. Rescissions				
Adjustments to Budget Years Since <u>FY 1999</u> PB			-32337	-8433
Current Budget Submit (<u>FY 2000/2001</u> PB Submission)	225241	128521	128026	112149

Change Summary Explanation: FY 00/01 decreases due to slippage of Block IIA Program.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition					PROJECT D641	
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D641 BAT	86123	17125	17006	0	0	0	0	0	0	1028410
<p>A. Mission Description and Budget Item Justification: Project D641-BAT: The BAT submunition is an unpowered, aerodynamically stable vehicle approximately 36 inches long, 5.5 inches in diameter, and weighs 44 pounds. The BAT is an acoustic and infrared terminally guided submunition that searches for, tracks, and destroys moving armored combat vehicles. BAT submunitions are carried deep into enemy territory by a variant of the Army Tactical Missile System (ATACMS Block II), then dispensed over concentration of critical high-payoff targets to selectively attack and destroy individual targets. By using acoustic technology, BAT has the advantage of an extremely large footprint, which allows it to compensate for target location errors. Being a certified round, the Block II with BAT submunitions has a low sustainment cost.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 40501 Conduct EMD Program. • 33822 Award Test Hardware Contract (THC) to build submunitions for Initial Operational Test and Evaluation (IOT&E)/Formal Live Fire Test (FLFT) Hardware Testing. • 9533 Support Carrier Flight Testing and Other Integration Activities • 2267 Conduct Test Range and Target Operation, Maintenance and Improvement <p>Total 86123</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 11556 Build hardware to support IOT&E/FLFT • 2890 Complete EMD program • 1900 Support Carrier Flight Testing and Other Integration Activities • 325 Conduct Test Range and Target Operation, Maintenance and Improvement • 454 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program <p>Total 17125</p>										

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition	PROJECT D641
---	--	-------------------------------

FY 2000 Planned Program:

- 10533 Support IOT&E/FLFT Qualification Tests
 - 2875 Conduct Formal Live Fire Tests
 - 2998 Conduct Integration Activities
 - 500 Conduct Test Range and Target Operation, Maintenance and Improvement
 - 100 Trade studies and system improvement and optimization activities
- Total 17006

FY 2001 Planned Program: Project not funded in FY 2001

B. <u>Other Program Funding Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Complete	Total Cost
Missile Procurement, Arm CA 6100 BAT		100099	149254	136391	149481	224517	192901	198502	1105261	2256406

C. Acquisition Strategy: The BAT system is a sole source EMD program.

D. <u>Schedule Profile</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2004</u>	<u>FY 2005</u>
Complete Functional Configuration Audit (FCA)	4QTR*								
Complete CDT and PPVT	2QTR*								
Award Test Hardware Contract (TH)	3QTR*								
Block II/BAT LRIP DA		2QTR							
Award LRIP I Contract		2QTR							
THC Qualification Tests			3QTR						
First THC Deliveries			3QTR						
LFT &E Tests Begin			4QTR						
IOT&E Tests Begin			4QTR						

* Milestone completed.

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)											DATE February 1999	
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition						PROJECT D641	
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Northrop Grumman Corp	SS/CPAF/ CPFF/CPIF/ FPIF		761967	14396		12931					789294	
b. RDEC Support			35897	497							36394	
Subtotal Product Development:			797864	14893		12931					825688	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Sys Eng Tech Assist & Program Mgmt Spt	SS/CPFF		60848	495							61343	
b. Misc Other Gov Act	PO		46937								46937	
Subtotal Support Costs:			107785	495							108280	
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Range Support	PO		22551	737		3600					26888	
b. Other Test	PO		15758			275					16033	
Subtotal Test and Evaluation			38309	737		3875					42921	
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. In-House Support	PO		50321	1000		200					51521	
Subtotal Management Services:			50321	1000		200					51521	

ARMY RDT&E COST ANALYSIS (R-3)

DATE **February 1999**

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604768A Brilliant Anti-Armor (BAT) Submunition

PROJECT
D641

	Total PYs Cost	FY 1999 Cost		FY 2000 Cost		FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Project Total Cost:	994279	17125		17006		0			1028410	

Remark:

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition	PROJECT D687
--	---	------------------------

COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D687 BAT P3I	56298	65458	81321	68889	45065	11318	5622	0	0	399655

A. Mission Description and Budget Item Justification: Project D687-BAT P3I: The BAT P3I submunition maintains the Basic BAT length, diameter, and weight configurations. The BAT P3I is a multi-sensored, terminally guided submunition that searches, tracks, and destroys specific targets including mobile armored combat vehicles, cold stationary armored combat vehicles, Surface-to-Surface missile (SSM) Transporter Erector Launchers (TELs), and Heavy Multiple Rocket Launchers (MRLs). BAT P3I submunitions are carried deep into enemy territory by variants of the Army Tactical Missile System (ATACMS), then dispensed over numerous high-payoff target concentrations to selectively attack and destroy individual targets. BAT P3I is intended to increase submunition lethality and expand the target set to be attacked. Being a certified round, the Block II and IIA missile carrying the BAT P3I submunition has a low sustainment cost. This program will incorporate new seeker, warhead, and microprocessor technologies into the current Basic BAT configuration while maintaining the current BAT form, fit and maximum commonality of BAT components. This program includes studies/demos pertaining to technology advancements, alternate carriers, target recognition, and acoustic/infrared/millimeter wave characterization of expanded target sets.

FY 1998 Accomplishments:

- 45249 Continue System Development and P3I Program Definition & Risk Reduction (PDRR) Program
 - 4100 Award Test Hardware Contract to build submunitions for IOT&E/FLFT
 - 1831 Continue Simulation and Testing Program
 - 1626 Conduct Captive Flight Tests (CFTs)
 - 2047 Test Seekers in the Hardware-in-the-Loop Facilit
 - 1445 Conduct Warhead Testing
- Total 56298

FY 1999 Planned Program:

- 37858 Complete P3I PDRR and start Continued Development Program
 - 17500 Procure Test Hardware
 - 4300 Conduct CFTs
 - 3200 Continue Hardware-in-the-Loop Seeker Assessments
 - 2400 Conduct Simulations and Algorithm Development
 - 200 Trade studies, CAIV initiatives, risk reduction and system improvement and optimization activities
- Total 65458

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition	PROJECT D687
---	--	-------------------------------

FY 2000 Planned Program:

- 31221 Continue P3I BAT Seeker Development and Design
 - 21000 Conduct CFTs, Recoverable Flight Tests, and Engineering Development Tests
 - 13900 Fabricate/Assemble Engineering Test Hardware
 - 7000 Complete Warhead Design, Integration and Testing
 - 3500 Continue Hardware-in-the-Loop Operations
 - 2500 Simulation Analysis and Modeling
 - 2000 Missile Carrier Integration
 - 200 Trade studies, CAIV initiatives, risk reduction and system improvement and optimization activities
- Total 81321

FY 2001 Planned Program:

- 28739 Continue Seeker Integration and System Testing
 - 15200 Complete Design and Fabricate P3I BAT Seeker Hardware
 - 13700 Conduct Engineering Design/Design Verification Tests
 - 4000 Continue Hardware-in-the-Loop Operations
 - 4000 Missile Carrier Integration
 - 3000 Simulation Analysis
 - 250 Trade studies, CAIV initiatives, risk reduction and system improvement and optimization activities
- Total 68889

B. Other Program Funding Summary: There are no other related RDT&E or other appropriation efforts.

C. Acquisition Strategy: The BAT P3I system is a sole source to the prime contractor, Northrop Grumman Corporation. Production cut-in of P3I BAT on to Block II will provide full capability against all target sets except MRLs/TELS. P3I BAT on Block IIA will accommodate all required target sets.

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>
Captive Flight Test (CFT)	2QTR*	4QTR	2QTR	3QTR					
Continuous CFT (Seeker Tests)		2/3QTR	1/3QTR						
Warhead Testing	3/4QTR*	1-4QTR	1/2QTR						
Continue Dual Mode Radar Seeker Design	1-4QTR*	1-4QTR	1-4QTR						
Hardware-in-the-Loop Testing	4QTR*	1-4QTR	1-4QTR	1-4QTR	1-4QTR	1-4QTR			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition	PROJECT D687
--	---	------------------------

D. Schedule Profile	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006
Tactical Prototype Seeker Integration			2/3QTR						
Recoverable BAT Tests		4QTR	3/4QTR						
Engineering Development Tests (EDTs)			4QTR	1QTR					
Warhead LFT&E/Soft Target				2/3QTR					
Software CDR				2QTR					
Design Verification Tests				3/4QTR					
Envir Stress Test (EST) Prod Qual Tests (PQT)				4QTR	1QTR				
DT/OT System Tests (Block II)					2QTR				
Blk II/P3I BAT Production Cut-In Decision					3QTR				
Blk IIA/P3I BATs OTs							2QTR		
Blk IIA/P3I BAT LRIP								1QTR	

*Milestone completed.

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition					PROJECT D687		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Northrop Grumman Corp	SS-CPIF		95542	56314		60014		45261		36760	293891	
b. RDEC Support*	PO		9919	2200		3100		3000		5300	23519	
Subtotal Product Development:			105461	58514		63114		48261		42060	317410	
Remark: *Includes Hardware-in-the Loop costs												
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Sys Eng Tech Assist & Program Mgmt Spt	SS-CPIF		2655	1065		1200		1200		3500	9620	
b. Misc Other Gov Act	PO		5074	315		425		550		1050	7414	
Subtotal Support Costs:			7729	1380		1625		1750		4550	17034	
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Range Support	PO		35	400		4900		8000		6500	19835	
b. Other Test Activities	PO		3578	2795		7599		7500		5450	26922	
Subtotal Test and Evaluation			3613	3195		12499		15500		11950	46757	
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. In-House Support	PO		5179	2369		4083		3378		3445	18454	
Subtotal Management Services:			5179	2369		4083		3378		3445	18454	
Project D687												

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition	PROJECT D687
--	---	------------------------

	Total PYs Cost	FY 1999 Cost		FY 2000 Cost		FY 2001 Cost		Cost To Complete	Total Cost	Target Value of Contract
Project Total Cost:	121982	65458		81321		68889		62005	399655	

--	--	--	--	--	--	--	--	--	--	--

UNCLASSIFIED

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition	PROJECT D688
--	---	------------------------

COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D688 ATACMS BLK II	82820	41414	27528	14757	0	0	0	0	0	296576

A. Mission Description and Budget Item Justification: Project D688-Army Tactical Missile System Block II: The Army Tactical Missile System Block II (ATACMS BLK II) is a ground launched, solid propellant, inertially guided Global Positioning System (GPS)-aided missile system with 13 BATs or P3I BATs as its payload. The mission of the ATACMS BLK II is to delay, disrupt, neutralize, or destroy armored combat vehicles and other critical high-payoff targets. Once the BAT P3I submunition is incorporated into the ATACMS BLK II, the target set will expand to include cold stationary armored combat vehicles. ATACMS BLK II will carry and dispense BAT and BAT P3I submunitions deep in enemy territory where these submunitions will autonomously track and destroy numerous critical high-payoff targets. ATACMS BLK II will be capable of being launched from the M270 with Improved Position Determining System (IPDS) and the M270A1 launcher. Funds also include costs of trade studies/demonstrations pertaining to technology advancements, payload variants, propulsion, guidance and control, and fire control improvements.

FY 1998 Accomplishments:

- 14000 Begin Pilot Production Line and Begin IOT&E Activities
 - 56268 Continue Development Including Submunition Integration
 - 8071 Complete Production Proveout Test (PPT) Flights /Begin Preproduction Qualification Test (PQT) Flights
 - 350 Conduct "Interim" Launcher Integration Tests
 - 4131 Continue Command and Control Software Design, Development and Test
- Total 82820

FY 1999 Planned Program:

- 26202 Continue Development and Subsystem Qualification
 - 7099 Continue pilot production line and IOT&E preparation activities
 - 4289 Complete PQT and conduct Dev Test/Op Test Flight Tests
 - 1073 Conduct M270A1 Launcher Integration Tests
 - 1451 Conduct C4I System Integration Tests
 - 1300 Continue Command and Control Software Design, Development and Test
- Total 41414

UNCLASSIFIED

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition	PROJECT D688
--	---	------------------------

- FY 2000 Planned Program:**
- 18204 Prepare for and conduct IOT&E
 - 4724 Complete missile and submunition integration activities and flight test of final configuration
 - 2100 Continue Command and Control Software Design, Development and Test
 - 2000 Complete Launcher Integration Tests
 - 500 Trade studies and system improvement and optimization activities
- Total 27528
- FY 2001 Planned Program:**
- 14107 Continue and complete IOT&E
 - 400 Continue Command and Control Software Design, Development and Test
 - 250 Trade studies and system improvement and optimization activities
- Total 14757

B. Funding Other Program Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Complete	Total Cost
Missile Procurement, Arm CA 6105 ATACMS BLK II		48924	76787	91844	114817	149491	130146	118191	680529	1410729

B. Acquisition Strategy: The Army Tactical Missile System Block II is a sole source, performance specification program.

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>
Sled Test									
PDR									
CDR									
EDT Flight Test	1QTR*								
PPT Flight Tests	2/3QTR*								
PQT Flight Tests	4QTR*	1QTR							
DT/OT Flight Test Complete		2QTR							
Block II/BAT LRIP DA		2QTR							
IOT&E Testing			3/4QTR	1QTR					

*Milestone Completed

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE **February 1999**

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604768A Brilliant Anti-Armor (BAT) Submunition

PROJECT
D688

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. LMVS	SS/CPIF		164099	22335		3535		0			189969	
b. RDEC Support	PO		7012	746		1513		1450			10721	
Subtotal Product Development:			171111	23081		5048		1450			200690	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Sys Eng Tech Assist & Program Mgmt Spt	SS/CPFF		4177	1312		1330		1100			7919	
b. Misc OGA Activities	PO		9772	1755		1690		1324			14541	
Subtotal Support Costs:			13949	3067		3020		2424			22460	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Range Support	PO		8381	4363		6776		2883			22403	
b. Other Test Activity	PO		5984	6555		9968		5073			27580	
Subtotal Test and Evaluation			14365	10918		16744		7956			49983	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. In-House Support	PO		13452	4348		2716		2927			23443	
Subtotal Management Services:			13452	4348		2716		2927			23443	

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition	PROJECT D688
--	---	------------------------

	Total PYs Cost	FY 1999 Cost		FY 2000 Cost		FY 2001 Cost		Cost To Complete	Total Cost	Target Value of Contract
Project Total Cost:	212877	41414		27528		14757			296576	

--	--	--	--	--	--	--	--	--	--	--

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition				PROJECT D686		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D686 ATACMS BLK IIA	0	4273	0	28452	52440	63294	54887	18801	14465	236612
<p>A. <u>Mission Description and Budget Item Justification:</u> The Army TACMS Block IIA (ATACMS Block IIA) will be a ground launched, solid propellant, inertial guided Global Positioning System (GPS) aided missile system with 6 BAT P3I submunitions as its payload. The mission of the ATACMS Block IIA will be to delay, disrupt, or destroy the Block II target sets plus cold stationary armored combat vehicles as well as moving and stationary surface-to-surface missile (SSM) transporter launchers (TELS) at extended ranges. The ATACMS Block IIA will be launched from the M270A1 launcher in response to the same Command and Control (C2) systems applicable to the Block I, Block IA, and Block II missiles. The range of the Block IIA missile will be significantly larger than the Block II.</p> <p>FY 1998 Accomplishments: Project not funded in FY 1998</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 4100 Scheduled for internal reprogramming to BAT, Project D641 • 173 Trade studies and system improvement and optimization activities <p>Total 4273</p> <p>FY 2000 Planned Program: Project not funded in FY 2000</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 3420 Complete Milestone II decision and initiate EMD program • 13232 Begin Preliminary Design Activities • 9000 Conduct Submunition Integration Activities • 2800 Conduct Test Range and Target Operation, Maintenance and Improvement <p>Total 28452</p>										
B. <u>Other Program Funding Summary</u>										
	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To Complete</u>	<u>Total Cost</u>
Missile Procurement, Arm CA 6110 Block IIA							16494	54889	545546	616929
<p>Project D686</p> <p align="center">Page 16 of 20 Pages</p> <p align="right">Exhibit R-2A (PE 0604768A)</p>										

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition	PROJECT D686
--	---	------------------------

C. Acquisition Strategy: The Army Tactical Missile System Block IIA system will be acquired using a cost-plus contract with Lockheed Martin Vought Systems. A fixed-price-incentive type contract will be used for initial production followed by a firm-fixed price type contract for full rate production.

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>
Milestone II Decision				1QTR					
EMD Contract Award				2QTR					
PDR				4QTR					
CDR					4QTR				
EDTs and PPTs						2QTR			
PQT Flight Tests							1/2QTR		
DT/OT Flight Tests							3QTR		
IOT&E Flight Tests							4QTR	1QTR	
Block IIA LRIP Decision								1QTR	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE **February 1999**

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604768A Brilliant Anti-Armor (BAT) Submunition

PROJECT
D686

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. LMVS	SS/CPFF			4273				21417		141379	167069	
b. RDEC Support	PO							1034		2829	3863	
Subtotal Product Development:				4273				22451		144208	170932	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Sys Eng Tech Assist & Program Mgmt Spt	SS/CPFF							300		2704	3004	
b. Misc Other Gov Act								870		7860	8730	
Subtotal Support Costs:								1170		10564	11734	
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Range Support	PO							500		10135	10635	
b. Other Test Activities	PO							3060		32294	35354	
Subtotal Test and Evaluation								3560		42429	45989	
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. In-House Support	PO							1271		6686	7957	
Subtotal Management Services:								1271		6686	7957	
Project Total Cost:				4273				28452		203887	236612	

Remark: Majority of FY 99 funds will be internally reprogrammed to BAT, Project D641.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition	PROJECT D2NT
---	--	-------------------------------

COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D2NT BAT Operational Test	0	251	2171	51	74	438	1518	0	0	4792

A. Mission Description and Budget Item Justification: Project D2NT finances the direct costs of planning and conducting operational testing and evaluation of the BAT submunition by the Operational Test and Evaluation Command (OPTEC). Operational testing is conducted under conditions, as similar as possible, to those encountered in actual combat with typical soldiers trained to employ the system. OPTEC provides the Army leadership with an independent test and evaluation of both the effectiveness and suitability of the system.

FY 1998 Accomplishments: Project not funded in FY 1998

FY 1999 Planned Program:

- 245 IOTE planning and preparation
- 6 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs

Total 251

FY 2000 Planned Program:

- 2171 IOTE planning and preparation. Support IOTE tests.

Total 2171

FY 2001 Planned Program:

- 51 IOTE planning and preparation

Total 51

B. Other Program Funding Summary: There are no other related RDT&E or other appropriation efforts.

C. Acquisition Strategy: Not applicable.

D. <u>Schedule Profile</u>	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006
Planning and Preparation of IOT&E Activities		1QTR*	1QTR	1QTR	1QTR	1QTR	1QTR		

*Milestone completed

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition	PROJECT D2NT
--	---	------------------------

I. Product Development: Not applicable

II. Support Costs: Not applicable

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Other Test Activities	PO		289	251		2171		51		2030	4792	
Subtotal Test and Evaluation			289	251		2171		51		2030	4792	

IV. Management Services: Not applicable.

Project Total Cost:			289	251		2171		51		2030	4792	
---------------------	--	--	-----	-----	--	------	--	----	--	------	------	--

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604770A Joint Surveillance/Target Attack Radar System	PROJECT D202
---	---	-------------------------------

COST (<i>In Thousands</i>)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D202 Army Joint STARS (TIARA)	6464	5463	11535	26871	25227	10752	16437	130	Continuing	Continuing

A. Mission Description and Justification: This is a Tactical Intelligence and Related Activities (TIARA) program. The Joint Army/Air Force program objective is to develop a radar, datalink, ground station, and airframe that will provide the capability to locate, track and classify tracked and wheeled vehicles beyond ground line-of-sight during the day, night and under most weather conditions. Radar data is distributed to ground station modules via a secure surveillance and control data link. The Army developed the initial ground components of the JSTARS under this PE/Project. The rapidly deployable Common Ground Station(CGS) is housed in a Standard Integrated Command Post Shelter (SICPS) and mounted on a High Mobility Multi-Purpose Wheeled Vehicle (HMMWV). The CGS will integrate signal, imagery, and other intelligence processing into a single ground station, resulting in enhanced battle management as well as significant cost savings. These enhancements are being implemented in a phased approach of Pre-Planned Product Improvement (P3I) initiatives and provide significant expansion of the system performance parameters. Specific enhancements include: integration of Secondary Imagery Dissemination, extended range Satellite Communications (SATCOM relay) capability, full on the move and manportable operations as well as integration/interface with other service/allied sensor systems. Commencing with the FY99 effort, the primary P3I effort will focus on modifications to the CGS interfaces and processors required to maintain interoperability with and exploit the capabilities being added to the JSTARS aircraft under the Radar Technology Improvement Program (RTIP). The RTIP radar will provide a much greater fidelity of Imagery Intelligence (IMINT) products and will provide enhanced targeting and battle management ability. The CGS architecture, to include data link and ADP processors, will require significant redesign and modifications to remain fully interoperable. The actual radar enhancements and all associated modifications to the Joint Stars air platform are fully funded within the USAF RDT&E PE 060440F.

FY 1998 Accomplishments:

- 473 Conducted Interoperability Testing
- 5991 Provided IOT&E Support
- Total 6464

FY 1999 Planned Program:

- 1600 Initial CGS Data Link Enhancement required to make full connectivity with primary sensor / Tactical Control Data Link (TCDL) Planning/Design
- 3082 Conduct IOT&E Retest/Reliability Test Event and Reports
- 656 Conduct Expanded Performance Interoperability Testing/Demonstrations
- 125 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 5463

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)		DATE February 1999
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604770A Joint Surveillance/Target Attack Radar System	PROJECT D202

FY 2000 Planned Program:

- 9812 Continue CGS Data Link Enhancement /Tactical Data Link (TCDL)
 - 523 Modeling and Simulation for Enhanced Radar Modes (ESAR/ISAR)
 - 350 Technical Test
 - 850 Start TCDL Planning/Integration
- Total 11535

FY 2001 Planned Program:

- 18478 Continue CGS Data Link Enhancement / TCDL
 - 4030 Continue CGS Interoperability/Technical Testing for Enhanced Synthetic Aperture Radar(ESAR)/Inverse Synthetic Aperture Radar(ISAR)
 - 4363 Initial TCDL Integration/Data Compression
- Total 26871

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	6726	5503	4010	12135
Appropriated Value	6940	5503		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-214	-40		
b. SBIR / STT	-154			
c. Omnibus or Other Above Threshold Reduction	-51			
d. Below Threshold Reprogramming	-57			
e. Rescissions				
Adjustments to Budget Years Since FY 1999 PB			7525	14736
Current Budget Submit (FY 2000/2001 PB)	6464	5463	11535	26871

Change Summary Explanation: Funding - FY 2000/2001 - Funds were realigned from OPA in accordance with revised acquisition strategy and approved Army cost position (June 1998) for CGS extended range capability associated with the Air Force RTIP development efforts.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604770A Joint Surveillance/Target Attack Radar System	PROJECT D202
---	---	-------------------------------

C. <u>Other Program Funding Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Compl	Total Cost
BA1080 Joint STARS (TIARA)	89276	86895	82176	57773	13510	4184	14226	26881	Cont	Cont
BS9724 Joint STARS Spares	6108	8709	6166	6224	6929	4414	0	0	Cont	Cont
1001018A NATO AGS C35	10147	2980	0	0	0	0	0	0	Cont	Cont

This Joint Program is also related to Air Force PE 060477

D. Acquisition Strategy: In December 1995, the JSTARS Ground Station Program awarded an eight year [basic plus seven one year options] production contract to acquire the balance of ground stations required to meet Army needs. Initial production quantities are designated Low Rate Initial Production (LRIP), and supported the March 1998 Initial Operational Test. The IOT&E Retest/Reliability Test Event and Reports, scheduled for the 2Qtr 99, will support the MSIII DAB decision in June 99. The contract also includes provisions for the design, development and test of various P3Is. Following P3I prove out, the modifications will be folded into the production contract via fixed price contract revisions. Those P3I enhancements initiated prior to the Full Production Decision (Milestone III) include Advanced Imagery Processing, Integration of Improved Data Modem (IDM) providing Army Aviation Command and Control (A2C2) interoperability and radar masking analysis tools. All P3Is will be developed and implemented in accordance with the CGS System Improvement Plan (SIP).

E. <u>Schedule Profile</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Initiate CGS Data Link Enhancement/TCDL		2Q						
IOT&E Phase 3 Test		2Q						
Milestone III		3Q						
Initial P3I Technical Test		3Q						
Initial P3I Operational Assessment		4Q						
Initiate TCDL Integration			1Q					
Initial CGS Data Link Enhancement Technical Test			3Q					
Modeling And Simulation			3Q					
Interoperability/Technical Test				3Q				
Continue CGS Data Link Enhancement						1Q		
Complete CGS Data Link Enhancement							1Q	
Complete TCDL Integration							1Q	
Data Link Enhancement IOT&E							2Q	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604770A Joint Surveillance/Target Attack Radar System						PROJECT D202		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. DAAB07-96-C-S201	SS/CPFF	Motorola, Scottsdale, AZ	3826	276	2Q	120	2Q	0		Cont	4222	
b. DAAB07-96-C-S204	C/FP	Motorola, Scottsdale, AZ	8813	316	2Q	338	2Q	1127	2Q	Cont	10594	
c. Expanded CGS Capability RTIP	CPFF	TBD	0	1600	2Q	9766	1Q	17863	1Q	Cont	29229	
d. TCDL	CPFF	TBD	0	0		850	1Q	3463	2Q	Cont	4313	
e. SBIR/STTR				125							125	
Subtotal Product Development:			12639	2317		11074		22453			48483	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. CECOM	MIPR		85	87	1Q	52	1Q	250	1Q	Cont	474	
b. Miscellaneous			163	29	1Q	16	1Q	76	1Q	Cont	284	
Subtotal Support Costs:			248	116		68		326			758	
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Initial Operational Test	MIPR	TEXCOM	4984	1488	1Q	0		0		Cont	6472	
b. OEC	MIPR	OEC	1163	325	1Q	0		0		Cont	1488	
c. USAF	MIPR	USAF	850	0		0		0		Cont	850	
d. Developmental Test	TBD	TBD	0	0		137	1Q	700	1Q	Cont	837	
e. Interoperability Test	MIPR	TBD	0	0		0		3042	1Q	Cont	3042	
f. Miscellaneous	MIPR	DOD	1250	0		0		0		Cont	1250	
g. DAAB07-96-C-S204	C/FP	Motorola, Scottsdale, AZ	3425	894		0		0		Cont	4319	
Subtotal Test and Evaluation			11672	2707		137		3742			18258	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604770A Joint Surveillance/Target Attack Radar System					PROJECT D202		
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Project Management			1024	323	1Q	256	1Q	350	1Q	Cont	1953	
Subtotal Management Services:			1024	323		256		350			1953	
Project Total			25583	5463		11535		26871			69452	

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604778A Positioning Systems Development (SPACE)				PROJECT D168		
<i>COST (In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D168 NAVSTAR Global Positioning System (GPS) Equipment	405	377	443	435	0	0	0	1000	0	2660
<p>A. <u>Mission Description and Budget Item Justification:</u> NAVSTAR GPS is the Joint Program Office at LAAFB. The program is composed of three segments: Space, Control and User Equipment. PM GPS fall under the User Equipment segment and procures the majority of user equipment. Project D 168 provides for Arm participation in the research and development phases of Army weapon systems requiring POS/NAV capabilities. It provides for the engineering development of several alternatives for integration of GPS receivers into selected systems. These alternatives include, but are not limited to, Embedded/Integrated GPS, Advanced GPS Receivers (AGR), Tactical GPS Anti-Jam Technology (TGAT) and Differential GPS.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 132 Continued improved accuracy and time to fix studies • 122 Continued survivability studies • 151 Exploration of emerging capabilities based on follow-on satellite configuration options <p>Total 405</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 160 Development of DAGR GUI • 107 Development of GRAM and GPS/INS • 100 Studies on interfacing of GPS with other systems • 10 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 377</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 230 Continued development of GRAM and GPS/INS • 213 Studies associated with the NAVWAR and GPS modernization programs <p>Total 443</p>										
Project D168			<i>Page 1 of 2 Pages</i>				Exhibit R-2 (PE 0604778A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)		DATE September 1998
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604778A Positioning Systems Development (SPACE)	PROJECT D168

FY 2001 Planned Program:

- 223 Exploration and development of Pseudolites
 - 212 Studies associated with the NavWar and GPS modernization programs
- Total 435

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	407	379	419	408
Appropriated Value	419			
Adjustments to Appropriated Value				
a. Congressional General Reductions	-12	-2		
b. SBIR / STT	-11			
c. Omnibus or Other Above Threshold Reduction	-3			
d. Below Threshold Reprogramming	12			
e. Rescissions				
Adjustments to Budget Years Since FY 1999 PB			+24	-27
Current Budget Submit (FY 2000/2001 PB)	405	377	443	435

C. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY2002</u>	<u>FY2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To Complete</u>	<u>Total Cost</u>
K47800, Other Procurement, Army, NAVSTA GPS	5261	6527	6557	31502	62672	49862	48170	44806	288000	517315

D. Acquisition Strategy: Perform studies and analyses of host vehicles to support development of alternative GPS applications.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604780A Combined Arms Tactical Trainer (CATT)
---	---

COST <i>(In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
Total Program Element (PE) Cost	14950	7472	19925	18627	8958	5117	5109	5102	0	315650
D571 Close Combat Tactical Trainer	14950	7472	13238	7786	5021	5117	5109	5102	0	294185
D582 Synthetic Environment Core	0	0	6687	10841	3937	0	0	0	0	21465

A. Mission Description and Budget Item Justification: The Combined Arms Tactical Trainer (CATT) is a family of combined arms simulation systems designed to support the Army's simulation-based Combined Arms Training Strategy. The initial CATT system is the Close Combat Tactical Trainer (CCTT) which provides the underlying baseline (architecture, terrain data bases, after action review [AAR], semi-automated forces [SAF], and models/algorithms) for future CATT expansions, pre-planned product improvements and system enhancements. Synthetic Environment Core provides for the expansion of the CCTT Synthetic Environment baseline to include enhanced Aviation, Engineer, Fire Support, and Air Defense capabilities needed to support integration of hardware/simulators funded by System Program Managers. CATT enables units, from crew to the battalion task force level, to conduct a wide variety of combat tasks on a realistic, interactive synthetic battlefield. CATT's combination of manned simulators and staff officer workstations enables units to train as a combined arms team in a cost effective manner. CATT reinforces the successes and corrects the shortcomings of the Simulator Network (SIMNET) and Aviation Network (AIRNET) demonstration programs executed by the Defense Advanced Research Projects Agency (DARPA). By practicing skills in CATT, units are able to make more effective use of scarce resources and costly live fire and maneuver exercises as well as train tasks deemed too hazardous to conduct in the field. Fielded in both fixed site and mobile/transportable versions, CATT enables both Active and Reserve component units to prepare for real world contingency missions. By being able to process a wide array of terrain data bases and modify the behavior of the computer generated opposing forces, CATT offers a virtually unlimited array of training options to support the Army's many regional contingency missions. The combination of tough field and live fire training and realistic simulation training in CATT is the catalyst to prepare soldiers and their leaders for the uncertainties they will face in an unpredictable world.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE **February 1999**

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604780A Combined Arms Tactical Trainer (CATT)

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (<u>FY 1999</u> PB)	12880	7533	11551	7836
Appropriated Value	13323	7533		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-443	-61		
b. SBIR / STT	-323			
c. Omnibus or Other Above Threshold Reductions	-107			
d. Below Threshold Reprogramming	+2500			
e. Rescissions				
Adjustments to Budget Years Since <u>FY 1999</u> PB			+8374	+10791
Current Budget Submit (<u>FY 2000/2001</u> PB)	14950	7472	19925	18627

Change Summary Explanation: FY 1998 - Funding increase due to below threshold reprogramming (+2500) for deficiencies identified during Initial Operational Test and Evaluation (IOT&E) and for digitization support.

FY 2000 increased to meet additional requirements for Training Support Packages supporting structured training exercises and to develop aviation component of Synthetic Environment Core (+8374), funded within current Army resources.

FY 2001 increased to continue development of aviation component of Synthetic Environment Core (+10791), funded within current Army resources.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604780A Combined Arms Tactical Trainer (CATT)	PROJECT D571
--	--	------------------------

COST (<i>In Thousands</i>)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D571 Close Combat Tactical Trainer	14950	7472	13238	7786	5021	5117	5109	5102	0	294185

A. Mission Description and Justification: This program provides for engineering and manufacturing development (EMD) and pre-planned product improvements (P3I) for the Close Combat Tactical Trainer (CCTT) which will enhance readiness of both active and reserve component forces. The program develops a networked system of interactive computer driven simulators, emulators and semi-automated forces that replicate combat vehicles and weapon systems, combat support systems, combat service support systems, and command and control systems to create a fully integrated real-time collective task training environment. This trainer will allow soldiers to practice, repetitively, techniques which, if performed on real equipment, would be too hazardous, time-consuming and expensive. These trainers enhance realism and allow soldiers and units to learn tactical combat lessons on maneuver, command and control, and improved teamwork for increased survivability. The pre-planned product improvements provide CCTT an opportunity to enhance its capabilities as a tactical trainer as well as maintain concurrency with the structural changes that today's battleforce is experiencing.

FY 1998 Accomplishments:

- 14069 Concluded functionality integration and test, conducted and supported IOT&E.
 - 325 Maintained support services to the program office. Prepared for MSIII decision 1st QTR FY99.
 - 556 Provided government program management, engineering, technical and contract support.
- Total 14950

FY 1999 Planned Program:

- 6861 Complete EMD contract, provide structured training (STRUCTT) exercises and interface between Commanders Independent Training Tool (CITT) and Maintenance Control Console (MCC), initiate High Level Architecture (HLA) compliance efforts and other Pre-Planned Product Improvements.
 - 83 Maintain support services to the program office.
 - 330 Provide government program management, engineering, technical, contract and continuous operational evaluation support.
 - 198 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 7472

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604780A Combined Arms Tactical Trainer (CATT)	PROJECT D571
--	--	------------------------

FY 2000 Planned Program:

- 12598 Develop Training Support Packages (TSPs) to support structured approach to preparation for training exercises, complete High Level Architecture (HLA) compliance efforts, and begin Pre-Planned Product Improvements (P3I) for After Action Reports (AAR) and Dismounted Infantry (DI) components of CCTT and other user prioritized P3I.
- 80 Maintain support services to the program office.
- 560 Provide government program management, engineering, technical, contract and continuous operational evaluation support.

Total 13238

FY 2001 Planned Program:

- 7066 Develop additional Training Support Packages (TSPs), Complete Pre-Planned Product Improvements for After Action Reports (AAR) and Dismounted Infantry (DI) components of CCTT and other user prioritized items.
- 80 Maintain support services to the program office.
- 640 Provide government program management, engineering, technical, contract and continuous operational evaluation support.

Total 7786

B. <u>Other Program Funding Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
OPA3, Appropriation NA0170 SIMNET/CCTT	53003	88687	75367	81505	26847	7744			0	465442
RDTE, Appropriation 0605712A Support of Operational Testing	19921	20041	19799	18954	18703	21010	20593	21922	Cont	Cont
CCTT Portion of RDTE, 0605712A Above										6528
Military Construction, A Appropriation 2050 (CCTT Portion)	14600	7600	0	0					0	52100
Operation and Maintenance, A Appropriation 115013 under WCLS MDEP	174410	180380	194902	214609	238806	248376	266609	252566	Cont'd	Cont'd
CCTT Portion of OMA above	7930	11900	21670	28700	34050	38850	39710	40590	Cont'd	Cont'd

C. Acquisition Strategy: Competitive cost plus award fee contract for EMD phase. Competitive procurement against performance specifications as part of basic contract.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604780A Combined Arms Tactical Trainer (CATT)	PROJECT D571
--	--	------------------------

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2004</u>	<u>FY 2005</u>
IOT&E Fixed System	3Q*									
MSIII Decision		1Q*								
Full Rate Production Contract Award		2Q								
P3I Software/Hardware Insertions		4Q	4Q	4Q	4Q	4Q	4Q		4Q	4Q

* Completed Milestones

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604780A Combined Arms Tactical Trainer (CATT)					PROJECT D571		
I. Product Development												
Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract	
a. CCTT EMD	C/CPAF & T&M/FFP	203991	2900	Oct 98						206891		
b. Pre-Planned Product Improvements (P3I)	C/CP		3961	Oct 98	12598	Oct 99	7066	Oct 00	19109	42734		
Subtotal Product Development:		203991	6861		12598		7066		19109	249625		
II. Support Costs												
Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract	
a. Engineering and Technical Support	MIPR	30155	281		80		80		350	30946		
Subtotal Support Costs:		30155	281		80		80		350	30946		
III. Test and Evaluation: Not Applicable												
IV. Management Services												
Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract	
a. Project Office Support	MIPR	11194	330		560		640		890	13614		
Subtotal Management Services:		11194	330		560		640		890	13614		
Project Total Cost:		245340	7472		13238		7786		20349	294185		

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604780A Combined Arms Tactical Trainer (CATT)				PROJECT D582		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D582 Synthetic Environment Core	0	0	6687	10841	3937	0	0	0	0	21465
<p>A. <u>Mission Description and Budget Item Justification</u> Synthetic Environment Core (SE Core) provides for the engineering, manufacturing, and development (EMD) enhancements to the Close Combat Tactical Trainer (CCTT) synthetic environment baseline for use in future CATT expansions. This first initiative will support the development and refinement of the SE Core architecture to include functionality for the Close Combat Tactical Trainer and Aviation Combined Arms Tactical Trainer – Aviation Reconfigurable Manned Simulators (AVCATT-A), which will enhance readiness of the Total Army (Active and Reserve component forces). The program will provide terrain databases, aviation behaviors, Air Defense capabilities, natural effects (e.g., wind) that enable the Army, specifically the aviation community, to conduct collective training and aviation combined arms training in the virtual environment. SE Core will provide the semi-automated forces (SAF) behaviors to represent the evolving structure, tactics, and procedures of the Army's digitized battlefield. SE Core will provide the additional aviation models to support aviation collective training, and will provide for extended ranges to simulate the aviation weapon systems and communication particular to the aviation community. The program will provide fo scenario development to support aviation combined arms and collective training and After Action Review of an exercise.</p> <p>FY 1998 Accomplishments: Project not funded in FY 1998</p> <p>FY 1999 Planned Program: Project not funded in FY 1999</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 5119 Develop aviation semi-automated forces behaviors, an aviation terrain database, interoperability between aviation and ground simulations, and mission planning and controls for the AVCATT-A system. Development and refinement of SE Core architecture. • 1009 Develop an After Action Review capability, training scenarios, and provide for system High Level Architecture (HLA) compliance. Acquire development hardware to support software development • 200 Maintain support services to program office. • 359 Provide government program management, engineering, technical and contract support for the aviation effort and the refinement of the SE Core baseline. <p>Total 6687</p>										
Project D582			Page 7 of 9 Pages				Exhibit R-2A (PE 0604780A)			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604780A Combined Arms Tactical Trainer (CATT)	PROJECT D582
--	--	------------------------

- FY 2001 Planned Program:**
- 7291 Continue development of aviation semi-automated forces behaviors, an aviation terrain database, interoperability between aviation and ground simulations, and mission planning and controls for the AVCATT-A system. Development and refinement of SE Core architecture.
 - 2900 Continue development of the After Action Review capability, training scenarios, and provide for system High Level Architecture (HLA) compliance.
 - 200 Maintain support services to program office.
 - 450 Provide Government Program management, engineering, technical, and contract support for the aviation effort and the refinement of the SE Core baseline.
- Total 10841

B. Other Program Funding Summary: Not Applicable

C. Acquisition Strategy: Engineering Manufacturing & Development (EMD) competitive contract against performance specification.

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2004</u>	<u>FY 2005</u>
MS II Decision		3Q							
Contract Option Awar			1Q						
Integration Testing					4Q				

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604780A Combined Arms Tactical Trainer (CATT)					PROJECT D582		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. AVCATT-	C/CPFF	TBD				6128	Nov 99	10191	Nov 00	3537	19856	
Subtotal Product Development						6128		10191		3537	19856	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Engineering Services & Technical Support	C/CFFP	SHERIKON. Orlando, FL				200	Nov 99	200	Nov 00		400	
Subtotal Support Costs:						200		200			400	
Remark: Each award is a Delivery Order against CFFP.												
III. Test and Evaluation: Not Applicable.												
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Project Office Support	MIPR	STRICOM/NAWC-TSD, Orlando, FL				359	Nov 99	450	Nov 00	400	1209	
Subtotal Management Services:						359		450		400	1209	
Project Total Cost:						6687		10841		3937	21465	

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604801A Aviation - Engineering Development				PROJECT DC45		
COST (<i>In Thousands</i>)	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
DC45 Aircrew Integrated Systems - ED	5402	11519	6312	9264	3687	2293	2587	2610	Continuing	Continuing
<p>A. <u>Mission Description and Budget Item Justification:</u> Aircrew Integrated Systems (ACIS) – Engineering Manufacturing Development (EMD) project provides engineering and manufacturing development for those systems and items of equipment which are unique and necessary for the sustainment, survivability, and performance of Army aircrews and troops on the future integrated battlefield and related training missions. The basic Air Warrior EMD programs will focus on air vehicle integration, airworthiness considerations, and user evaluation of multiple technologies to improve aircrew mission performance, aircrew comfort, aircrew and aircrew station interface, safety and survivability. These funds also include work on: advanced laser protection against emerging new threat systems; product improvement to existing helmets to improve performance and increase commonality; development and adaptation of airbag technology to Army aircraft to improve crash protection and enhance aircrew survivability. Follow-on integration and test of Air Warrior program product improvement effort will continue to enhance and maximize aircrew performance in force modernized aircraft by integrating new technologies into the basic Air Warrior ensemble. Maximum advantage will be taken of simulation to reduce program technical risk through early user evaluation and to reduce program design and test cost and schedules. This project does not duplicate any aircraft platform program efforts. Both joint and service independent efforts continue to be pursued under the scope of this project.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 1848 Continued UH-60 Cockpit Air Bag System pre-production evaluation and testing • 2216 Initiated Air Warrior Engineering Manufacturing Development effort • 618 Continued Advanced Laser Eye Protection (Joint Service) Engineering Manufacturing Development • 720 Test articles of 50 ship sets and 168 gas generators for the UH-60 Cockpit Air Bag System <p>Total 5402</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 6099 Continue Air Warrior Engineering Manufacturing Development effort and development of technical insertion plan • 500 Complete Advanced Laser Eye Protection (Joint Service) Engineering Manufacturing Development • 4628 Initiated Helmet Mounted Display Engineering Manufacturing Development • 292 Small Business Innovation Research/Small Business Technology(SBIR/STTR) Transfer Programs. <p>Total 11519</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 6312 Continue Air Warrior Engineering Manufacturing Development for basic ensemble and components design <p>Total 6312</p>										
Project DC45			<i>Page 1 of 4 Pages</i>				Exhibit R-2 (PE 0604801A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604801A Aviation - Engineering Development	PROJECT DC45
--	---	------------------------

FY 2001 Planned Program:

- 7138 Continue Air Warrior Engineering Manufacturing Development effort for ensemble developmental and operational test
 - 1726 Initiate AH-64 Cockpit Air Bag System pre-production evaluation and testing
 - 400 Test Articles of 40 ship sets for the AH-64 Cockpit Air Bag System
- Total 9264

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	4951	6599	6508	9638
Appropriated Value	5109	11599		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-158	-80		
b. SBIR / STTR	-112			
c. Omnibus or Other Above Threshold Reductions	-37			
d. Below Threshold Reprogramming	+600			
e. Rescissions				
Adjustments to Budget Years Since FY 1999 PB			-196	-374
Current Budget Submit (FY 2000/ 2001 PB)	5402	11519	6312	9264

Change Summary Explanation: Funding FY 1998 – Funds reprogrammed to cover requirements for the UH-60 Cockpit Air Bag System EMD (+600).

C. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To</u>	<u>Total</u>
									<u>Compl</u>	<u>Cost</u>
RDTE,A PE 0604801A PROJ DB45 – ACIS AD	9453	6428	0	0	2686	2693	2947	2943	Cont	Cont
Aircraft Procurement, Army SSN AZ3110 – ACIS	7950	9024	4394	1419	21063	34511	57377	65637	Cont	Cont

D. Acquisition Strategy: An Air Warrior Program Definition and Risk Reduction (PDRR) development contract was awarded in FY 1997 to perform a functional requirements analysis and consider user requirements and available technologies to optimize recommended alternatives within the constraints of cost as an independent variable. A combined government and contractor team will mature and finalize the Air Warrior systems and integrate those systems with the force modernization aircraft. Prototypes that represent the basic Air Warrior ensemble will be developed for test and evaluation in the FY 1999 through FY 2001 timeframe. Performance specifications for the joint service advanced laser eye protection program are being developed and will be used for production competition. The Cockpit Air Bag Systems (CABS) B-kit components will be competitively procured using an approved performance specification and interface drawings (except that the initial production quantity will be procured sole-source from the developer). The CABS A-kit nonrecurring engineering and hardware will be aircraft platform specific. The CABS A-kit hardware will be procured competitively. CABS will be installed via field retrofit and production line incorporation (where applicable).

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604801A Aviation - Engineering Development	PROJECT DC45
--	---	------------------------

E. Schedule Profile	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Air Warrior Functional Analysis Review and Preferred Alternative selected			4Qtr							
Air Warrior Milestone II approved				1Qtr						
EMD for Air Warrior basic ensemble				4Qtr	4Qtr	4Qtr	2Qtr			
Development of Technical Insertion Plan				4Qtr						
Air Warrior Preliminary Design Review					1Qtr					
Critical Design Review and initial Prototype Development					3Qtr					
Air Warrior System Test (Development/Qualification)						1Qtr				
Initial Air Warrior Operation Test & Evaluation Compete						4Qtr				
Continuous evaluation, test, and insertion of new technologies as Air Warrior product improvements						4Qtr	4Qtr	4Qtr	4Qtr	4Qtr
Air Warrior basic ensemble Milestone III							2Qtr			
Production of the basic Air Warrior ensemble during FY2002 through FY2008							4Qtr	4Qtr	4Qtr	4Qtr
Air Warrior basic ensemble IOC								3Qtr		
Production of Air Warrior ensemble product improvements as emerging technologies can be inserted during FY 2003 through FY 2012								4Qtr	4Qtr	4Qtr

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)											DATE February 1999	
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604801A Aviation - Engineering Development					PROJECT DC45		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Air Warrior	C-CPFF	Contractor - TBD	465	5528	Mar 1999	3295	Nov 1999	3941	Nov 2000	Cont	13229	Cont
b. Adv Laser Eye Protection	C-CPFF	Aotec, Southbirdge, MA	771	344	Dec 1998					0	1115	Cont
c. AH-64 Cockpit Air Bags	SS-CPFF	Simula, Inc., Phoenix, AZ						2000	Nov 2000	0	2000	Cont
d. Product Dev Integration	Fixed Rate	Various		100	Quarterly	672	Quarterly	592	Quarterly	Cont	1364	Cont
e. Helmet Mounted Display	SS-CPFF	Microvision, Seattle, WA		4092	Dec 1998					Cont	4092	Cont
Subtotal Product Development:			1236	10064		3967		6533			21800	Cont
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Matrix Support	Reimbursable	Various Government		595	Quarterly	468	Quarterly	407	Quarterly	Cont	1470	Cont
Subtotal Support Costs:				595		468		407			1470	Cont
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Matrix Support	Reimbursable	Various Government		242	Quarterly	265	Quarterly	660	Quarterly	Cont	1167	Cont
Subtotal Test and Evaluation				242		265		660			1167	Cont
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PM Administration	Reimbursable			618		1612		1664		Cont	3894	Cont
Subtotal Management Services:				618		1612		1664			3894	Cont
Project Total Cost:			1236	11519		6312		9264			28331	Cont

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development
---	---

COST <i>(In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	18114	35566	54943	55077	53798	60347	64948	56803	Continuing	Continuing
D134 Objective Individual Combat Weapon Engineering Development (OICW)	0	0	14813	26047	27713	22432	19525	15157	1000	126687
D284 Multipurpose Individual Munition	3936	16591	17093	10374	0	0	0	0	0	66866
D613 Mortar Systems	9369	9140	10181	0	6792	7872	30459	30804	Continuing	Continuing
D695 XM982 Projectile	3382	5861	10387	15594	16106	23327	0	0	0	75610
D705 Hydra 70 Engineering and Manufacturing Development	0	3974	0	0	0	0	0	0	0	3974
DAS1 Small Arms Improvement	1427	0	2469	3062	3187	6716	14964	10842	Continuing	Continuing

A. Mission Description and Budget Item Justification: Provides for engineering development of weapons and munitions systems. The Multi-Purpose Individual Munition (MPIM) provides the infantry with a fire-and-forget weapon capable of defeating enemy forces in buildings, bunkers, and lightly armored vehicles. The howitzer ammunition effort supports development of ammunition for the M119A1 Howitzer. The mortar systems effort supports development of the Mortar Fire Control System (MFCS). The MFCS is a revolutionary improvement in mortar capability, seamlessly linking mortar fires in the future digital battlefield. Additionally, it funds development of a low cost 60mm training round in FY2000 and the Precision Guided Mortar Munition in FY 02 – FY05. The XM982 extended range Dual Purpose Improved Conventional Munition (DPICM) is an extended range 155mm artillery projectile. It will extend the range of the M198, M190A5, M190A6, 155mm Paladin and the lightweight Howitzer to approximately 37 kilometers, with the Modular Artillery Charge System (MACS) in Crusader extending the range to 47 kilometers. The Hydra 70 EMD program will accomplish airworthiness testing of the Hydra 70 rocket motor under various flight conditions. The small arms improvement program develops technology to enhance lethality, target acquisition, fire control, training effectiveness, and /or reliability for small arms weapon systems. This project develops a universal mounting bracket for the MK19-3 Grenade Machine Gun.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development
--	--

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (<u>FY 1999 PB</u>)	14611	37725	31115	30742
Appropriated Value	15077	35725		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-466	-159		
b. SBIR / STTR	-366			
c. Omnibus or Other Above Threshold Reductions	-120			
d. Below Threshold Reprogramming	+3989			
e. Rescissions				
Adjustments to Budget Years Since <u>FY 1999 PB</u>			+23828	+24335
Current Budget Submit (<u>FY 2000/ 2001 PB</u>)	18114	35566	54943	55077

Change Summary Explanation: FY 1998: Funds reprogrammed from PE 64854A/D505 to project D695 to accelerate the XM982 program (+2800).
 FY 2000: Funds added for development and test of a low-cost 60mm full range training round (+10300). Funds added to initiate development efforts on the OICW (+13200).
 FY 2001: Funds added for continued development of OICW (+24600).

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development				PROJECT D134	
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D134 Objective Individual Combat Weapon Engineering Development (OICW)	0	0	14813	26047	27713	22432	19525	15157	1000	126687
<p>A. <u>Mission Description and Budget Item Justification:</u> The Objective Individual Combat Weapon (OICW) represents the next generation individual soldier's weapon, replacing selected M16 rifles, the M4 series carbine, the rifle-mounted M203 40mm grenade launcher as well as night vision devices and laser range- finders. The OICW will provide the soldier with significant increases in individual weapon performance that will result in an overall improvement in combat effectiveness to include hit probability, range, lethality, cost per kill, combat load, man/machine interface and sustainability and logistics.</p> <p>FY 1998 Accomplishments: Project not funded in FY 1998</p> <p>FY 1999 Planned Program: Project not funded in FY 1999</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 7343 Contract: Ammunition and fuze development • 7470 Contract: Weapon and fire control development <p>Total 14813</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> 13596 Contract: Ammunition and fuze development 12451 Contract: Weapon and fire control development <p>Total 26047</p>										
B. <u>Other Program Funding Summary</u>										
	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
PAA, SSN E92000 Objective Family of Weapons							2456	12267	189000	203723
<p>C. <u>Acquisition Strategy:</u> The OICW prototype system will have been demonstrated in the Advanced Technology Demonstration (ATD) in FY 1999. Based on the result of the ATD and requirements of the final Operational Requirements document (ORD) for the OICW, appropriate changes will be made to contractual requirements for engineering and manufacturing development and first production buy of the OICW. Non-conventional contracting strategies such as integrated contractor-government product teaming and various contract incentives will be examined for implementation. Integrated Product and Process Design (IPPD) efforts initiated in the previous ATD</p>										
Project D134			Page 3 of 26 Pages				Exhibit R-2A (PE 0604802A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development	PROJECT D134
---	---	-------------------------------

phase of this program will reduce work and streamline activities in EMD. The IPPD philosophy will be continued in EMD. The performance evaluation portion of the program will include live fire tests and an extensive amount of simulation activities. A complete technical data package, including quality assurance provision (QAP) for acceptance of hardware, will be deliverable under the contract, along with delivery of pre-production prototypes. The first production buy will prove out the contractor's Technical Data Package and hardware. Type classification will take place in FY2005. FY06 RDT&E will support OICW pre-planned product improvement efforts.

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Contract Preparation			1-2Qtr					
Ammo/Fuze Development			3-4Qtr	1-4Qtr	1-2Qtr	3-4Qtr	1-2Qtr	
Weapon/Fire Control Development			3-4Qtr	1-4Qtr	1-2Qtr	3-4Qtr	1-2Qtr	
Quality Design & Build					3-4Qtr	1-2Qtr	1-2Qtr	
Developmental Testing & Assessment						3-4Qtr	1-3Qtr	
Operational Testing & Assessment							4Qtr	1-3Qtr
Milestone III								4Qtr

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE **February 1999**

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604802A Weapons and Munitions - Engineering Development

PROJECT
D134

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Primary System Contract	FP	Contractor TBD				10928	TBD	19941	TBD	55485		
Subtotal Product Development:						10928		19941		55485		

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Development	MIPR	Multiple				2062	Multiple	2062	Multiple	8956	13080	
b. Integrated Logistics Spt	MIPR	Multiple				100		100		400	600	
c. Training and Simulations	MIPR	Multiple				778		2964		12152	15894	
Subtotal Support Costs:						2940		5126		21508	29574	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. DT	MIPR	TECOM								3115	3115	
b. OT	MIPR	OPTEC								1335	1335	
Subtotal Test and Evaluation										4450	4450	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PGM Management	ALLOT	PM Small Arms				925		960		4304	6189	
b. Travel						20		20		80	120	
Subtotal Management Services:						945		980		4384	6309	

			Total PYs Cost	FY 1999 Cost		FY 2000 Cost		FY 2001 Cost		Cost To Complete	Total Cost	Target Value of Contract
Project Total Cost:				0		14813		26047		85827	126687	

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development				PROJECT D284		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D284 Multipurpose Individual Munition	3936	16591	17093	10374	0	0	0	0	0	66866
<p>A. <u>Mission Description and Budget Item Justification:</u> Provides for the engineering manufacturing development (EMD) of a lightweight, shoulder fired, multiple purpose weapon. Provides the infantry with a fire and forget weapon capable of defeating enemy forces in buildings, bunkers, and lightly armored vehicles. The Multi-Purpose Individual Munition/Short Range Anti-Tank Weapon (MPIM/SRAW) is capable of being fired quickly from its carrying configuration and can be safely fired from an enclosure for close battle. It is more versatile than the AT4 system because it can be fired from enclosures and defeat bunkers and various field fortifications. This system will have tremendously increased lethality over the AT4 and will be multiple targets capable. System design will allow for growth, service life extension and technology insertion to support the U. S. Army mission of crisis response to regionally based threats. The Army and U. S. Marine Corps have signed a memorandum of agreement for a horizontal technology integration effort utilizing the USMC SRAW flight module/launcher as the carrier for the MPIM warhead.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 1025 Phase II EMD contract • 1205 Conducted system level analysis • 700 Initiated procurement of range support hardware for pre-production test (PPT) flights • 606 Supported preliminary design review (PDR) • 400 Supported early user demonstration (EUD) <p>Total 3936</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 13345 Phase II EMD contract, development, fabrication, and qualification of the MPIM/SRAW system • 955 Twenty missiles for PPT • 450 Testing PPT, warhead section and missile flight testing • 705 Systems engineering requirements generation and system level trade studies • 255 Warhead design, development and trade studies • 290 Safe and Arm (grenade S&A design, development and trade studies) • 268 Flight Module risk analysis, design verification and trade studies • 323 Program Management administration <p>Total 16591</p>										
Project D284	Page 6 of 26 Pages					Exhibit R-2A (PE 0604802A)				

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)							DATE February 1999					
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development			PROJECT D284				
FY 2000 Planned Program:												
•	11561	Phase II EMD contract, development, fabrication, qualification of the MPIM/SRAW system										
•	2339	Fifty missiles for preproduction qualification test (PPQT)										
•	930	Testing – (PPQT) (warhead and missile flight testing)										
•	1136	Systems engineering requirements generation and system level trade studies										
•	145	Warhead design, development and trade studies										
•	90	Safe and Arm (grenade S&A design, development and trade studies)										
•	143	Flight module risk analysis, design verification and trade studies										
•	749	Program management administration										
Total	17093											
FY 2001 Planned Program:												
•	1583	Phase II EMD contract, fabrication, and qualification of the MPIM/SRAW system										
•	4917	Missiles for initial operational test and evaluation (IOTE) (103 missiles as test articles)										
•	1580	Testing- PPQT(warhead and missile flight testing)										
•	1296	Systems engineering requirements generation and system level trade studies										
•	145	Warhead design, development and trade studies										
•	75	Safe and Arm (grenade S&A design, development and trade studies)										
•	143	Flight module risk analysis, design verification and trade studies										
•	635	Program management administration										
Total	10374											
B. Other Program Funding Summary			<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
Missile Procurement, Army, SSN C09100 (Multi-Purpose Individual Munition)			0	0	0	5684	20549	23303	47799	49666		147001
C. Acquisition Strategy: The MPIM/SRAW is a 65-month two phase EMD program which will leverage off the USMC 42-month SRAW EMD contract awarded in June 1994 and the 18-month U. S. Army technology demonstration MPIM/SRAW contract awarded in January 1995. The MPIM/SRAW EMD Phase 1 contract (18 month risk mitigation effort) was awarded in October 1996 with an EMD Phase 2 (maturation) contract (option) award in May 1998. FY99 funding will support PPT and preparation for CDR. FY 00/01 funding will support completion of systems qualifications and maturation in support of Milestone III in FY02.												
Project D284			Page 7 of 26 Pages				Exhibit R-2A (PE 0604802A)					

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development	PROJECT D284
--	--	------------------------

D. Schedule Profile	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Complete telemetry missile flight test	2Q*							
Corporate/government Phase I reviews	2Q*							
Exercise Phase II option	3Q*							
Complete EUD test		1Q*						
Conduct PDR		2Q						
Complete PPT			1Q					
Conduct CDR			2Q					
Initiate PPQT			2Q					
Conduct PRR				3Q				
Complete PPQT				4Q				
Complete IOTE					2Q			

*Completed milestone

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development						PROJECT D284		
I. Product Development												
	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	
a.	Contract (EMD Phase I)	SS/CPIF Lockheed Martin, Orlando (EMD Phase I)	7263							7263	7263	
b.	Contract (EMD Phase II)	SS/CPAF Lockheed Martin Orlando (EMD Phase II)	8137	14300	NOV98	13500	NOV99	4900	40837		40837	
c.	Award Fee					400		1600	2000		2000	
Subtotal Product Development:			15400	14300		13900		6500	50100		50100	
II. Support Costs: Not applicable												
III. Test and Evaluation												
	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a.	TECOM: APG	1095 RTTC,RSA	1273	922		880		880			3955	
b.	Operational evaluation Command	MIPR ALEX. VA.		12		071		695			778	
Subtotal Test and Evaluation			1273	934		951		1575			4733	
IV. Management Services												
	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a.	PM MPIM	INHOUSE AMCOM,RSA	6135	1357		2242		2299			12033	
b.	Congressional reduction											
c.												
d.												
Subtotal Management Services:			6135	1357		2242		2299			12033	
Project Total Cost:			22808	16591		17093		10374			66866	

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development				PROJECT D613		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D613 Mortar Systems	9369	9140	10181	0	6792	7872	30459	30804	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program provides funds to develop existing and emerging technology to enhance the effectiveness, lethality, versatility of use, mobility, and accuracy of mortar systems. Current mortar systems include conventional ammunition with a variety of fuzing and applications, weapons that range from man-portable 60mm to vehicle-mounted 120mm mortars, and related equipment such as fire control, mortar ballistic computer, training devices, and ammunition. Funding for EMD of the digital Mortar Fire Control System (MFCS) is provided in FY 98-FY00. MFCS is a revolutionary improvement in mortar capability, seamlessly linking mortar fires in the future digital battlefield. MFCS provides an on-board fire control system that includes a fire control computer, position navigation system, and gun pointing system. MFCS allows mortar crews to set-up in one minute, down from the current eight minutes. Accuracy is increased by a factor of four. Shorter exposure times increase crew survivability. The MFCS is fully compatible with the Advanced Field Artillery Tactical Data System (AFATDS), making mortars an integral part of Force XXI and Army After Next (AAN) fire support network. This will increase situational awareness and reduce the probability of fratricide. Additional funding in FY2000 funds the development and test of a low-cost 60mm full range training round (XM769). This will decrease the cost of training while increasing safety and lowering environmental impact. FY2002 through 2005 provides for EMD of a Precision Guided Mortar Munition (PGMM). The PGMM will be a precision strike round using advanced sensors and guidance systems, extended range and enhanced lethal mechanism technology. It will be capable of a first round defeat of high value hard point targets such as bunkers and command and control centers. The capability to hit point targets in built up areas makes this especially valuable in Military Operations in Urban Terrain (MOUT) and Military Operations Other Than War /Stability and Support Operations (MOOT/SASO) situations. First round hit capability reduces the overall logistical burden, a critical goal for early entry forces.

FY 1998 Accomplishments:

- 7605 Contractor software development and initiation of hardware integration
- 28 Conducted user assessment
- 1736 Support and management

Total 9369

FY 1999 Planned Program:

- 6280 Continue contractor software development and hardware integration; provide units for Production Qualification Tests (PQT)
- 1609 Support and management
- 1009 Begin production qualification test (PQT)
- 242 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs

Total 9140

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development	PROJECT D613
---	---	-------------------------------

FY 2000 Planned Program:

- 3420 Complete system and platform integration (MFCS)
 - 2180 Support and management (MFCS and XM731)
 - 250 Conclude PQT (MFCS)
 - 557 Conduct Operational Test (MFCS)
 - 561 Type Classify MFCS; test reports
 - 2160 Developmental engineering (XM769)
 - 703 Developmental tests/Operational tests (DT/OT) (XM769)
 - 350 Test hardware (Ammunition destructive tests) (XM769)
- Total 10181

FY 2001 Planned Program: Project not funded in FY 2001

B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Compl	Total Cost
Other Procurement, Army: K99300 (MFCS)	0	0	3740	12494	35709	35542	38595	39049	40400	205529
Procurement, Ammunition, Army: E92200 XM731 60mm Full Range Practice Round	0	0	0	2987	3623	3141	3095	3161	Cont.	Cont.

C. Acquisition Strategy: The Mortar Fire Control System was approved as a two year Warfighting Rapid Acquisition Program (WRAP) effort. FY 1997 funds were realigned to this program from PE 0203758A (Horizontal battlefield Digitization) in FY 1997. FY 1998 WRAP funding was aligned to this PE in the FY 1998 DoD Appropriations Bill, at the Army's request. Development will be accomplished by the prime contractor (AlliedSignal Corp. of Teterboro, NJ) teamed with a number of subcontractors. Initial production, scheduled for FY 2000, is planned as an option to the development contract. The XM731 60mm full range practice round will be developed in house at TACOM-ARDEC, using the 120mm M931 program as a model. Components, which are common to other 60mm programs (shell body, fin, and propulsion system), will be provided as GFM to the Load, Assemble, and Pack (LAP) contractor.

D. Schedule Profile	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Mortar Fire Control System									
Engineering & Manufacturing Development				End 2Qt					
Critical Design Review			2Qtr						
Operational Test				1Qtr					
Type Classify (Milestone III)				3Qtr					

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development	PROJECT D613
--	--	------------------------

D. Schedule Profile	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
First Unit Equipped (Heavy)						2Qtr			
60 mm Full Range Practice Round XM769									
Development engineering				Start 2Qtr	End 3Qt				
Design Review				4Qtr					
Performance Test					1Qtr				
Type Classif					3Qtr				

Remark: The XM731 60mm Full Range Practice Round (FRPR) is a government in-house development program.

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE **February 1999**

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604802A Weapons and Munitions - Engineering Development

PROJECT
D613

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Mortar Fire Control System												
a.	Competitive Cost Plus Award Fee	Allied Signal Corp., Teterboro, NJ	10884	5800	Jun 9	3420	Jan 00	0	N/A	0	20104	20104
b.	MIPR	TACOM-ARDEC Picatinny Arsenal NJ	700	480	Jan 99	0	N/A	0	N/A	0	1180	1180
c.	MIPR	Other OGA	15	0	N/A	0	N/A	0	N/A	0	15	15
XM769 60mm FRPR												
e.	Project Order	ARDEC Picatinny Arsenal NJ		0		2160					2160	2160
Subtotal Product Development:			11599	6280		5580					23459	23469

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Mortar Fire Control System												
d.	MIPR	TACOM-ARDEC Picatinny Arsenal NJ	1453	632	Jan 99	1100	Jan 00	0	N/A	0	3185	3195
e.	MIPR	TACOM-ACALA Rock Island Ill	243	154	Jan 99	200	Jan 00	0	N/A	0	597	597
f.	MIPR	PM Mortars Picatinny Arsenal NJ	392	438	Jan 99	350	Jan 00	0	N/A	0	1180	1180
g.	MIPR	Other OGA	224	50	Jan 99	100	Jan 00	0	N/A	0	374	374
XM769 60mm FRPR												
e.	In-house	PM Mortars Picatinny Arsenal NJ				240	Jan 00	0		0	240	240
SBIR/STTR				242							242	
Subtotal Support Costs:			2312	1516		1990					5818	5828

Remark: Because the XM731 is a training round only, the testing need only prove out that 1)the round is safe to use, and 2) the round accurately simulates the tactical round. Formal operational testing is greatly modified. Test hardware is for components that are common to other 60mm rounds. This will be procured by exercising options on existing production contracts.

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development	PROJECT D613
---	---	-------------------------------

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Mortar Fire Control System												
a.		TECOM	16	500	N/A	557	Jan 00	0	N/A	0	1073	1073
b.		TEXCOM	16	209	Jan 99	561	Jan 00	0	N/A	0	786	786
c.		OPTEC	50	300	Jun 99	250	Jan 00	0	N/A	0	600	600
XM731 60mm FRPR:												
d. Performance Text	MIPR	TECOM				703					703	703
e. Test Hardware	Options	Various				350					350	350
Subtotal Management Services:			82	1009		2421					3512	3512

Remark: Because the XM769 is a training round only, the testing need only prove out that 1) the round is safe to use, and 2) the round accurately simulates the tactical round. Formal operational testing is greatly modified. Test hardware is for components that are common to other 60mm rounds. This will be procured by exercising options on existing production contracts.

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Mortar Fire Control System												
d.	Time & Material	Robbins Gioia Corp Alexandria Va.	125	225	Jan 99	100	Jan 00	0	N/A	0	450	450
e.	Time & Material	BRTC	87	0	N/A	0					87	87
f.	Time & Material	Simulation Technology Inc Natick M	164	110	Jan 99	90	Jan 00	0	N/A	0	364	364
XM731 60mm FRPR: None												
Subtotal Management Services:			376	335		190					901	901

Project Total Cost:			14369	9140		10181					33690	
---------------------	--	--	-------	------	--	-------	--	--	--	--	-------	--

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development				PROJECT D695		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D695 XM982 Projectile	3382	5861	10387	15594	16106	23327	0	0	0	75610
<p>A. <u>Mission Description and Budget Item Justification:</u> The XM982 is an extended range Dual Purpose Improved Conventional Munition (DPICM) projectile which is an extended range 155mm artillery projectile. It will be compatible with all current and future 155mm artillery systems in the U. S. inventory. The XM982 will extend the range of the M198, M109A5, 155mm Paladin (M109A6), and the lightweight Howitzer to approximately 37 kilometers. The XM982 with the Modular Artillery Charge System (MACS) extends the Crusader range to 47 kilometers. Allowing greater stand-off from threats and faster defeat of potential threats increases survivability.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 582 Government support for engineering and developmental testing. Conducted Integrated Baseline Reviews (IBR) and System Requirements Review with contractor and established Integrated Product Teams (IPT) • 1100 Conducted Preliminary Design Reviews (PDR) • 600 Conducted preliminary Instrumentation and Guidance Designs • 1100 Conducted Systems Requirements and Design Reviews <p>Total 3382</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 2556 Continue government support for engineering, Integrated Product Team (IPT), developmental testing, and evaluation. • 1253 Continue design of projectile assembly. Build prototype sub-systems for evaluation • 661 Continue design of guidance and instrumentation systems, and simulations. Build prototype sub-systems for evaluation. • 1236 Continue development of system requirements and subsystem requirement allocation. Conduct laboratory and field testing and evaluation • 155 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 5861</p>										

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999				
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development				PROJECT D695				
<p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 3507 Continue government support for engineering, Integrated Product Team (IPT), engineering support for developmental testing • 3410 Continue design of projectile assembly. Build prototype sub-systems for evaluation • 1214 Continue design of guidance and instrumentation systems, and simulations. Build prototype sub-systems for evaluation • 2256 Continue development of system requirements and subsystem requirement allocation. Conduct laboratory and field testing and evaluation <p>Total 10387</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 9114 Continue government support for engineering, Integrated Product Team (IPT), engineering support for development testing. Conduct Critical Design Reviews (CDR). Conduct platform integration program • Contract: <ul style="list-style-type: none"> 2462 Complete design of projectile assembly. Build prototype subsystems for evaluation. Support CD 372 Complete design of guidance and instrumentation systems. Build prototype subsystems for evaluation. Support CDR 3646 Complete development of system requirements and subsystem requirement allocation. Conduct laboratory and field testing and evaluation. Conduct simulation validation. Support CD <p>Total 15594</p>												
B. Other Program Funding Summary			<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
RDT&E: 0603004A, Project D233			5621									
Procurement Ammunition, Army: E80100								27780	30768		Cont.	Cont.
<p>C. Acquisition Strategy: The approved Acquisition Strategy was to award the EMD contract (FY98-01) to a systems contractor through full and open competition utilizing formal source selection. As a result of this strategy, a contract was awarded to Raytheon-TI Systems, Inc., Lewisville, TX on 23 January 1998 for the design, development, fabrication, and engineering services in support of the development and testing of the 155MM ER DPICM XM982 Projectile. Two low rate production fixed price ceiling price options were also included in the award for the first year's buy of 3,400 each and the second year's buy of 4,900 each.</p>												
D. Schedule Profile			<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Milestone II			1Qtr*									
Source Selection				1Qtr*								
Award Initial EMD contract				2Qtr*								
Project D695			Page 16 of 26 Pages				Exhibit R-2A (PE 0604802A)					

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development	PROJECT D695
---	---	-------------------------------

D. <u>Schedule Profile</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Systems Requirements Review		3Qtr*								
Integrated Baseline Review (IBR)		3Qtr*								
Preliminary Design Review (PDR)		4Qtr*								
Initiate Platform Integration Kits Effort				1Qtr						
Critical Design Review (CDR)						1Qtr				
Contractor Pre-Qualification Tests						2Qtr				
Start Developmental Test and Evaluation						4tr				
Complete Developmental Test and Evaluation							4Qtr			
Independent Program Review (IPR)								3Qtr		
Award LRIP1 Contract									1Qtr	
First Article Test									4Qtr	
Operational Testing										2Qtr
FUE										3Qtr

*Denotes a completed milestone

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development					PROJECT D695		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Projectile & DPICM Payload Development	C/CPIF	Raytheon Texas Instruments Systems, Dallas, TX	2800	3150	Jan 99	6880	Oct 99	6480	Oct 00	13500	32810	32810
a. Platform Integration	MIPR	ARDEC, Picatinny Arsenal, NJ		200	Nov 98	116	Nov 99	3560	Nov 00	8933	12809	
Subtotal Product Development:			2800	3350		6996		10040		22433	45619	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
b. XM982	Allot	PM ARMS	232	600		600		600		989	3021	
c. Gov't Engineering	MIPR	ARDEC, Picatinny Arsenal, NJ	350	1314	Oct 98	2191	Oct 99	4004	Oct 00	9411	17270	
d. SBIR/STTR				155							155	
Subtotal Support Costs:			582	2069		2791		4604		10400	20446	
II. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TECOM Texting	MIPR	YPG, Yuma, AZ		442	Nov 98	600	Oct 99	950	Oct 00	6600	8592	
Subtotal Support Costs:				442		600		950		6600	8592	
IV. Management Services: Not applicable												
Project Total Cost:			3382	5861		10387		15594		39433	74657	

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development				PROJECT DAS1		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DAS1 Small Arms Improvement	1427	0	2469	3062	3187	6716	14964	10842	Continuing	Continuing
<p>A. <u>Mission Description and Budget Item Justification:</u> This project addresses the modernization of existing Small Arms Weapon systems. This program provides funds to develop existing and emerging technology to enhance lethality, target acquisition, fire control, training effectiveness, and reliability for small arms weapon systems and munitions. Current small arms include a variety of personal defense weapons (.38 caliber, .45 caliber; 9mm), individual weapons (5.56mm), crew-served weapons (5.56mm-40mm) and related equipment such as fire control, training devices, hand grenades and ammunition. Current efforts focus on improvements to the M249 Squad Automatic Weapon, M16/M4 Rifle, M203 Grenade Launcher, MK19 Grenade Machine Gun, M240B Medium Machine Gun, ammunition and hand grenades.</p> <p>FY 1998 Accomplishments:</p> <p><u>MK19 Modern Mount</u></p> <ul style="list-style-type: none"> • 150 Preparation of procurement package • 730 Contract to fabricate test hardware samples <p><u>MK19 Remote Platform</u></p> <ul style="list-style-type: none"> • 100 Program planning and documentation • 40 Modeling and Simulation • 100 Requirement analysis and system specifications will be examined for implementation • 260 Prototype demonstrations • 22 Began preparation of Request for Proposal (RFP) <p><u>MK19 Low Cost Training Ammunition</u></p> <ul style="list-style-type: none"> • 25 Market Survey <p>Total 1427</p> <p>FY 1999 Planned Program: Project not funded in FY 1999</p> <p>FY 2000 Planned Program:</p> <p><u>Lightweight Tripod for Light Machine Gu</u></p> <ul style="list-style-type: none"> • 280 Tripod Feature design (In House) • 180 Solicitation and evaluation of proposals 										
Project DAS1	Page 19 of 26 Pages					Exhibit R-2A (PE 0604802A)				

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development		February 1999
PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development		PROJECT DAS1
FY 2000 Planned Program: (continued)		
<u>M249 Rails/BIPOD/Handguard</u>		
•	60	Contract awar
•	99	Procure Materials
•	350	Prototype designs
<u>MK19 Remote Platform</u>		
•	330	Complete and Release RFP; evaluate proposals
•	770	Award EMD contract
<u>MK19 Modern Mount</u>		
•	280	Conduct tests on hardware samples
•	120	Prepare RFP and performance specifications
Total	2469	
FY 2001 Planned Program:		
<u>Lightweight Tripod for Light Machine Gu</u>		
•	50	Contract awar
•	395	Design/fabricate prototype
•	130	Test prototype
<u>M249 Rails/BIPOD/Handguard</u>		
•	190	Fabricate prototype
•	282	Developmental Tests
•	105	Finalize Design
<u>M249 Machine Gun Barrel Life Extension Program</u>		
•	40	Prepare and release RFP
•	30	Evaluate proposals, award contract
•	300	Contract execution, design and fabrication
•	40	Technical data preparation
<u>MK19 Remote Platform</u>		
•	600	Engineering and Manufacturing Development (EMD)
<u>MK19 Modern Mount</u>		
•	620	Contract for production qualification hardware
	280	Test production qualification hardware
Total	3062	
Project DAS1		

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development				PROJECT DAS1		
B. Other Program Funding Summary										
	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
WTCV, GZ1290, Squad Auto Wpn (MODS)	0	0	8326	10053	5486	4165	4904		52453	67008
WTCV, GZ2800, M16 Rifle MODS	4535	5227	7180	9685	2112	0	2452	2450	2100	2100
WTCV, GB3000, MK19 MODS	0	0	1980	586	0	0	3923	3920	29300	29300
WTCV, GZ1300, Med MG (MODS)	0	0	0	0	0	0	3040	3039	4500	10579
C. Acquisition Strategy: Primary strategy is to mature and finalize design, award RDTE hardware contracts, and test and evaluate system with ultimate goal of type classification and production award.										
D. Schedule Profile										
	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Lightweight Tripod for Light Machine Gu										
Tripod Feature design (in-house)					2Qtr					
Solicitation					3Qtr					
Contract awar						1Qtr				
Design/fabricate prototypes						2Qtr				
Test prototypes						4Qtr				
Fabricate test hardware							3-4Qtr			
Development Test								1-2Qtr		
Operational Test								2-3Qtr		
Type Classif								4Qtr		
M249 Rails/BIPOD/Handguard										
Award contract					2Qtr					
Procure materials					3Qtr					
Prototype designs					3-4Qtr					
Prototype fabrication						1-2Qtr				
Developmental Tests						2-3Qtr				
Final design						4Qtr				
Technical Tests							1 Qtr			
User Evaluation							1-2 Qtr			
Engineering Change Approval							2 Qtr			
Project DAS1										
Page 21 of 26 Pages										
Exhibit R-2A (PE 0604802A)										

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)							DATE February 1999				
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development				PROJECT DAS1			
D. Schedule Profile	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	
M249 RAM Improvement/Weight Reduction											
Award contract									2 Qtr		
Procure materials									3 Qtr		
Prototype designs									3-4 Qtr		
Prototype fabrication										1-2 Qtr	
Developmental Tests										2-3 Qtr	
Final design										4 Qtr	
M249 MG Barrel Life Extension Program											
Prepare and release RFP						1-2Qtr					
Receive proposals, evaluate, award contract						2-3 Qtr					
Contract execution, design/fabrication						3-4 Qtr	1-4 Qtr				
Technical Testing & Evaluation							4 Qtr	1 Qtr			
User Evaluation								1-2 Qtr			
Finalize design								2 Qtr			
Tech Data preparation						3-4 Qtr	1-4 Qtr	1-3 Qtr			
Approval of ECP								3 Qtr			
M249 Low Cost Training Ammunition											
Market Survey								1 Qtr			
Performance Specifications								2 Qtr			
Procurement Package								2-3 Qtr			
Concept Validation								3 Qtr			
Build hardware									1-2 Qtr		
DT/OT									3-4 Qtr		
Design refinement										1 Qtr	
Build hardware										2 Qtr	
Testing										3-4 Qtr	
Milestone III/TC (Beyond FY 2005)											
M203 Upgrade											
Award contract(s)								2 Qtr			
Procure materials								1 Qtr			
Design in-house prototypes								1-3 Qtr			
Fabricate prototype system								3-4 Qtr	1 Qtr		

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development			PROJECT DAS1		
D. Schedule Profile	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Test prototype system									1-2 Qtr	
Redesign and fabricate system									3-4 Qtr	
MK19 Modern Mount										
Prepare solicitation and Concept Definition			4 Qtr	1 Qtr						
Contract award (test hardware samples)				2Qtr						
Test hardware samples					1-2Qtr					
Prepare solicitation, performance specifications					3-4Qtr					
Contract awar						2Qtr				
Production qualification fabrication						3-4Qtr				
Testing-production qualification						4Qtr	1Qtr			
MK19 Remote Platform										
Program planning and documentation (FY98 c/o)			4 Qtr	1-4 Qtr						
Modeling & Simulation FY98 c/o)			4 Qtr	1-4 Qtr	1-2 Qtr					
Requirement Analysis & System Specification (FY98 c/o)			4 Qtr	1-4 Qtr	2Qtr					
RFP preparation and release (FY98 c/o)				4 Qtr	1-2 Qtr					
Proposal evaluation					2 Qtr					
EMD contract award					2 Qtr					
Design, Fabrication (EMD)						1-4Qtr	1Qtr			
Vehicle integration							2-4Qtr	1Qtr		
Technical testing								1-3Qtr		
Initial operational test and evaluation								2-3Qtr		
Type Classification								4Qtr		
MK19 Stabilized Platform										
Award contract									1-2 Qtr	
Design prototype									3 Qtr	
Fabricate prototype									4 Qtr	1 Qtr
Evaluate prototype										1-2 Qtr
Redesign system										3-4 Qtr
Fabricate second hardware iteration										4 Qtr
MK19 Low Cost Training Ammunition										
Market Survey (FY98 carryover)			4 Qtr							

Project DAS1

Page 23 of 26 Pages

Exhibit R-2A (PE 0604802A)

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)							DATE February 1999				
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development			PROJECT DAS1			
D. Schedule Profile	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	
MK19 Self-Destruct Cartridge											
Market Survey							1 Qtr				
Performance Specification							2-3 Qtr				
Small purchase							3 Qtr				
Technical evaluation							3 Qtr				
Contract awar							4 Qtr				
Engineering, Manufacturing, Development								1-2 Qtr			
Validation Test								3 Qtr			
Contract option								4 Qtr			
Build hardware									1-2 Qtr		
Testing									3-4 Qtr		
Milestone III IP										1 Qtr	
M240 Weight Reduction											
Contract awar								3 Qtr			
Design Review									1 Qtr		
Receive hardware									4 Qtr		
Test										2 Qtr	
Report/ECP										3 Qtr	
M240 Improved MG Barrel											
Contract awar									3 Qtr		
Design Review										1 Qtr	
Receive hardware										2 Qtr	
Test										3 Qtr	
Report/ECP										4 Qtr	
Lightweight Hand Grenade											
Procurement Package									1 Qtr		
Contract awar									2-3 Qtr		
Build hardware									4 Qtr		
Testing									4 Qtr		
Contract Option										1 Qtr	
Performance Specification										2-3 Qtr	
Build hardware										4 Qtr	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development	PROJECT DAS1
--	--	------------------------

<u>D. Schedule Profile</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Non-Toxic Ammo										
Market Survey								1 Qtr		
Performance Specification								1-2 Qtr		
Procurement Package								2-3 Qtr		
Concept Validation								3 Qtr		
Contract awar								4 Qtr		
Build hardware									1-2 Qtr	
DT/OT									3-4 Qtr	
Contract Option										1 Qtr
Manufacturing										2-3 Qtr

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE **February 1999**

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604802A Weapons and Munitions - Engineering Development

PROJECT
DAS1

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Hardware Development	FP	Multi	1103			1175	Multi	1325	Multi	28366	31969	31969
Subtotal Product Development:			1103			1175		1325		28366	31969	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
b. Development	MIPR	ARDEC	1635			557	Multi	803	Multi	16251	19246	19246
c. ILS	MIPR	ACALA	34			40	Multi	65	Multi	1350	1489	1489
Subtotal Support Costs:			1669			597		868		17601	20735	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
d. DT	MIPR	TECOM	294			284	Multi	312	Multi	10130	11020	11020
e. OT	MIPR	OPTEC						85	Multi	4052	4137	4137
f. Human Engineering	MIPR	HEL	24			30	Multi	30	Multi	677	761	761
Subtotal Support Costs:			318			314		427		14859	15918	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PGM Management	ALLOT	PM SA	318			300	Multi	350	Multi	4728	5696	5674
b. Travel	ALLOT	PM SA	17			83		92		1350	1542	
Subtotal Management Services:			335			383		442		6078	7238	

Project Total Cost:			3425			2469		3062		66904	75860	75860
---------------------	--	--	------	--	--	------	--	------	--	-------	-------	-------

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)									DATE February 1999	
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development						
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
Total Program Element (PE) Cost	21591	25820	22996	16074	15321	14517	31531	37639	Continuing	Continuing
DH01 Combat Engineer Equipment Engineering Development	7986	7525	2764	1475	2049	1032	19960	24923	Continuing	Continuing
DH02 Bridge Site Mobilit	0	348	0	0	0	0	0	0	Continuing	Continuing
DH14 Logistics Support Equipment - Engineering Development	1062	93	102	99	226	247	98	98	Continuing	Continuing
DL39 General Support Equipment Engineering Development	1778	2494	2127	2028	4422	3979	4634	4063	Continuing	Continuing
DL41 Fuels Handling Equipment - Engineering Development	768	1078	5327	4904	3830	2472	1479	1478	Continuing	Continuing
DL42 Camouflage System - Engineering Development	0	776	391	382	330	346	491	1471	Continuing	Continuing
DL43 Combat Service Support Equipment Engineering Development	0	189	53	581	252	1217	546	1200	Continuing	Continuing
DL44 Distribution System, 105k	0	0	0	0	772	0	0	0	0	772
D194 Engine Driven Generators Engineering Development	7071	8998	7949	5151	2228	2504	1535	1545	Continuing	Continuing
D279 Airdrop Equipment Engineering Development	1523	1347	0	0	0	0	0	0	0	2870
D429 Rigidwall Shelter Engineering Development	1403	902	0	0	0	0	0	0	0	2305
D461 Marine Oriented Logistics Equipment -Engineering Development	0	2070	4283	1454	1212	2720	2788	2861	Continuing	Continuing

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development
--	---

A. Mission Description and Budget Item Justification: Included within this program element is the development of military tactical bridging, materiel handling equipment, water purification equipment, petroleum distribution equipment, mobile electric power and water craft.

B. <u>Program Change Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	27174	26002	23942	18534
Appropriated Value	28039	26002		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-865	-182		
b. SBIR / STT	-671			
c. Omnibus or Other Above Threshold Reductions	-239			
d. Below Threshold Reprogramming	-4672			
e. Rescissions				
Adjustments to Budget Years Since FY 1999 PB			-976	-2460
Current Budget Submit (FY 2000/2001 PB)	21592	25820	22996	16074

Change Summary Explanation: Funding - In FY 1998 funds were reprogrammed to higher priority Army programs (-4672).
 FY 2001 decrease due to a transfer of projects D279 and D429 to PE 0604713A (-2460).

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999			
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development					PROJECT DH01		
COST (In Thousands)		FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DH01 Combat Engineer Equipment Engineering Development		7986	7525	2764	1475	2049	1032	19960	24923	Continuing	Continuing
<p>A. <u>Mission Description and Budget Item Justification</u>: This project supports the development of military tactical bridging for wet and dry gap bridging requirements such as the Common Bridge Transporter (CBT), Improved Ribbon Bridge (IRB) Bays, Heavy Dry Support Bridge (HDSB), and Line of Communication Bridge (LOCB). All bridging work supports the increased capabilities of the Multi-Role Bridge Company (MRBC). This project also provides for market investigations of enginee construction equipment. This project also supports EMD for the M9 Armored Combat Earthmover (ACE) successor vehicle program and the LOCB successor to the Bailey Bridge.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 5992 Fabricated HDSB EMD Launcher Prototype • Prepared for contractor testing for the HDSB <p>641</p> <ul style="list-style-type: none"> • 755 Initiated testing of HDSB Prototype • 237 Initiated IRB Market Investigation • 361 Initiated market investigations for Construction Equipment <p>Total 7986</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 1951 Prepare and Fabricate HDSB EMD System Support Package including Technical Publications & Training • 1227 Complete contractor testing of HDSB EMD Prototype • 2866 Conduct Production Qualification Test (PQT) of HDSB • 250 Prepare HDSB Production Solicitation • 300 Prepare IRB Production Solicitation • 200 Initiate IRB Flotation Modeling and Simulation • 532 Conduct market investigation for Construction Equipment • 199 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 7525</p>											
Project DH01				Page 3 of 31 Pages				Exhibit R-2A (PE 0604804A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development	PROJECT DH01
---	--	-------------------------------

FY 2000 Planned Program:

- 750 Completion of HDSB Prototype Contracts
 - 750 Complete PQT of HDSB
 - 414 Fabricate Bridge Erection Boat (BEB) Prototypes
 - 250 Complete IRB Flotation Modeling and Simulation
 - 600 Conduct market investigation for Construction Equipment
- Total 2764

FY 2001 Planned Program:

- 440 Conduct PQT on BEB
 - 200 Prepare BEB Production Solicitation
 - 835 Conduct market investigation for Construction Equipment
- Total 1475

B. <u>Other Program Funding Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Compl	Total Cost
OPA3, G82400, Heavy Dry Support Bridge			13980	20319	20788	20944	61500	47457	Cont	Cont
OPA3, M26800, Bridge, Float-Ribbon, Transporte	4007	8801	7809	8900	16044	21033	35911	37240	Cont	Cont
OPA3, M26600, Bridge, Float-Ribbon, Interio Bays			2988	3528	7822	6729	8003	6978	Cont	Cont
OPA3, M26700, Bridge, Float-Ribbon, Ramp Bays			1280	2006	2235	2871	3020	3076	Cont	Cont
OPA3, M27200, Float Bridge Propulsion					1957	4456	7309	7162	Cont	Cont
OPA3, M06600, Crane Shovel Crawler			3865	3150	3201	3280	2339	686	Cont	Cont
OPA3, M03900, Loader, Scoop Type								4136	Cont	Cont

C. Acquisition Strategy: HDSB - Competitive RDTE followed by competitive procurement. IRB – Limited RDTE followed by competitive procurement. BEB – Limited RDTE followed by competitive procurement

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development	PROJECT DH01
---	--	-------------------------------

D. Schedule Profile	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2004</u>	<u>FY 2005</u>
Fabricate HDSB Prototype Bridge	1Q*	1Q*								
Fabricate HDSB Prototype Launcher		1Q*	1Q*							
Conduct HDSB PPQT			3Q	1Q						
HDSB Production Contract Award/MS IIIA				2Q						
HDSB PVT/IOT&E Complete/MS Full Rate					3Q	2Q				
HDSB FUE						4Q				
Conduct IRB Flotation Model and Simulation			3Q	1Q						
IRB Production Contract Award/MS IIIA				2Q						
IRB PVT Complete/ MS III Full Rate					2Q					
IRB FUE						3Q				
BEB Prototype Contract Award/MSII				4Q						
BEB Production Contract Award/MS IIIA						4Q				
BEB PVT Complete/ MS III Full Rate							4Q			
BEB FUE								4Q		

*Indicates completed effort

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE
February 1999

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
**0604804A Logistics & Engineer Equipment -
Engineering Development**

PROJECT
DH01

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. HDSB EMD Contract	C-CPFF	Williams Faire Engineering LTD, UK	9053	1050	1Q99	250	1Q00				10353	
b. HDSB EMD Contract	C-CPFF	Kockums AB, Sweden	9715	1296	1Q99	180	1Q00				11191	
c. PM/Matrix Support	MIPR	TACOM	4867	1583	2Q99	760	2Q00	640	2Q01	Cont	7850	
d. BEB EMD Contract	C-CPFF	TBS				300	1Q00				300	
e. TARDEC Support to Construction Equipment	MIPR	TACOM	520	482	2Q99	600	2Q00	835	2Q01	Cont	2437	
Subtotal Product Development:			24155	4411		2090		1475			32131	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Focus Sustainment	C-CPFF	TBS		125	2Q99						125	
b. Management Information System Development	C-CPFF	SAIC, Sterling Heights, MI	349	75	1Q99	74	1Q00				498	
Subtotal Support Costs:			349	200		74					623	
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Misc. Test & Prep	MIPR	APG, Aberdeen, MD	629								629	
b. PPQT, HDSB	MIPR	APG, Aberdeen, MD		2260	1Q99	300	1Q00				2560	
c. Load Simulator	MIRR	TECOM, Aberdeen, MD		654	2Q99	300	2Q00				954	
d. Extended Towbar Test	MIPR	YPG, Yuma, AZ	60								60	
e. Modelin	MIPR	WES, Vicksburg, MS	408								408	
Subtotal Test and Evaluation			1097	2914		600					4611	
Project Total Cost:			25601	7525		2764		1475			37365	

Project DH01

Page 6 of 31 Pages

Exhibit R-3 (PE 0604804A)

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development					PROJECT DH14	
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DH14 Logistics Support Equipment - Engineering Development	1062	93	102	99	226	247	98	98	Continuing	Continuing

A. Mission Description and Justification: This project supports development of Material Handling Equipment (MHE) that support Combat Service Support units with MHE for world wide rapid movement of supplies including container handling equipment, forklifts, and other cargo handling related items.

FY 1998 Accomplishments:

- 179 Conducted Market investigations for Rough Terrain Container Crane (RTCC) and for Expandable Lightweight Spreader Bar (ELSB).
- 410 Provided engineering support for development of performance specifications and program documentation for Rough Terrain Container Handle (RTCH).
- 100 Provided funding to Aberdeen Test Center for development of Rough Terrain Container Handler detailed test plan and preparation for RTC prototype test.
- 373 Conducted Source Selection Board for RTCH.

Total 1062

FY 1999 Planned Program:

- 30 Develop performance specifications for Rough Terrain Container Crane FY00 buy.
- 20 Conduct pre-award contract efforts for FY00 buy Rough Terrain Container Crane and Spreader Bars.
- 20 Continue engineering support, testing and MSIII support for the Rough Terrain Container Handler (RTCH).
- 21 Conduct market investigations for General Material Handling Equipment.
- 2 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs

Total 93

FY 2000 Planned Program:

- 40 Development of performance specifications for Electric Forklift.
- 22 Conduct market investigations for Container Handling Equipment (CHE).
- 40 Prepared updated ATLAS purchase description for FY01 buy.

Total 102

Project DH14 Page 7 of 31 Pages Exhibit R-2A (PE 0604804A)

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development	PROJECT DH14
---	--	-------------------------------

FY 2001 Planned Program:

- 30 Perform engineering integration of new technologies which will increase the performance capabilities of existing MHE to meet unique military requirements
 - 30 Preparation of program documentation for NDI MHE procurement.
 - 39 Updating performance specifications for use in upcoming NDI MHE procurements.
- Total 99

B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
RDTE, 0603804.DG14, Logistics Support Equipment, Advanced Development	92	98	105	103	106	103	98	98	Cont	Cont
OPA3, M41200, Forklift, DE, PT, RT, 50K lbs.		20532	0	34008	43494	55705	16183	15975	Cont	Cont
OPA3, M41800, All Terrain Lifting Arm System	3265	15188	23569	27858	20997	31466	31887	30338	Cont	Cont
OPA3, X00900, Rough Terrain Container Crane		8592	10930	8383	0	0			Cont	Cont
OPA3, ML5365, Items Less Than \$5.0M (MHE)	1644	1667	1763	1740	1863	1857	1949	1963	Cont	Cont

C. Acquisition Strategy: RDT&E Log Support Engineering Equipment – Competitive formal source selection for prototype equipment. Rough Terrain Container Handler (RTCH) – Competitive procurement using NDI integration of commercial components. Rough Terrain Container Crane (RTCC) – Sole source procurement to original manufacturer. Items less than \$5M – Competitive procurement for various MHE.

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Market Investigation	1Q-3Q*	1Q-3Q	1Q-3Q	1Q-3Q	1Q-3Q	1Q-3Q	1Q-3Q	1Q-3Q
Performance Specifications	2Q-4Q*	2Q-4Q	2Q-4Q	2Q-4Q	2Q-4Q	2Q-4Q	2Q-4Q	2Q-4Q
Testing of development systems		3Q-4Q	1Q			3Q	3Q	
Pre-award contract efforts		2Q						

*Milestone completed

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development					PROJECT DL39	
COST <i>(In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DL39 General Support Equipment Engineering Development	1778	2494	2127	2028	4422	3979	4634	4063	Continuing	Continuing

A. Mission Description and Justification: Develop and transition to procurement water purification equipment, maintenance equipment and environmental control units (ECU) that do not use ozone depleting refrigerants.

FY 1998 Accomplishments:

- 150 Conducted evaluation of alternative reverse osmosis membrane configurations.
 - 555 Released 1500 Gallons Per Hour (GPH) Tactical Water Purification System (TWPS) Engineering Manufacturing and Development (EMD) Request for Proposal (RFP), managed solicitation amendments and contractor protest.
 - 715 Initiated 1500 GPH TWPS Source Selection Evaluation Board (SSEB).
 - 179 Fabricated large diesel prototype heater (250K BTU/H).
 - 100 Developed Large Heater prototypes.
 - 79 Completed testing of R-134a refrigerant for 18K BTU/H Environmental Control Unit (ECU).
- Total 1778

FY 1999 Planned Program:

- 252 Engineering and management support of 1500 GPH TWPS EMD contract effort.
 - 100 Initiate 1500 GPH TWPS production contract solicitation and MS III IPR package.
 - 200 Complete 1500 GPH TWPS SSEB.
 - 1292 Award EMD contract for design and fabrication 1500 GPH TWPS EMD prototypes.
 - 55 Prepare and initiate Production Qualification Testing (PQT)/Engineering User Testing (EUT) for 1500 GPH TWPS.
 - 200 Develop purchase description for 18K BTU/H ECU.
 - 220 Develop purchase description for large diesel heaters (250K + BTU/H).
 - 112 Complete testing of large heater prototypes.
 - 63 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 2494

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development	PROJECT DL39
---	--	-------------------------------

FY 2000 Planned Program:

- 300 Engineering and management support of the 1500 GPH PQT/EUT.
 - 100 Contractor support of PQT and completion of 1500 GPH TWPS EMD contract.
 - 200 Engineering and management support of 1500 GPH TWPS EMD contract effort.
 - 879 Complete PQT/EUT for 1500 GPH TWPS.
 - 100 Complete 1500 GPH TWPS production contract solicitation and MS III IPR.
 - 200 Develop Purchase Description for 18,000 BTUH ECU
 - 348 Complete testing of 18K ECU prototypes
- Total 2127

FY 2001 Planned Program:

- 865 Award contract for system integration of Pre-Planned Product Improvement (P³I) water purification components into 3000 GPH ROWPU and 1500 TWPS.
 - 600 Engineering support for evaluation of system integration of P³I water purification components into 3000 GPH ROWPU and 1500 GPH TWPS.
 - 200 Complete testing of 9,000 BTU/H ECUs.
 - 150 Develop Purchase Description for 9K BTU/H ECUs.
 - 213 Test CO2 automotive ECU.
- Total 2028

B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
RDTE, 0603804.DK39, General Support Equipment Advanced Development	1782	3255	1922	2040	2344	2347	3006	3004	Cont	Cont
OPA 3, ML5335, Items Less Than \$2.0M (Water Equipment)	2628	1255	1773	1631	880	643	4920	7161	Cont	Cont
OPA 3, R05100, Water Purification Systems			10607	36133	35713	40550	12696	6695	Cont	Cont
OPA3, MF9301/M19600, ARMY SPACE HEATER 120K BTU/H (ASH)	855	1051	912	935	932	5867	3898	5886	Cont	Cont
OPA3, MF9302, LARGE CAPACITY FIELD HEATER 400K BTU/			1312	1657		2000			Cont	Cont
OPA3, MF9303/MF9300, AIR CONDITIONERS			3756	3801	1350	6893	10523	22681	Cont	Cont

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE February 1999
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development	PROJECT DL39

C. Acquisition Strategy: Development and transition to competitive procurement for all items under this project.

D. Schedule Profile	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY2005</u>
Completed purchase description and EMD contract solicitation package for the 1500 TWPS.	3Q*								
Released EMD RFP for the 1500 TWPS.		1Q*							
Award EMD contract for 1500 TWPS.			2Q						
Conduct CDR for the 1500 TWPS			3Q						
Complete 1500 TWPS prototype fabrication.			4Q						
Complete contractor testing on 1500 TWPS.			4Q						
Complete PQT/EUT on 1500 TWPS				2Q					
Conduct MS III on 1500 TWPS				3Q					
Initiate 1500 TWPS P ³ I effort in support of Force XXI and AAN Purification Systems					1Q-4Q				
Initiate Force XXI and AAN Quality Systems						1Q-4Q	1Q-4Q		
Future Water Recovery Systems						1Q	1Q		
Force XXI and AAN Storage & Distribution Systems								1Q	1Q
Completed engineering tests of R-134a EC			2Q						
Completed engineering tests for Large Heate				3Q					
Completed Performance Description for Large Heater				4Q					
Completed Engineering tests of 18,000 BTU/ ECU					3Q				
Completed Performance Description for 18,000 BTU/H ECU					4Q				
Completed engineering tests of 9,000 BTU/ ECU						2Q			
Completed Performance Description of 9K EC						4Q			

DATE
February 1999

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
**0604804A Logistics & Engineer Equipment -
Engineering Development**

Completed Engineering tests of automotive CO2 ECU						3Q			
--	--	--	--	--	--	----	--	--	--

* Milestone Completed.

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development						PROJECT DL39		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. 1500 GPH TWPS	MIPR	TARDEC/CECOM	2721	554	1Q					Cont	3275	
b. 1500 GPH TWPS	C-CPFF	Contractor TBD		1313	2Q	500	1Q			Cont	1813	
c. 1500 GPH TWPS P ³ I	C-CPFF	Contractor TBD										
d. Complete Large Heater Purchase Description (PD)	In-house	US ARMY CECOM, Ft. Belvoir, V		180				865	2Q		1045	
e. Complete 18K BTU/H ECU PD	In-house	US ARMY CECOM, Ft. Belvoir, V				170					170	
f. Complete 9K BTU/H ECU PD	In-house	US ARMY CECOM, Ft. Belvoir, V						120			120	
Subtotal Product Development:			2721	2047		670		985			6423	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. 1500 GPH TWPS	MIPR	TARDEC	2134			192		600		Cont	2926	
b. Large Heater PD	Time & Material	US ARMY CECOM, Ft. Belvoir, V		20							20	20
c. 18K BTU/H ECU PD	Time & Material	US ARMY CECOM, Ft. Belvoir, V				20					20	20
d. 9K BTU/H ECU PD	Time and Material	US ARMY CECOM, Ft. Belvoir, V						20	2Q		20	20
Subtotal Support Costs:			2134	20		212		620			2986	
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PQT (1500 TWPS)	MIPR	TECOM	20	55		687				Cont	762	
b. User Test (1500 TWPS)	MIPR	TEXCOM				200				Cont	200	
c. Engineering tests of heater	In-house	US ARMY CECOM, Ft. Belvoir, V		225							225	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development					PROJECT DL39		
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
d. ECU component tests	In-house	US ARMY CECOM, Ft. Belvoir, V		107							107	
e. Engineering tests of 18K ECU prototypes	In-house	US ARMY CECOM, Ft. Belvoir, V				300					300	
f. Engineering tests of 9K ECU prototypes	In-house	US ARMY CECOM, Ft. Belvoir, V						190			190	
g. Engineering tests of CO2 ECU	In-house	US ARMY CECOM, Ft. Belvoir, V						203			203	
Subtotal Test and Evaluation			20	387		1187		393			1987	
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PD/testing management	In-house	US ARMY CECOM, Ft. Belvoir, V		40							40	
b. PD/testing management	In-house	US ARMY CECOM, Ft. Belvoir, V				58					58	
c. PD/testing management	In-house	US ARMY CECOM, Ft. Belvoir, V						30			30	
Subtotal Management Services:				40		58		30			128	
Project Total Cost:			4875	2494		2127		2028			11524	

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development				PROJECT DL41		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DL41 Fuels Handling Equipment - Engineering Development	768	1078	5327	4904	3830	2472	1479	1478	Continuing	Continuing
<p>A. Mission Description and Justification: The Army has the mission to supply fuel for all land-based forces, including the Marines and the Air Force. This developmental program provides the capability to perform battlefield sustainment operations, including receiving and transferring petroleum from trucks, ships, and permanent and temporary storage facilities; moving petroleum between storage to and within corps and division areas; quality surveillance testing; and dispensing in support of tactical operations, including rapid refueling of airfields.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 228 Developed Petroleum Quality Analysis System (PQAS) Specification. • 32 Procured Government Furnished Equipment (GFE) for PQAS Engineering Manufacturing and Development (EMD) phase. • 150 Prepared solicitation package for PQAS EMD phase. • 138 Evaluated filter-coalescer elements performance with JP8. • 84 Awarded task order for a performance specification for the Remote Refueling & Rearming Deployable Distribution System (R3D2S) 400HZ EMD pump. • 136 Awarded contract for prototypes of the Palletized Load System (PLS) modular fuel farm. <p>Total 768</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 942 Award and administer development and test/evaluation of two PQAS prototypes. • 109 Demonstrate modular fuel farm concept. • 27 Small Business Innovative Research/Small Business Technology Transfer Program (SBIR/STTR). <p>Total 1078</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 1384 Continue development and test/evaluation of PQAS prototypes. • 2100 Award and administer Petroleum Quality Surveillance PQSL EMD contract to develop EMD prototypes. • 1331 Award incrementally-funded contract for automated/digitized Petroleum and Water System (PAWS) prototypes. • 512 Initiate investigation into improved collapsible drums and coated fabric tanks. 										
Project DL41			Page 14 of 31 Pages				Exhibit R-2A (PE 0604804A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development	PROJECT DL41
---	--	-------------------------------

Total 5327

FY 2001 Planned Program:

- 2833 Continue development and test/evaluation of Petroleum Quality Surveillance System (PQSL) EMD prototypes.
 - 825 Fabricate, test, and evaluate improved collapsible drums and coated fabric tanks.
 - 1246 Integrate state-of-the-art components into PAWs for the digitized division and corps.
- Total 4904

B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Compl	Total Cost
RDTE, 0603804.DK41, POL Distribution Equipment Advanced Development	813	824	869	858	904	904	983	981	Cont	Cont
OPA 3, ML5330, Items Less Than \$2.0M (POL)	6865	4613	3083	4053	4898	8568	4980	4136	Cont	Cont

C. Acquisition Strategy: Development of and transition to competitive procurement for all items under this project.

D. Schedule Profile	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Awarded ITFDS contract for small lightweight pumps.	1Q*								
Designed and Fabricated ITFDS component prototypes and initiated testing.	2Q*								
Procured long lead-time items for PQAS EMD prototypes.	2Q*								
Develop PQAS specification.		2Q*							
Prepared contract package for PQAS.		3Q*							
Administer source selection process for PQAS.			1Q-3Q						
Award and test PQAS prototypes.			3Q-4Q						
Demonstrate concept for modular fuel farm.			3Q						
Award and administer contract for the prototype automated/digitized PAWS.				2Q					
Award PQSL contract.				3Q					

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)							DATE February 1999			
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development				PROJECT DL41		
D. Schedule Profile	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	
Fabricate, test, and evaluate improved collapsible drums and coated fabric tanks.					1Q-4Q					
Integrate digitized PAWS into division and corps.					2Q-4Q					
Develop POL Quality Analyzer.						1Q				
Award POL Quality Analyzer.						3Q				
Test POL Quality Analyzer.							1Q			
Develop Force XXI and AAN Tactical Petroleum Distribution System.								1Q-4Q		
Award and test Tactical Petroleum Distribution System.									1Q-4Q	
* Milestone Completed.										

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE **February 1999**

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
**0604804A Logistics & Engineer Equipment -
Engineering Development**

PROJECT
DL41

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PQAS	In-House	TARDEC	1569	302	Jan 99	390			Jan 01	Cont	2261	
b. PQAS	C-CPFF	Contractor TBD	2178	620	Jun 99	784	May 00		May 01	Cont	3582	
c. PQSL	In-House	TARDEC						330			330	
d. PQSL	C-CPFF	Contractor TBD				1780	May 00	1733	May 01		3513	
e. PLS Modular Fuel Farm	In-House	TARDEC		54		200			Jan 01		254	
f. PLS Modular Fuel Farm	In-House	TARDEC				1031	April 00	600	Jan 01		1631	
g. Collapsible Containers	C-CPFF	Contractor TBD						425			425	
h. COTS Components	In-House	TARDEC						800			800	
Subtotal Product Development:			3747	976		4185		3888			12796	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PQAS	In-House	TARDEC	270	20		60				Cont	350	
b. PQSL	In-House	TARDEC				320		200			520	
c. Collapsible Containers	MIPR	ARL/Navy/Misc	358			512	Mar 00	400	Mar 01	Cont	1270	
d. PLS Modular Fuel Farm	In House	TARDEC				100		146			246	
Subtotal Support Costs:			628	20		992		746			2386	
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PQAS	MIPR	TECOM	187		May 99	150	May 00			Cont	337	
b. PQSL	MIPR	TECOM						170	May 00		170	
c. PLS Modular Fuel Farm	MIPR	TECOM		82				100	April 00		182	
Subtotal Test and Evaluation			187	82		150		270			689	
Project Total Cost:			4562	1078		5327		4904			15871	

Project DL41

Page 17 of 31 Pages

Exhibit R-3 (PE 0604804A)

Item 109

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development				PROJECT DL42		
COST <i>(In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DL42 Camouflage System - Engineering Development	0	776	391	382	330	346	491	1471	Continuing	Continuing
<p>A. <u>Mission Description and Justification:</u> Project DL42 provides for development and transition to procurement low cost, low observable systems for suppression of visual, near-infrared, thermal, radar, and acoustic signatures of highly mobile and semi-mobile weapon assets.</p> <p>FY 1998 Accomplishments: Project not funded in FY 1998.</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 190 Prepare draft Engineering Change Proposal (ECP) for desert Ultra-Lightweight Camouflage Net System (ULCANS). • 190 Finalize Production Qualification Test/Operational Test (PQT/OT) plan • 376 Perform desert PQT/OT testing • 20 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 776</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 191 Complete desert ULCANS PQT/OT testing • 100 Finalize test report • 100 Prepare final desert ECP. <p>Total 391</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 282 Prepare draft ECP for snow ULCANS • 100 Prepare snow ULCANS PQT/OT test plan <p>Total 382</p>										
B. <u>Other Program Funding Summary</u>										
	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
RDTE, 0602712.AH35, Camouflage Technolog	749	2028	2109	2422	2479	2540	2704	2836	Cont	Cont
<div style="display: flex; justify-content: space-between;"> Project DL42 Page 18 of 31 Pages Exhibit R-2A (PE 0604804A) </div>										

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development	PROJECT DL42
---	--	-------------------------------

C. Acquisition Strategy: Develop camouflage systems for the Services and transition items to competitive procurement.

D. Schedule Profile	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2004	FY 2005
Complete desert ULCANS P3I MDR PQT/OT Test, and test report				4Q						
Prepare draft snow ECP for ULCANS and snow PQT/OT test plan					4Q					

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development					PROJECT DL43	
COST <i>(In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DL43 Combat Service Support Equipment Engineering Development	0	189	53	581	252	1217	546	1200	Continuing	Continuing

A. Mission Description and Justification: Project develops Combat Service Support Equipment (CSSE) such as small boats, diving equipment, well drilling machines, firetrucks, tool outfits, electrical distribution systems, and floodlights which are used for field operations.

FY 1998 Accomplishments: Project not funded in FY 1998

FY 1999 Planned Program:

- 50 Develop performance specifications for multiple Combat Service Support Equipment (CSSE) (diving , well drilling and survey equipment).
 - 80 Conduct market investigation for multiple CSSE items (diving , well drilling and survey equipment).
 - 54 Conduct market investigation testing for multiple CSSE items (diving , well drilling and survey equipment)
 - 5 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 189

FY 2000 Planned Program:

- 20 Develop performance specifications for multiple Combat Service Support Equipment (CSSE) (outboard motors).
 - 20 Conduct market investigation for multiple CSSE items (outboard motors).
 - 13 Conduct market investigation testing for multiple CSSE items (outboard motors).
- Total 53

FY 2001 Planned Program:

- 170 Develop performance specifications for multiple Combat Service Support Equipment (CSSE) (500KW electric power system, power distribution and controls system, diving equipment, etc.).
- 150 Conduct market investigation of commercial components for multiple CSSE items. (500KW electric power system, power distribution and controls system, diving equipment, etc.).
- 261 Conduct evaluation of commercial components for multiple CSSE items. (500KW electric power system, power distribution and controls system, diving equipment, etc.).

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999			
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development			PROJECT DL43			
Total		581									
B. Other Program Funding Summary		<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
OPA 1, D15802, Truck, Firefighting, Multipurpose		0	1708	2473	2574	2758	2885	6232	6462	Cont	Cont
OPA 3, M72100, Floodlight Set, Electric, Traile Mounted		0	1938	2370	2363	4136	4279	9272	10239	Cont	Cont
OPA 3, ML5325/MA8050, Items Less than \$5.0M (CSS Equipment)		4242	8798	2553	2261	9401	10286	21814	33836	Cont	Cont
C. Acquisition Strategy: EMD and transition to production.											
D. Schedule Profile		<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2004</u>	<u>FY 2005</u>		
Conduct market investigation testing for diving, well drilling and survey equipment		4Q									
Conduct market investigation testing for outboard motors			4Q								
Develop performance specifications for 500KW Electric Power System				2Q							
Develop performance specifications for Powe Distribution Control System				2Q							
Conduct market investigation testing for Powe Distribution Control System				4Q							
Conduct market investigation testing for 500KW Electric Power System				4Q							

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development					PROJECT D194	
COST <i>(In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D194 Engine Driven Generators Engineering Development	7071	8998	7949	5151	2228	2504	1535	1545	Continuing	Continuing

A. Mission Description and Budget Item Justification: Develop and transition to procurement a series of diesel engine driven generator sets/auxiliary power units and provide continual modernization of fielded sets in order to meet federally mandated environmental statutes with reduced weight and size with reduced thermal signatures.

FY 1998 Accomplishments:

- 2400 Continued hardware development for 3 kW Tactical Quiet Generator (TQG).
 - 1668 Initiated test and evaluation for the 3kW TQG.
 - 759 Developed initial logistics data for the 3kW TQG.
 - 1869 Initiated hardware development for Deployable Power Generator Distribution System (DPGDS).
 - 375 Initiated 100 & 200kW Utility Set Program.
- Total 7071

FY 1999 Planned Program:

- 1217 Complete development, testing and transition 3kW generator set to procurement (Qty – 8).
 - 2810 Complete hardware and initiate test/evaluation of DPGDS (Qty – 2).
 - 4085 Initiate hardware development for 100 & 200kW TQG sets (Qty – 4).
 - 658 Initiate evaluation of 5-60kW Advanced Medium Sized Mobile Power Sources (AMMPS) generator designs.
 - 228 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 8998

FY 2000 Planned Program:

- 780 Complete DPGDS test and evaluation.
 - 2645 Continue hardware development and testing for 100 & 200kW TQG.
 - 4524 Design and fabricate 5-60kW AMMPS.
- Total 7949

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development	PROJECT D194
---	--	-------------------------------

FY 2001 Planned Program:

- 3029 Complete hardware testing for 100 & 200kW TQG (Qty – 12).
 - 2122 Complete fabrication and initiate evaluation and test of 5-60kW AMMPS (Qty – 25).
- Total 5151

B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Compl	Total Cost
RDT&E:PE0603804A/Advanced Electrical Energy Concepts Advanced Development (DG11)	202	1366	995	730	610	1048	649	650	Cont	Cont
Other Procurement, Army 3 Generators & Assoc Equip (MA9800)	9644	68863	79125	90854	52048	79950	58464	54801	Cont	Cont

C. Acquisition Strategy: Develop and transition to competitive procurement all items in this project.

D. Schedule Profile	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Initiate hardware development for DPGDS			1Q*							
Award final phase of development for 3kW TQG with option for procurement contract			2Q*							
Complete procurement package and issue RFP fo 100/200kW				2Q						
Design prototype fabrication & testing of DPGDS				1Q*						
Award competitive contract(s) for design, prototype fabrication & testing of 100/200kW TQG/Phase I)				3Q						
Award Phase II EMD for DPGDS				2Q						
Complete testing & transition 3kW generator set to Procurement (Milestone III)				4Q						
Transition 3kW TQG to procurement					1Q					
Complete testing of DPGDS					2Q					
Award contract for AMMPS					2Q					
Milestone III of DPGDS					3Q					

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE **February 1999**

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
**0604804A Logistics & Engineer Equipment -
Engineering Development**

PROJECT
D194

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. DPGDS EMD	C-CPFF (2 nd increment)	Radian – Baltimore, MD	1800	2729	Mar99						4529	
b. 100/200kW	C-CPFF	TBD		3560	Apr99	2025	May00			1000	6585	
c. AMMPS(5-60kW)	Small Purchase	TBD		200	Mar99						200	
d. AMMPS(5-60kW)	C-CPFF	TBD				4174	Jan00	1200	Jan01	6040	11414	
Subtotal Product Development:			1800	6489		6199		1200		7040	22728	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. 3kW		CECOM-In-house		375	Oct98						375	
b. AMMPS(5-60kW)		CECOM-In-house		408	Oct98	250	Oct99	200	Oct00	2100	2958	
c. 100/200kW		CECOM-In-house		375	Oct98	200	Oct99	150	Oct00	200	925	
d. DPGDS		CECOM-In-house		60	Oct98	100	Oct99				160	
Subtotal Support Costs:				1218		550		350		2300	4418	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. DPGDS		Eglin AFB, F		199	Nov98	630	Nov99				829	
b. 100/200kW		TBD				270	Nov99	2729	Mar01	1300	4299	
c. 3kW		APG, MD	1500	742	Feb99						2242	
d. AMMPS(5-60kW)		TBD						522	Mar01	3000	3522	
Subtotal Test and Evaluation			1500	941		900		3251		4300	10892	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE **February 1999**

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
**0604804A Logistics & Engineer Equipment -
Engineering Development**

PROJECT
D194

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. DPGDS		CECOM-In-house	300	50	Oct98	50	Oct99				400	
b. 100/200kW		CECOM-In-house	100	150	Oct98	150	Oct99	150	Oct00		550	
c. 3kW		CECOM-In-house	200	100	Oct98						300	
d. AMMPS(5-60kW)		CECOM-In-house	200	50	Oct98	100	Oct99	200	Oct00	600	1150	
Subtotal Management Services:			800	350		300		350		600	2400	
Project Total Cost:			4100	8998		7949		5151		14240	40438	

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development					PROJECT D461	
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D461 Marine Oriented Logistics Equipment -Engineering Development	0	2070	4283	1454	1212	2720	2788	2861	Continuing	Continuing
<p>A. <u>Mission Description and Justification:</u> This project provides for the engineering development of Army Watercraft systems. Efforts will center on the completion of Containerized Maintenance Facility (CMF) development (this item replaces current Floating Machine Shops). Components for the CMF have been identified as a result of prior initiatives. However, Container/Shelter Configuration and Packaging Configurations still require additional development. Strategy is to complete remaining developmental activity, immediately commence acquisition, assembly and packaging in the same fiscal year. This will allow early fielding and consequent retirement of the costly Floating machine Shop. The FY 99 program also provides for minor development work on the Logistics Support Vessel (LSV) prior to the FY 00 procurement. The project supports engineering development for the Joint Lighterage and Causeway (JLC) effort with the Navy, and the Army's Rapidly Installed Breakwater (RIB) Project; both of which are aimed at allowing defense forces to continue to offload critical equipment and supplies under challenging sea state conditions. Efforts complete the RIB development and center on the Port Communications and Control Center (PCCC). The PCCC program will provide for the safe and effective management of Army and Joint Port Operations during deployment of forces; both under Logistics Over The Shore (LOTS) conditions and operations in existing port facilities.</p> <p>FY 1998 Accomplishments: Project not funded in FY 1998</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 1717 Complete full scale development of the Containerized Maintenance Facility (CMF). • 300 Complete development of Logistics Support Vessel (LSV). • 53 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 2070</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 1781 Complete development of Joint Lighterage and Causeway Program (Sea State 3 Capable) with Navy. • 2502 Complete final development and testing for Rapidly Installed Breakwater (RIB) Project. <p>Total 4283</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 615 Complete programmatic documentation for production effort for RIB Project. • 839 Complete final development and testing for Port Communications and Control Center (PCCC). 										
Project D461			Page 27 of 31 Pages				Exhibit R-2A (PE 0604804A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE February 1999
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development		PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development
		PROJECT D461

Total 1454

B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To Compl</u>	<u>Total Cost</u>
RDTE, 0603804A, D526, Marine Oriented Logistics, Advanced Development	0	10910	2424	2316	2020	1806	3863	3954	Cont	Cont
OPA 3, M32400, Floating Crane, 100-250 Ton	13555	14959	0	0	0	0	0	0	Cont	Cont
OPA 3, M44500, Pusher Tug, Small	6506	8545	0	0	0	0	0	0	Cont	Cont
OPA 3, R09600, Causeway, Powered System	0	0	8070	0	8818	9425	5412	5459	Cont	Cont
OPA 3, R09800, RO/RO Discharge Platfor	0	17037	8670	123861	0	0	12303	12386	Cont	Cont
OPA 3, R09900, Causeway, Floating	0	0	0	4895	0	0	0	0	Cont	Cont
OPA 3, M11200, Logistic Support Vessel (LSV)	0	0	18924	0	18426	18044	0	0	Cont	Cont
OPA 3, M11201, Logistic Support Vessel (ESP)	0	0	0	6097	7283	13091	0	0	Cont	Cont
OPA 3, M32500, Rapidly Installed Breakwate	0	0	0	0	4687	4662	0	0	Cont	Cont
OPA 3, M11300, Containerized Maintenance Facilit	0	5286	0	0	0	0	0	0	Cont	Cont
OPA 3, M34200, Landing Craft Utility 2000							19488	19622	Cont	Cont

C. Acquisition Strategy: Develop and transition to competitive procurement all items in this project.

D. Schedule Profile	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2004</u>	<u>FY 2005</u>
Containerized Maintenance Facility Award			2Q							
Logistics Support Vessel (LSV) Award			2Q							
Joint Lighterage and Causeway Program Award				2Q						
Rapidly Installed Breakwater (RIB) Awards				2Q	2Q					
Port Communications & Control Center (PCCC) Contract Awar					2Q					

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development					PROJECT D461		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. CMF	MIPR	Industrial Operations Command, Rock Island Arsenal		1200	Feb					Cont	1200	
b. PCCC	MIPR	Industrial Operations Command, Rock Island Arsenal						284	Dec		284	
c. CMF	MIPR	TACOM ARDEC, Rock Island Arsenal		315	Feb					Cont	315	
d. PCCC	FC-FP	Conley & Associates, St. Louis, MO						401	Feb	Cont	401	
e. CMF	FC-FP	Modern Technologies Inc, Warren, M		200	Mar					Cont	200	
f. RIB	FC-FP	Modern Technologies Inc, Warren, M				477	Jan	311	Feb		788	
g. LSV	MIPR	Navy (NSWC), Suffolk, V		205	Feb					Cont	205	
h. JLC	MIPR	Navy (PM JMLS), Hueneme, CA				1542	Dec			Cont	1542	
i. RIB	MIPR	Corps of Engineers (WES), Vicksburg, MI				1754	Dec	213	Dec	Cont	1967	
Subtotal Product Development:				1920		3773		1209			6902	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. CMF	MIPR	TACOM IMMC, Warren, M		5	Jan					Cont	5	

DATE
February 1999

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
**0604804A Logistics & Engineer Equipment -
Engineering Development**

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
b. LSV	MIPR	TACOM IMMC, Warren, M		10	Jan						10	
c. JLC	MIPR	TACOM IMMC, Warren, M				23	Dec				23	
d. RIB	MIPR	TACOM IMMC, Warren, M				25	Dec	7	Dec		32	
e. PCCC	MIPR	TACOM IMMC, Warren, M						23	Dec		23	
Subtotal Support Costs:				15		48		30			93	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. CMF	MIPR	TECOM , APG		10	Apr					Cont	10	
b. LSV	MIPR	TECOM , APG		10	Apr						10	
c. JLC	MIPR	TECOM , APG				40	Apr				40	
d. RIB	MIPR	TECOM , APG				60	Apr	29	Apr		89	
e. PCCC	MIPR	TECOM , APG						42	Apr		42	
Subtotal Test and Evaluation				20		100		71			191	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. CMF	MIPR	Transportation Systems Management Office, TACOM, Warren, M		40	Jan					Cont	40	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development					PROJECT D461		
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
b. LSV	MIPR	Transportation Systems Management Office, TACOM, Warren, M		75	Jan						75	
c. JLC	MIPR	Transportation Systems Management Office, TACOM, Warren, M				176	Oct				176	
d. RIB	MIPR	Transportation Systems Management Office, TACOM, Warren, M				186	Oct	52	Oct		238	
e. PCCC	MIPR	Transportation Systems Management Office, TACOM, Warren, M						92	Oct		92	
Subtotal Management Services:				115		362		144			621	
Project Total Cost:						2070		4283		1454		7807

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604805A Command, Control, Communications Systems - Engineering Development						
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
Total Program Element (PE) Cost	14352	16280	23987	23842	22239	24648	28139	25734	Continuing	Continuing
D097 C3I Interoperability Network Activit	5122	4264	3140	3171	3093	3231	3266	3282	Continuing	Continuing
D098 Tactical Radio Accessories	475	466	0	0	0	0	0	0	0	4662
D485 C4I Systems Certification	5498	5066	5303	4704	4494	4373	4444	4459	Continuing	Continuing
D589 Army Systems Engineering & Warfighter Technical Support	3257	6484	7755	7897	8172	8133	8148	8183	Continuing	Continuing
D591 Weapons System Technical Architecture	0	0	1063	1058	1054	1051	0	0	Continuing	Continuing
D615 JTRS Ground Domain	0	0	4904	5183	3581	6001	12281	9810	0	41760
D629 Tactical Communications System-Advanced Development	0	0	1822	1829	1845	1859	0	0	0	0

A. Mission Description and Budget Item Justification: This PE supports efforts to develop interoperability of Army programs and products, horizontally and vertical for the digitized battlefield. Project D097 supports development of the C4I Interoperability Network. Also included is the Army portion of engineering development efforts is support of the Combat Survivor Evader Locator System (CSEL)in Project D098. This includes follow-on programs to demonstrated technologies evolving from Wireless Network Access, Communications Network Planning and Management and initiatives to establish a Multiband Radio Integrated testbed. Project D485 supports C4I Systems Certification. It evaluates system’s interoperability for the Army XXI battlefield digitization effort, in support of the Vice Chief of Staff of the Army (VCSA) and Army Acquisition Executive (AAE), to identify interoperability issues, develop certification recommendations, and provide architecture assessments by the Digital Integration Lab (DIL). Project D589 Army Systems Engineering & Warfighter Technical Support efforts is recommended by the Army Science Board and directed by the Army Acquisition Executive (AAE) and Vice Chief of Staff of the Army (VCSA). The ASE provides essential technology expertise on all Systems Engineering and Technical Architecture (SE/TA) matters critical to gain Information Dominance and foster interoperability among all Army systems. The Weapons Systems Technical Architecture, Project D591, supports development of the Joint Technical Architecture-Army (JTA-A) which provides the ‘building code’ foundation for designing, building, fielding, and supporting interoperable systems in an expedient and cost-effective manner. The Near -Term Digital Radio System (NTDRS) is funded in D615 in FY 2000 and in PE 0603713A/D370. The Army Unique development effort for the Joint Tactical Radio System (JTRS) is funded in D615 in FY 2001-2005.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communications Systems - Engineering Development
---	--

NTDRS program is a Research and Development (R&D) Program that maximizes the use of Non-Developmental Item (NDI), Commercial and Off-The-Shelf (COTS) hardware and software. The program provides an interim solution to the long term Army need for a greatly enhanced data radio capability. NTDRS will provide Tactical Operation Center (TOC) to Tactical Operation Center (TOC) data distribution from Battalion to Brigade and for critical moving platforms from Brigade to Division in the First Digitized Division and the First Digitized Corps. The Joint Tactical Radio System (JTRS) is a Research and Development program to procure radio systems to satisfy all service requirements. Since the singular functionality of current systems requires a commensurate number of unique discrete radio systems that must each have a costl logistics infrastructure, a consolidated systems approach to provide substantial benefits in the overall space, weight, power and cost is mandated. Therefore, the need is fo a software programmable and hardware configurable digital radio system that provides increased interoperability, flexibility and adaptability to support the varied mission requirements of the warfighters. The system will be capable of simultaneous networked voice, video, and data operations with low probability of intercept over multiple frequency bands. The concept behind JTR is essential to realizing the goal of a fully digitized battlespace. JTR lays the foundation for achieving network connectivit across the RF spectrum. The JTR will provide the operational forces with an upgraded communications capability, for more effective battlespace management and interoperability among Command, Control, Communications, Computers and Intelligence (C4I) Systems. Project D629, Tactical Communications System – Demonstration Validation, provides for insertion of selected proven communications technology from program elements 0602782A, Project AH92 applied research and 0603006A, advanced technology development, into the next phase of development. Examples of these potential programs are the Joint Tactical Radio, high power solid state amplifiers and couplers, and packet appliquéés used to increase network efficiency. Note: This is not a new start effort, previously this effort was funded under PE/Proj. 0603805A/D246.

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	10710	16404	17616	17119
Appropriated Value	11052	16404		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-342	-124		
b. SBIR / STT	-268			
c. Omnibus or Other Above Threshold Reductions	-89			
d. Below Threshold Reprogramming	+3999			
e. Rescissions				
Adjustments to Budget Years Since <u>FY 1999 PB</u>			+6371	+6723
Current Budget Submit (FY 2000 / 2001 PB)	14352	16280	23987	23842

Change Summary Explanation: Funding - FY 1998 (+3999) reprogrammed to address high priority requirements for the Arm Enterprise Architecture. FY2000/2001 funds increased to support critical Army Unique Joint Tactical Radio developmental efforts.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999			
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604805A Command, Control, Communications Systems - Engineering Development					PROJECT D097		
COST (<i>In Thousands</i>)		FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D097 C3I Interoperability Network Activit		5122	4264	3140	3171	3093	3231	3266	3282	Continuing	Continuing

A. Mission Description and Budget Item Justification: Project D097 - C3I Interoperability Network: Support warfighter systems' interoperability with a virtual command, control, communications, computer, intelligence, electronic warfare and sensor (C4IEWS) Digital Integration Lab (DIL) to help integrate the Army's programs and products, horizontally and vertically for the digitized battlefield, by replicating current and future tactical battlefield environments and enabling/facilitating comprehensive evaluations of new prototypes, evolutionary system developments, new technologies, commercial products, software and systems interoperability. Develop and operate the communications Army Interoperability Network (AIN) to electronically interconnect remote C4IEWS systems, labs/testbeds, field/integration sites, developers facilities and Battle Labs. Develop and apply protocol test tools to assure the capability to support and assess interoperability and compliance with the Joint/Army Technical Architecture's Variable Message Format (VMF) and MIL-STD-188-220 protocol standards suites.

FY 1998 Accomplishments:

- 710 Developed and operated the AIN core capabilities to facilitate 7500 test-days test support, experimentation and evaluation of Army C4IEW systems interoperability/software development/sustainment (for DAWE, FDD, ACTDs, Joint tests & fielded tactical systems)
- 490 Systems engineering of AIN design, analysis, integration, installation and test support for C4IEWS system requirements
- 618 Provided AIN's core network communications support to link geographically dispersed network hubs/sites
- 160 Provided technology improvements and system upgrades to meet emerging test support requirements for FDD, Force XXI & Y2K
- 450 Provided external DIL connectivity to remote battlefield digitization sites for digitization experimentation and tests
- 640 Upgraded, operated and supported DIL Evaluation & Certification Testbed and other facilities supporting experimentations/certifications needed for the battlefield digitization associated with 1st Digitized Division (FDD)
- 290 Acquired/updated DIL hardware and software interfacing systems, test tools, and supporting systems for FDD and TA/SA evaluations
- 120 Acquired DIL automated scenario drivers and test analysis tools for 1st Digitized Division evaluations and TA/SA evaluations
- 281 Developed VMF test tool, Rel 3 & 4, to support correct C4IEWS system implementations of the Technical Architecture's VMF standard
- 103 Developed PTT Conformance Tester V1 to support correct C4IEWS system implementations of Technical Architecture's Mil-Std-188-220
- 135 Developed PTT Monitor/Decoder V2 to support C4IEWS system development and experimentation with Technical Architecture's Mil-Std-188-220
- 1125 Performed Weapons Domain Analysis, Commercial Standards Evaluation/Development, and Embedded Battle Command (EBC) Analysis Activities in support of development of Weapon System Technical Architecture
 - Completed Map Data Loading Symbology Surve
 - Completed Imagery and Symbology Surve

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE February 1999
BUDGET ACTIVIT	PE NUMBER AND TITLE	PROJECT
5 - Engineering and Manufacturing Development	0604805A Command, Control, Communcations Systems - Engineering Development	D097
Total	5122	
FY 1999 Planned Program:		
•	700	Develop and operate the AIN core capabilities to facilitate test, experimentation and evaluation of Army C4IEW systems interoperability/software development/sustainment (for Force XXI modernization, ACTDs, Joint tests and tactical systems)
•	390	Systems engineering of AIN design, analysis, integration, installation and test support for C4IEWS system requirements
•	589	Provide AIN's core network communications support to link geographically dispersed network hubs/sites
•	350	Provide external DIL connectivity to remote battlefield digitization sites for digitization experimentation and tests.
•	715	Upgrade, operate and support DIL Evaluation & Certification Testbed and other facilities supporting experiments/certifications needed for battlefield digitization for Army FDD, Y2K, Joint as well as STO/ACTD/ATD experimentation and evaluations.
•	200	Acquire/update DIL hardware and software interfacing systems, test tools, and supporting systems for 1st Digitized Division and TA/SA evaluations
•	375	Acquire DIL automated scenario drivers and test analysis tools for FDD evaluations and TA/SA evaluations.
•	200	Develop PTT Monitor/Decoder V2.1 to support Technical Architecture's Mil-Std-188-220B Sync Mode
•	150	Develop PTT Conformance Tester V2 to support correct C4IEWS system implementations of Technical Architecture's Mil-Std-188-220
•	100	Develop PTT Network Analyzer V1 (partial capability) to support Mil-Std-188-220B CNR network operation & performance analysis in FDD
•	190	Develop VMF test tool, Rel 5, to support correct C4IEWS system implementations of Technical Architecture's VMF Reissue 3
•	70	Develop VMF Reissue 3 VMF database
•	140	Develop VTT VMF message generation scripting
•	95	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	4264	
FY 2000 Planned Program:		
•	440	Sustain AIN's core network connectivit
•	460	Provide external DIL connectivity to remote battlefield digitization sites for digitization experimentation and tests.
•	840	Upgrade, operate and support DIL Evaluation & Certification Testbed and other facilities supporting experiments/certifications needed fo battlefield digitization for Army FDD, Y2K, Joint (e.g. Joint Contingency Force AWE) as well as STO/ACTD/ATD experimentation and evaluations.
•	375	Acquire/update DIL hardware and software interfacing systems, test tools, and supporting systems for 1st Digitized Division and TA/SA evaluations
•	150	Acquire DIL automated scenario drivers and test analysis tools for FDD evaluations and TA/SA evaluations.
•	100	Develop PTT Monitor/Decoder V2.2 to support Technical Architecture's Mil-Std-188-220B remaining features
•	125	Develop PTT Conformance Tester V2.1 to add full generation capabilit
•	250	Develop PTT Network Analyzer V2 (full capability) for Mil-Std-188-220B CNR network operation & performance
•	200	Develop VMF test tool, Rel 6, to support correct C4IEWS system implementations of Technical Architecture's VMF Reissue 4+
Project D097	Page 4 of 30 Pages	Exhibit R-2A (PE 0604805A)

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999			
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604805A Command, Control, Communcations Systems - Engineering Development				PROJECT D097			
<ul style="list-style-type: none"> • 200 Develop VMF Reissue 4+ VMF database Total 3140											
FY 2001 Planned Program:											
<ul style="list-style-type: none"> • 471 Sustain AIN's core network connectivit • 450 Provide external DIL connectivity to remote battlefield digitization sites for digitization experimentation, and tests. • 850 Upgrade, operate and support DIL Evaluation & Certification Testbed and other facilities supporting experiments/certifications needed fo battlefield digitization for Army Corps digitization efforts, Joint, Allied as well as STO/ACTD/ATD experimentation and evaluations. • 300 Acquire/update DIL hardware and software interfacing systems, test tools, and supporting systems for 1st Digitized Division and TA/SA evaluations • 150 Acquire DIL automated scenario drivers and test analysis tools for FDD evaluations and TA/SA evaluations. • 200 Develop PTT Monitor/Decoder V3 to support Technical Architecture's Mil-Std-188-220C version for systems development/experimentation • 200 Develop PTT Conformance Tester V3 to support Mil-Std-188-220C for system certification testing • 100 Develop PTT Network Analyzer V3 to support Mil-Std-188-220C CNR network operation & performance • 250 Develop VMF test tool, Rel 7, to support correct C4IEWS system implementations of Technical Architecture's VMF Reissue 5+ • 200 Develop VMF Reissue 5+ VMF database Total 3171											
B. <u>Other Program Funding Summary:</u> None											
C. <u>Acquisition Strategy:</u> The efforts funded in this project are non-system specific, supporting interoperability across multiple systems. The contractual efforts/services are obtained from existing competitive omnibus support services contracts.											
D. <u>Schedule Profile</u>											
	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2004</u>	<u>FY 2005</u>	
AIN C4I system support (2000 test-days)											
AIN C4I system support (5000 test-days)											
AIN C4I system support (8800 test-days)	1-4Q										
AIN C4I system support (7500 test-days)		1-4Q									
AIN C4I system support (sw/interop/dev/field)			1-4Q								
DIL Testbed support for DAWE, FDD, JCF & BD		1-4Q	1-4Q	1-4Q	1-4Q						
Acquire DIL testbed systems		1-4Q	1-4Q	1-4Q	1-4Q						
VMF Tester, Rel 2											
VMF Tester, Rel 3	2Q										
Project D097			Page 5 of 30 Pages				Exhibit R-2A (PE 0604805A)				

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604805A Command, Control, Communcations Systems - Engineering Development				PROJECT D097		
D. Schedule Profile	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2004	FY 2005
VMF Tester, Rel 4		4Q								
VMF Tester, Rel 5			3Q							
VMF Tester, Rel 6				4Q						
VMF Tester, Rel 7					4Q					
PTT Monitor/Decoder v1	3Q									
PTT Monitor/Decoder v2		4Q								
PTT Monitor/Decoder v2.1			4Q							
PTT Monitor/Decoder v2.2				4Q						
PTT Monitor/Decoder v3					4Q					
PTT Conformance v1		3Q								
PTT Conformance v2			4Q							
PTT Conformance v2.1				4Q						
PTT Conformance v3						4Q				
PTT Net Analyzer prototype		3Q								
PTT Net Analyzer v1			2Q							
PTT Net Analyzer v2				4Q						
PTT Net Analyzer v3					4Q					

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communcations Systems - Engineering Development	PROJECT D097
---	---	-------------------------------

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Labor (internal Govt)		USACECOM FM NJ	908	1040	01/01/99	1020	01/01/00	1020	01/01/01	Cont'd	3988	
b. Travel		USACECOM FM NJ	36	40	01/01/99	25	01/01/00	25	01/01/01	Cont'd	126	
c. Systems Management		USA TARDEC Warren M	7	TBD							7	
d. Systems Engineering	MIPR	USA AMCOM Huntsville AL	325	TBD							325	
e. Systems Engineering	MIPR	USA TACOM Picatinny, NJ	143	TBD							143	
f. Contract Services												
1)Surge Support Contract	C/CPFF	DCS Corp. Alexandria VA	500	TBD							500	
2)Systems & Software Engineering	C/CPFF	SAIC Corp. San Diego CA	90	TBD							90	
3)Battlefield Automated Sys. Engrg Spt (BASES)	C/CPFF	EER System Corp Lanham MD	60	TBD							60	
Subtotal Product Development:			2069	1080		1045		1045			5239	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Software Development	C/CPFF	Arinc, Ft Monmouth NJ	95	200	10/93	125	3/99	125	*	Cont'd	545	
b. Software Development	C/CPAF	Telos, Ft Monmouth NJ	188	220	12/95	244	*	244	*	Cont'd	896	
c. Systems Integration	C/CPFF	Arinc, Ft Monmouth NJ	280	250	10/93	100	3/99	100	*	Cont'd	730	
d. Development Support	C/CPFF	Arinc, Ft Monmouth NJ	400	340	10/93	140	3/99	140	*	Cont'd	1020	
e. Development Support	C/CPAF	Telos, Ft Monmouth NJ	21	259	12/95	159	*	159	*	Cont'd	598	
f. Development Support	C/CPFF	CSC, Ft Monmouth NJ	150	280	3/95	280	*	280	4/00	Cont'd	990	
g. Development Support	C/CPFF	C3I, Ft Monmouth NJ	150	200	7/96	300	*	300	*	Cont'd	950	
h. Systems Engineering	C/CPFF	Arinc, Ft Monmouth NJ	200	200	10/93	50	3/99	50	*	Cont'd	500	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604805A Command, Control, Communcations Systems - Engineering Development						PROJECT D097		
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
i. Testing Support	C/CPFF	Arinc, Ft Monmouth NJ	115	125	10/93	50	3/99	50	*	Cont'd	340	
j. Testing Support	C/CPAF	Telos, Ft Monmouth NJ	490	250	12/95	100	*	100	*	Cont'd	940	
k. Technical Support	C/CPFF	Arinc, Ft Monmouth NJ	360	350	10/93	90	3/99	110	*	Cont'd	910	
l. Technical Support	C/CPFF	Nations, Monmouth NJ	21	20	6/94	20	7/99	21	*	Cont'd	82	
m. Configuration Mgmt	C/CPFF	Arinc, Ft Monmouth NJ	93	90	10/93	25	3/99	25	*	Cont'd	233	
n. Configuration Mgmt	C/CPAF	Telos, Ft Monmouth NJ	0	20	12/95	20	*	20	*	Cont'd	60	
o. Equipment	C/CPFF	Arinc, Ft Monmouth NJ	0	20	10/93	20	3/99	20	*	Cont'd	60	
p. Equipment	Reqn	USACECOM, "	450	320	1/99	300	1/00	300	1/01	Cont'd	1370	
q. Telecommunications	MIPR	USASC Ft Huachuca AZ	40	40	1/99	72	1/00	82	1/01	Cont'd	234	
Subtotal Support Costs:			3053	3184		2095	*	2126	*		10458	
Remark: *Contracts cited are 5 year (1 base year + 4 option years). Future award dates imply future competitive award, contractor TBD.												
III. Test and Evaluation: Not applicable												
IV. Management Services: Not applicable												
Project Total Cost:			5122	4264		3140		3171			15697	

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communications Systems - Engineering Development	PROJECT D098
---	--	-------------------------------

COST (<i>In Thousands</i>)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D098 Tactical Radio Accessories	475	466	0	0	0	0	0	0	0	4662

A. Mission Description and Budget Item Justification: Project D098 - Tactical Radio Accessories: This project will provide for PM participation in the development efforts for the Combat Survivor Evader Locator System (CSEL), a joint program led by the Air Force. This program will provide service, joint, and/or composite operational recovery/rescue forces with the capability to pinpoint the location of and establish communication with downed personnel in need of extraction from hostile territories. The CSEL system will include the capability to pass data directly into the standard warfighter command, control, communications, computer, and intelligence (C4I) systems. The user's equipment will consist of a small hand-held unit used for geopositioning, over-the-horizon data communications, and two-way line-of-sight voice communications.

FY 1998 Planned Program:

- 475 Support Air Force Development efforts on CSEL program

Total 475

FY 1999 Planned Program:

- 170 Program Management Support
- 283 Testing Support Analysis
- 13 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs

Total 466

FY 2000 Planned Program: Project not funded in FY 2000

FY 2001 Planned Program: Project not funded in FY 2001

B. <u>Other Program Funding Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
ARMY, OPA2 B03200, Combat Survivor Evade Locator (CSEL)	1059	13675	0	0	13294	24092	20098	6868	0	79086

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communcations Systems - Engineering Development	PROJECT D098
--	--	------------------------

C. Acquisition Strategy: The joint Air Force led acquisition strategy is a research and development approach for the handheld unit, followed by a production contract award in FY 1998. \$5M was reprogrammed to DA on 11 August 1998.

D. Schedule Profile	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Army LRIP Decision				1Q				
CT/DT/OA 2			3Q					
Option 2 Contract Award (LRIP)				1Q				
Option 3 Contract Awar					1Q			
Option 1 Deliveries		2Q						
Option 2 Deliveries (LRIP)				3Q				
Milestone Decision III					3Q			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604805A Command, Control, Communcations Systems - Engineering Development					PROJECT D485	
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D485 C4I Systems Certification	5498	5066	5303	4704	4494	4373	4444	4459	Continuing	Continuing
<p>A. <u>Mission Description and Budget Item Justification:</u> C4I Systems Certification: Evaluate system's interoperability for the Army XXI battlefield digitization effort, in support of the Vice Chief of Staff of the Army (VCSA) and Army Acquisition Executive (AAE), to identify interoperability issues, develop certification recommendations, and provide architecture assessments by the Digital Integration Lab (DIL). Interoperability certification recommendations and assessments are provided to the Army Digitization Office (ADO) and Army System Engineer. Establish and sustain interoperability between Army C4I systems, and between the Arm and Joint/Allied C4I communities in support of DOD 4630.5, DODI 4630.8, CJSCI 6212.01, and AR73-1. Provide the Army focal point for the review, staffing, coordination, and development of Army positions for interface interoperability standards and specifications. Participate in Joint/Allied and intra-Army interoperability certification testing and represent the Army in the Joint/Allied Configuration Management Process. Develop and configuration manage two key elements of the Joint/Army Technical Architectures - the Variable Message Format (VMF) message and the MIL-STD-188-220 protocol standards, in support of Army Science Board directive and approved Technical Architectures.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 760 Evaluated and certified IT/C4ISR systems interoperability for FDD, Joint experiments to assure compliance with the Technical and System Architectures • 610 Provided DIL System Engineering and Integration support for conduct of experiments and evaluations to support FDD, Joint Contingency Force AWE, & Joint Tests. • 279 Provided systems engineering, integrated support & field support for identification and resolution of systems' discrepancies and inconsistencies identified during evaluations. • 240 Evaluated and validated Technical and Systems Architectures, including development of tools for compliance evaluation. • 624 Developed, evolved and approved Army/Joint VMF TIDP • 332 Obtained joint approvals for Army's VMF ICPs for FDD and Y2K • 121 Updated VMF databases per evolving VMF standards • 556 Developed 'B' versions of Mil-Stds 188-220 & 2045-47001 for TA and evolving Battlefield Digitization and FDD requirements • 690 Provided engineering evaluations and Army CM of 342 TADIL joint messages • 455 Provided engineering evaluations and Army CM of 147 USMTF joint messages • 831 Directed and managed Army's joint certification testing/analysis for system certifications, and represented Army's consolidated positions at Joint Analysis Review Panels 										
Project D485			Page 11 of 30 Pages				Exhibit R-2A (PE 0604805A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE February 1999
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communcations Systems - Engineering Development	PROJECT D485
Total	5498	
FY 1999 Planned Program:		
•	780 Evaluate and certify IT/C4ISR systems interoperability for FDD, Joint experiments to assure compliance with the Technical and System Architectures	
•	660 Provide DIL System Engineering and Integration support for conduct of experiments and evaluations to support FDD, Joint Contingency Force AWE, & Joint Tests.	
•	335 Provide systems engineering, integrated support & field support for identification and resolution of systems' discrepancies and inconsistencies identified during evaluations.	
•	300 Evaluate and validate Technical and Systems Architectures, including development of tools for compliance evaluation.	
•	325 Develop, evolve and approve Army/Joint VMF TIDP	
•	332 Obtained joint approvals for Army's VMF ICPs for FDD and Y2K	
•	76 Update VMF databases per evolving VMF standards	
•	574 Develop 'C' versions of Mil-Stds 188-220 & 2045-47001 for TA and evolving Battlefield Digitization and FDD requirements	
•	619 Provide engineering evaluations and Army CM of TADIL joint messages	
•	430 Provide engineering evaluations and Army CM of USMTF joint messages	
•	518 Direct and manage Army's joint certification testing/analysis for system certifications, and represent Army's consolidated positions at Joint Analysis Review Panels	
•	117 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs	
Total	5066	
FY 2000 Planned Program:		
•	625 Evaluate and certify IT/C4ISR systems interoperability for FDD, Joint experiments to assure compliance with the Technical and System Architectures	
•	550 Provide DIL System Engineering & Integration support for conduct of experiments & evaluations to support FDD, JCF AWE, & Joint Tests.	
•	200 Provide systems engineering, integrated support & field support for identification and resolution of systems' discrepancies and inconsistencies identified during evaluations.	
•	200 Evaluate and validate Technical and Systems Architectures, including development of tools for compliance evaluation.	
•	325 Develop, evolve and approve Army/Joint VMF TIDP	
•	325 Obtained joint approvals for Army's VMF ICPs for FDD and other battlefield digitization requirements	
•	90 Update VMF databases per evolving VMF standards	
Project D485	<i>Page 12 of 30 Pages</i>	Exhibit R-2A (PE 0604805A)

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE
BUDGET ACTIVIT		February 1999
5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE	PROJECT
	0604805A Command, Control, Communcations Systems - Engineering Development	D485
<ul style="list-style-type: none"> • 575 Develop 'C' versions of Mil-Stds 188-220 & 2045-47001 for TA and evolving Battlefield Digitization requirements • 650 Provide engineering evaluations and Army CM of TADIL joint messages • 605 Provide engineering evaluations and Army CM of USMTF joint messages • 808 Direct & manage Army's joint certification testing/analysis for system certifications; represent Army's consolidated positions at JARPs <p>FY 2000 Planned Program: (continued)</p> <ul style="list-style-type: none"> • 100 TDLMP Management • 250 NATO message development/harmonization support <p>Total 5303</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 500 Evaluate and certify IT/C4ISR systems interoperability for FDD, Joint experiments to assure compliance with the Technical and System Architectures • 450 Provide DIL System Engineering and Integration support for conduct of experiments and evaluations to support FDD, Joint Contingency Force AWE, & Joint Tests. • 150 Provide systems engineering, integrated support & field support for identification and resolution of systems' discrepancies and inconsistencies identified during evaluations. • 150 Evaluate and validate Technical and Systems Architectures, including development of tools for compliance evaluation. • 325 Develop, evolve and approve Army/Joint VMF TIDP • 325 Obtained joint approvals for Army's VMF ICs for battlefield digitization requirements • 90 Update VMF databases per evolving VMF standards • 600 Develop, obtain joint approval and publish Mil-Stds 188-220C & 2045-47001C for TA and evolving Battlefield Digitization requirements • 600 Provide engineering evaluations and Army CM of TADIL joint messages • 600 Provide engineering evaluations and Army CM of USMTF joint messages • 829 Direct and manage Army's joint certification testing/analysis for system certifications, and represent Army's consolidated positions at Joint Analysis Review Panels (JARPs) • 85 TDLMP Management <p>Total 4704</p> <p>B. <u>Other Program Funding Summary:</u> None</p> <p>C. <u>Acquisition Strategy:</u> The efforts funded in this project are non-system specific, interoperability experimentation, evaluation and certification across multiple systems.</p>		
Project D485	Page 13 of 30 Pages	Exhibit R-2A (PE 0604805A)

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communcations Systems - Engineering Development	PROJECT D485
---	---	-------------------------------

The contractual efforts/services are obtained from existing competitive omnibus support services contracts.

D. Schedule Profile	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2004</u>	<u>FY 2005</u>
Evaluate, certify systems for & support TF/DAWE	1-4Q	1Q								
Evaluate, certify systems for and support FDD		1-4Q	1-4Q	1-4Q						
Evaluate, certify systems for and support Joint Contingency Force AWE		1-4Q	1-4Q	1-4Q						
Evaluate, experiment, and provide systems integration for testing of ACTD, ATD & STO's.		1-4Q	1-4Q	1-4Q	1-4Q					
Complete FDD CMP/DII COE evaluation Capabilit			3Q		3Q					
Army VMF (TFXXI) TIDP	2Q									
Joint VMF TIDP	4Q	3Q	3Q	3Q	3Q					
Joint VMF ICPs	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q					
Joint VMF Database update	2Q	2Q/4Q	2Q/4Q	2Q/4Q	2Q/4Q					
Joint approval/publication of 188-220A & 47001										
Joint approval/publication of 188-220B & 47001		2Q								
Joint approval/publication of 188-220C & 47001C					4Q					
TADIL/USMTF ICPs	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q					
Joint Certification Testing support	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q					
Joint WGs/Panels	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q					

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604805A Command, Control, Communcations Systems - Engineering Development						PROJECT D485		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Labor (internal Govt)		USACECOM FM NJ	1579	1653	01/01/99	1698	01/01/00	1708	01/01/01	Cont'd.	6638	
b. Travel		USACECOM FM NJ	30	40	01/01/99	50	01/01/00	50	01/01/01	Cont'd.	170	
Subtotal Product Development:			1609	1693		1748		1758			6808	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Development Support	C/CPFF	Arinc, Ft Monmouth NJ	700	600	10/93	600	3/99	600	*	Cont'd	2500	
b. Development Support	C/CPAF	Telos, Ft Monmouth NJ	903	784	12/95	978	*	789	*	Cont'd	3454	
c. Development Support	C/CPFF	CSC, Ft Monmouth NJ	750	560	3/95	316	*	160	*	Cont'd	1786	
d. Development Support	C/CPFF	C3I, Ft Monmouth NJ	450	400	7/96	250	*	206	*	Cont'd	1306	
e. Development Support	SS/CPFF	Mitre, Ft Monmouth NJ	0	280	10/98	150	10/99	100	10/00	Cont'd	530	
f. Testing Support	C/CPFF	Arinc, Ft Monmouth NJ	250	366	10/93	760	3/99	620	*	Cont'd	1996	
g. Technical Support	C/CPFF	Arinc, Ft Monmouth NJ	200	47	10/93	50	3/99	50	*	Cont'd	347	
h. Technical Support	C/CPFF	Tracor, Ft Monmouth NJ	36	36	12/95	36	*	36	*	Cont'd	144	
i. Configuration Mgmt	C/CPAF	Telos, Ft Monmouth NJ	150	165	12/95	255	*	225	*	Cont'd	795	
j. Equipment	Reqn	USACECOM, "	50	35	1/99	60	1/00	60	1/01	Cont'd	205	
k. Telecommunications	MIPR	USASC Ft Huachuca AZ	400	100	1/99	100	1/00	100	1/01	Cont'd	700	
Subtotal Support Costs:			3889	3373		3555		2946			13763	
Remark: *Contracts/awards cited are 5 year (1 base year + 4 option years). Future award dates imply future competitive award, contractor TBD.												
III. Test and Evaluation: Not applicable												
IV. Management Services: Not applicable												
Project Total Cost:			5498	5066		5303		4704			20571	

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604805A Command, Control, Communications Systems - Engineering Development				PROJECT D589		
COST <i>(In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D589 Army Systems Engineering & Warfighter Technical Support	3257	6484	7755	7897	8172	8133	8148	8183	Continuing	Continuing

A. Mission Description and Budget Item Justification: Army Systems Engineering & Warfighter Technical Support: Recommended by the Army Science Board and directed by the Army Acquisition Executive (AAE) and Vice Chief of Staff of the Army (VCSA), the ASE Provides essential technology expertise on all Systems Engineering and Technical Architecture (SE/TA) matters critical to gain Information Dominance and foster interoperability among all Army systems. The Joint Technical Architecture-Army (JTA-A) provides the ‘building code’ foundation for designing, building, fielding, and supporting interoperable systems in an expedient and cost-effective manner. Army System Engineer (ASE) supports CIO/DISC4/ADO in defining and maintaining the JTA-A and technically influences development and implementation of the JTA. ASE identifies new and emerging standards for integration of new technologies into existing Army Systems and ATD/ACTDs to support Army 2010. The ASE's work efforts associated with the development and implementation of the JTA-A under this project are critical path elements to achieve the Army’s DIV XXI, CORPS XXI, and Army XXI digitization mission, provide the ability to fight and win on tomorrow’s battlefield, and assure compatibility with both Joint and Coalition Warfighters. WTS provides essential field technical expertise, on-site architectural/system analysis and execution planning to integrate emerging technologies and support the next generation of digitization across all 21st Century Battlefield Operating Systems. Promotes joint experiments in conjunction with Joint C4ISR Battle Center (JBC). Conducts interservice coordination to identify candidate systems, provides expert analysis to define appropriate architecture, and evaluates notional designs and conducts performance/cost benefit analysis to recommend viable tradeoffs. Selects target architecture and works with warfighter to engineer appropriate field experiments (Battlelab Warfighter Experiments (BLWE), Army Warfighter Experiments (AWE) and warfighter rotations) to allow selection of appropriate systems and sub-systems for follow-on development and acquisition. Performs technical coordination/integration activities to accelerate system enhancements providing solutions to current user problems in the field capturing soldier ingenuity through on-the-spot soldier input/feedback. Supports development of the operational architecture and implementation of new warfighter information technologies throughout the force structure to achieve Army Enterprise Architecture (AEA) objectives.

FY 1998 Accomplishments:

- 1000 Conducted major Joint Technical Architecture-Army (JTA-A) compliant system design evaluations for CRUSADER, Near Term Digital Radio, M1A2 ABRAMS Fire Support, Land Warrior, WIN-T.
- 500 Assessed JTA-A Interoperability for Army Systems (Universal Modem, MIDOCS, STAMIS Computer Contract II, Mortar Fire Control System, COMBAT ID Dismounted Soldiers.
- 700 Provided quick response compliance assessment evaluations of ATA compliance for of Grenadier Brat, Movement Tracking System (MTS), Arm Act II Programs, All Army WRAP Candidates.
- 313 Developed JTA-A Version 5.0 and JTA Version 2.0 (Army input).

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE
BUDGET ACTIVIT		February 1999
5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE	PROJECT
	0604805A Command, Control, Communications Systems - Engineering Development	D589
<ul style="list-style-type: none"> • 544 Introduced Army air support to Joint Battle Center (JBC) GCCS Ground Tracks (Grenadier BRAT) experiment. Planned Joint Intelligence Surveillance and Reconnaissance (JISR), LINK16, Joint Contingency Force (JCF) joint experiments. <p>FY 1998 Accomplishments: (continued)</p> <ul style="list-style-type: none"> • 200 Enhanced Interim Design Division (IDD) Situational Awareness capability with In-Theater Injection and on-site engineering support to DIVXXI. <p>Total 3257</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 1269 Conduct Major design evaluations for Joint Technical Architecture-Army (JTA-A) Interoperability. (Future Scout Cavalry System, Tactical UAV, WIN-T, Army Battle Command System Version 5.0) • 1280 Ensure JTA-A Interop Implementation and Assess JTA-A compatibility for Army and S&T Programs (1st. Lt. Division Force Sys. Architecture, 1st. Digitized Corps system Architecture) • 800 Assess JTA-A interop for Army Systems, (I3A, AMC-ISA) • 617 Technically influence the development/implementation of Joint Technical Architecture (JTA) • 432 Maintain existing JTA-A Information Technical Standards • 450 Investigate information technical standards for inclusion in JTA-A/JTA • 169 Technically influence commercial and international standards forums • 550 Identify joint experiments, and provide inter-service coordination and experimental design support to JBC. Support JCF Army Warfighting Experiment (AWE) with joint coordination, early planning and implementation of JCF initiatives. Engineer JISR and LINK16 joint experiments. Conduct Army portion of All Service COMBAT ID Evaluation and Test (ASCIET). • 497 Plan and integrate C4IEWS concepts for wargames for Army After Next (AAN) exercises. Align tech base programs with emerging Army use requirements for 2025 Hybrid Force. Develop Strike Force C4IEWS architecture concepts • 310 Force XXI support to plan and integrate Reconnaissance TOC for 1st Digitized Division for Force XXI, engineer Global Combat Service Support (GCSS) logistics platform integration, provide field engineering support to user experiments and engineer product improvement/technical insertion into post Division AWE systems. • 110 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 6484</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 1335 Conduct Major design evaluations for Joint Technical Architecture-Army (JTA-A) Interoperability. • 1342 Ensure JTA-A Interop Implementation and Assess JTA-A compatibility for Army and S&T Programs. • 800 Assess JTA-A interop for Army Systems. 		
Project D589	Page 17 of 30 Pages	Exhibit R-2A (PE 0604805A)

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development		February 1999
PE NUMBER AND TITLE 0604805A Command, Control, Communications Systems - Engineering Development		PROJECT D589
<ul style="list-style-type: none"> • 808 Technically influence the development/implementation of Joint Technical Architecture (JTA). • 623 Maintain existing JTA-A Information Technical Standards. • 640 Investigate information technical standards for inclusion in JTA-A/JTA. <p>FY 2000 Planned Program: (continued)</p> <ul style="list-style-type: none"> • 469 Technically influence commercial and international standards forums. • 616 Engineer joint Strike Force C4IEWS research & development experiment. Conduct limited objective Strike Force experiment and information operations experiment in conjunction with JBC. • 730 Introduce early C4IEWS AAN concepts into existing programs. Plan and integrate comprehensive/extended Strike Force experiment. Conduct requirements oriented review of next generation tech base programs. • 392 Integrate digitization technology down to soldier. Develop distributed/network centric concepts for integration into digitized force. Engineer product improvement/technical insertion to Light Force systems. <p>Total 7755</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 1350 Conduct Major design evaluations for Joint Technical Architecture-Army (JTA-A) Interoperability. • 1355 Ensure JTA-A Interop Implementation and Assess JTA-A compatibility for Army and S&T Programs. • 800 Assess JTA-A interop for Army Systems. • 808 Technically influence the development/implementation of Joint Technical Architecture (JTA). • 623 Maintain existing JTA-A Information Technical Standards. • 640 Investigate information technical standards for inclusion in JTA-A/JTA. • 469 Technically influence commercial and international standards forums. • 650 Conduct joint Strike Force C4IEWS comprehensive experiment. Extend digitization experiment to coalition forces. Develop conceptual joint/coalition experiment of digitization across all force levels – Light, Strike and Heavy. • 702 Plan and integrate early AAN with total force digitized/network centric concept. Plan for next generation digitization systems. Incorporate airborne relay for range extension system architecture. • 500 Implement distributive/network centric concepts to Force XXI. Engineer product improvement/technical insertion to Strike Force Systems. <p>Total 7897</p> <p>B. <u>Other Program Funding Summary:</u> None</p> <p>C. <u>Acquisition Strategy:</u> The efforts funded in the project are non-system specific, therefore no acquisition strategy is provided.</p>		
Project D589	Page 18 of 30 Pages	Exhibit R-2A (PE 0604805A)

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)							DATE February 1999
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604805A Command, Control, Communcations Systems - Engineering Development			PROJECT D589

D. Schedule Profile	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2004	FY 2005
TA - JTA-A 6.0			3Q							
TA - JTA 3.0			3Q							
TA - JTA-A 7.0				3Q						
TA - JTA 4.0				3Q						
TA - JTA-A 8.0					3Q					
TA - JTA 5.0					3Q					
SA - 1DFS Updates			1Q	1Q	1Q					
SA - 1LDFS			2Q							
SA - AMC-ISA			4Q	3Q	3Q					
SA - I3A			3Q							
SA - 1DCSA Updates				2Q	2Q					
SA - I3A Updates				3Q	3Q					
STRIKE Force SA			3Q							
ASCIET Joint Experiment			2Q							
JCF AWE R&D Architecture			2Q							
AAN Planning Conference 1			1Q							
JCF AWE Initiative Implementation				2Q						
JCF AWE Support				2Q						
AAN Planning Conference 2				1Q						
STRIKE Force Initiatives				1Q						
JCF AWE After Action					3Q					
STRIKE Force AWE					3Q					
AAN Planning Conference 3					1Q					

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE
February 1999

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
**0604805A Command, Control, Communications
Systems - Engineering Development**

PROJECT
D589

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Government Systems Engineering Support		ASEO, Ft Monmouth, NJ	1417	1678		1800		1800		Con't	6695	
Engineering Support		ISEC, Ft Huachuca, AZ	0	592		700		700		Con't	1992	
Contract Systems Engineering Support	C & FP	CSC, Eatontown, NJ	823	1260	1 Oct 98	1483	1 Oct 99	1511	1 Oct 00	0	5077	
	SS & FP	MITRE, Tinton Falls, NJ	101	1114	1 Oct 98	1370	1 Oct 99	1370	1 Oct 00	0	3955	
	C & FP	Battelle, Alexandria, VA	0	100	30 Nov 98	200	30 Nov 99	200	30 Nov 00	0	500	
	C & FP	SRC, Atlanta GA.	70	100	30 Nov 98	100	30 Nov 99	100	30 Nov 00	0	370	
Systems Engineering and Integration		WTS - ISIO CECOM, Ft Monmouth, NJ	300	651		866		920		Con't	2737	
	C & T&M-WR	C3ISGI, Tinton Falls, NJ(Sole Source in 98)	197	509	9 Sep 98 (3 yrs)	700	9 Sep 98 (3 yrs)	780	9 Sep 98 (3 yrs)	0	2186	
Travel		ASEO/ISIO CECOM, Ft Monmouth, NJ	199	290		330		310		Con't	1129	
Overhead		ASEO/ISIO CECOM, Ft Monmouth, NJ	150	190		206		206		Con't	752	
Subtotal Product Development:			3257	6484		7755		7897			25393	

II. Support Costs: Not applicable

III. Test and Evaluation: Not applicable

IV. Management Services: Not applicable

Project Total Cost:			3257	6484		7755		7897			25393	
---------------------	--	--	------	------	--	------	--	------	--	--	-------	--

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604805A Command, Control, Communcations Systems - Engineering Development				PROJECT D591		
COST (In Thousands)	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost t Complete	Total Cost
D591 Weapons System Technical Architecture	0	0	1063	1058	1054	1051	0	0	Continuing	Continuing
<p>A. <u>Mission Description and Budget Item Justification:</u> Weapons System Technical Architecture: The Joint Technical Architecture-Army (JTA-A) provides the "building code" foundation for designing, building, fielding, and supporting interoperable systems in an expedient and cost-effective manner. The Weapons System Technical Architecture (WSTA) identifies new and emerging standards for integration of new technologies into existing Army Weapon Systems in support of Arm digitization efforts. WSTA will define weapon system domain exceptions and extensions to the JTA and JTA-Army. It will promote an open systems approach in Arm weapon systems in response to OSD open system initiatives. It will work to expand the Defense Information Infrastructure Common Operation Environment concept to properly accommodate Army weapon systems. NOTE: This is not a new start effort, FY 1998 and FY 1999 program tasks have been resourced through an joint HQDA/HQAMC effort via a series of below-threshold reprogramming actions across multiple program elements and project lines.</p> <p>FY 1998 Accomplishments: Project not funded in FY 1998</p> <p>FY 1999 Planned Program: Project not funded in FY 1999</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 1063 OE Implementation and Defense Information Infrastructure Common Operating Environment Integration • Continue Embedded Commercial Standards analysis/development for Weapons system architecture • Pursue rigorous Domain Analysis/Framework Definition • Complete work on Embedded Battle Command Analysis • Update Appendix F (WSTA Appendix) to JTA-A <p>Total 1063</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 1058 Complete Defense Information Infrastructure/Common Operating Environment real-time software re-use products for Army Weapon systems • Develop and codify universal device driver interface • Define and codify architecture description language • Update Appendix F (WSTA Appendix) to JTA-A <p>Total 1058</p>										
Project D591			Page 21 of 30 Pages				Exhibit R-2A (PE 0604805A)			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communcations Systems - Engineering Development	PROJECT D591
--	--	------------------------

B. <u>Other Program Funding Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
TBD										

C. **Acquisition Strategy:** Not applicable

D. **Schedule Profile:** Not applicable

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604805A Command, Control, Communcations Systems - Engineering Development					PROJECT D591		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Product Development	TBD	TBD				1063	TBD	1058	TBD		2121	
Subtotal Product Development:						1063		1058			2121	
II. Support Costs: Not applicable												
III. Test and Evaluation: Not applicable												
IV. Management Services: Not applicable												
Project Total Cost:						1063		1058			2121	
Project D591			<i>Page 23 of 30 Pages</i>					Exhibit R-3 (PE 0604805A)				

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604805A Command, Control, Communications Systems - Engineering Development					PROJECT D615	
COST (In Thousands)	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost t Complete	Total Cost
D615 JTRS Ground Domain	0	0	4904	5183	3581	6001	12281	9810	0	41760
<p>A. <u>Mission Description and Budget Item Justification:</u> The NTDRS program is a Research and Development Program that maximizes the use of Non-Development Item (NDI) and Commercial Off-The-Shelf (COTS) hardware and software. The program provides an interim solution to the long term Army need for greatly enhanced data capacities at Tactical Operations Centers. NTDRS will provide the Army's Tactical Internet Tactical Operation Center (TOC) to Tactical Operation Center (TOC) data distribution from Battalion to Brigade and for critical moving platforms from Brigade to Division in the First Digitized Division and may serve as the proof of concept leading to the integration of the NTDRS waveform/network into the Joint Tactical Radio System (JTRS) Program. FY 2000 funding is the final year of the RDTE dollars in support of the NTDRS. Funding for the NTDRS in FY 1999 and prior resides in PE0603713A, D370. The JTRS Software Architecture Development effort is the responsibility of the JTRS Joint Program Office and is funded under PE0604280A. Beginning in FY 2001, Project D615 supports the Army Unique Program for the JTRS. The JTRS is a joint Research and Development program that will lead to the Services acquiring a family of affordable, scaleable, high-capacity, interoperable Line of Sight (LOS) and Beyond Line of Sight (BLOS) tactical radios. JTRS activity in this program element supports the Army hardware development. The Army must develop hardware that is built to JTRS architecture standards, supports an open standards architecture, and a set of software-based, legacy tactical waveforms. Together, the architecture, the hardware, and the software will yield software programmable and hardware configurable digital radio systems that provide increased interoperability, flexibility and adaptability. The open standards based architecture will also provide the path for future hardware and software growth of delivered systems at minimal cost by allowing the Services to take advantage of advances in technology being realized in the commercial wireless communications marketplace. The JTRS will provide operational forces with an upgraded communications capability, for more effective battlespace management and interoperability among Command, Control, Communications, Computers and Intelligence (C4I) Systems supporting the warfighters' goal of realizing a fully digitized battlespace.</p> <p>FY 1998 Accomplishments: Project not funded in FY 1998</p> <p>FY 1999 Planned Program: Project not funded in FY 1999</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 798 NTDRS Program Management Activities • 2322 Completion of NTDRS Testing • 1250 Completion of NTDRS Engineering Development (T&M Effort) • 534 NTDRS System Integration <p>Total 4904</p>										
Project D615			Page 24 of 30 Pages				Exhibit R-2A (PE 0604805A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communications Systems - Engineering Development	PROJECT D615
---	--	-------------------------------

- FY 2001 Planned Program:**
- 1709 JTRS PMO Support
 - 1875 Army Integration - JTR
 - 1599 Wide Band Studies/Army Unique Development - JTRS
- Total 5183

B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Compl	Total Cost
OPA, Army, ADDS, BU1400	64910	46919	38763	38310	32226	34215	60122	120672	Cont	Cont

C. Acquisition Strategy: The NTDRS program maximizes the use of Non-Developmental Item (NDI) and Commercial Off-the-Shelf (COTS) hardware and software. An RDTE contract was awarded competitively in January 1996. The NTDRS was successfully tested in the Division XXI AWE in November 1997, Electronic Proving Ground (EPG) Field Test I in February 1998, and the FBCB2 LUT in August 1998. In FY 1999 and FY2000 the NTDRS will participate in the FBCB2 FDTE/IOT&E and other exercises to provide the Army's Tactical Internet TOC-TOC data communications. In FY 1999 and FY2000 NTDRS will continue design and testing efforts. Planned deployment of the NTDRS into the FDD for continued experimentation purposes is scheduled for mid-FY 2000. Beginning in FY2001 project D615 will support JTRS Army Unique hardware development. The JTRS will support an evolutionary acquisition strategy. The JTRS Joint Program Office (JPO) is responsible for common core activities including developing, maintaining, and evolving the JTRS open standards architecture, providing re-coded versions of legacy waveforms to operate on JTRS architecture compliant hardware, and providing a certification infrastructure for hardware/software compliance. Following the architecture's validation and a market survey of industry's capabilities, a program review will occur. Following that review, the Services, which retained acquisition and weapon system integration responsibility, will begin acquiring scaleable JTRS systems commensurate with Service migration plans. The Army portion of the system integration effort will be performed within this Project. Through industry teaming, the JTRS program and architecture will capitalize on previous government sponsored software definable radio activity such as NTDRS, EPLRS, SPEAKeasy, JCIT, TCDL, GLOMO, ULTRACOM, and WRN as well as similar efforts occurring in the commercial wireless information transfer sector. The development of this open standards architecture will foster and facilitate increased competition at all levels for initial acquisitions as well as for future hardware and software upgrades. Further procurement actions will be made by the services to acquire this "proven certified" technology in production configurations to replace the legacy radios in the DoD inventory today

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
NTDR Participation in FBCB2 IOT&E			1Q					
Complete NTDRS FDD Deployment			4Q					
Architecture Provided by JPO			4Q					

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE **February 1999**

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604805A Command, Control, Communications
Systems - Engineering Development

PROJECT
D615

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. NTDRS T&M Efforts (Projected)	C/T&M	ITT Ft. Wayne	*			1250	TBD				1250	
b. JTRS Army Integration	MIPR	TBD						1875	TBD		1875	
c. JTRS Wideband Studies/Army Unique Development	TBD	TBD						1599	TBD		1599	
Subtotal Product Development:						1250		3474			4724	

Remark: *NTDRS - prior to FY 2000 were charged against 0603713A, D370.

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. NTDRS Frequency/Logistics	MISC	MISC	*			175	Jan 00				175	
b. Installation/Training FDD	MISC	MISC	*			125	TBD				125	
c. NTDR System Integration	MIPR	TBD	*			234	TBD				234	
Subtotal Support Costs:						534					534	

Remark: *NTDRS - prior to FY 2000 were charged against 060713A, D370.

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. NTDRS Field Testing	MIPR	EPG, Ft. Huachuca	*			2322	TBD				2322	
Subtotal Test and Evaluation						2322					2322	

Remark: *NTDRS - prior to FY 2000 were charged against 0603713A, D370.

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communcations Systems - Engineering Development	PROJECT D615
---	---	-------------------------------

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. NTDRS Program Support	MIPR	Ft. Monmouth, NJ	*			798	TBD				798	
b. JTRS PMO Support	MIPR	TBD						1709	2Q		1709	
Subtotal Management Services:						798		1709			2507	

Remark: *NTDRS - prior to FY 2000 were charged against 0603713A, D370.

Project Total Cost:						4904		5183			10087	
---------------------	--	--	--	--	--	------	--	------	--	--	-------	--

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604805A Command, Control, Communications Systems - Engineering Development					PROJECT D629	
<i>COST (In Thousands)</i>	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost t Complete	Total Cost
D629 Tactical Communications System-Advanced Development	0	0	1822	1829	1845	1859	0	0	0	0

A. Mission Description and Budget Item Justification This project will validate the new Tactical Internet capability required for Force XXI. It provides definition, integration and testing of a mix of mature and prototype products which are used to develop a Tactical Internet capability. The Tactical Internet will be the primary data communications infrastructure at Corps and below for Force XXI and will revolve around interconnecting a mix of existing (e.g.: SINCGARS, SINCGARS SIP, EPLRS, MSE TPN, ETC) and emerging communications devices using gateways and routers. Gateways will also provide the link to Strategic levels. This capability will result in the tactical equivalent of the Information Highway and will support key battlefield functional areas to include logistics reporting, telemedicine, etc. The Tactical Internet (TI) will use and leverage commercial network standards and products. The "Internet Protocol" (IP) suite will be used to provide seamless communications with the capability to dynamically route data to hosts. It will be designed to facilitate technology insertion. The focus of this project will be to reduce the technical risk b assembling, integrating, and testing the Tactical Internet components prior to TF XXI, Division XXI, and Corps XXI and beyond. New services and components will be added and tested as required for each iteration leading up to Force XXI. Note: This program is not a new start effort, this project has been funded under PE/Proj. 0603805A/D246, and has been moved to this PE at the request of the OSD comptroller.

FY 1998 Accomplishments: Project not funded in FY 1998

FY 1999 Planned Program: Project not funded in FY1999

FY 2000 Planned Program:

- 1465 Integrate latest R&D products into the Tactical Internet (TI). Demonstrate improvements for TI architecture
 - 357 Demonstrate the capabilities of the Surrogate Joint Tactical Radio System (JTRS) on an airborne platform
- Total 1822

FY 2001 Planned Program:

- 1461 Integrate advanced mobile network technologies into the Tactical Internet (TI). Demonstrate improvements in TI communications services for lo echelon subscribers.
 - 368 Demonstrate the Surrogate Joint Tactical Radio System (JTRS) interoperability and transmission capabilities on an airborne platform.
- Total 1829

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communcations Systems - Engineering Development	PROJECT D629
---	---	-------------------------------

B. <u>Other Program Funding Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Compl	Total Cost
PE 0603805A/ Project D246	1590	1781								

C. Acquisition Strategy: The objective of this program is to validate new TI Capabilities required for Force XXI. In FY97, laboratory integration testing was conducted to reduce risk for Task Force XXI AWE. Similar laboratory was performed in FY98 for Division XXI and for the FBCB2 Limited User Test (LUT). In FY99 ne services and components will be added and tested to validate critical technologies for Force XXI beyond FDD.

D. <u>Schedule Profile</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Tactical Internet								
Prototype Internet								
System Integration			4Q					
Demonstrate Range Extension			4Q					
Address Architecture Issues			4Q					
Integrate Network Services			4Q	4Q				
Laboratory Testing			4Q	4Q				
Airborne Communications								
Systems Integration			4Q	4Q				
Video Demonstration			4Q	4Q				

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)		DATE February 1999
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communcations Systems - Engineering Development	PROJECT D629

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Systems Engineering	PO	CECOM RDEC, Ft. Monmouth, NJ				1417	01/01/00	1404	01/01/01	Cont'd	2821	
b. Contract Services												
1)	C-T&M AF	CSC/BAH				90	05/03/00	90	05/03/01	360	540	
2)	C-T&M Rqmts	C3I				135	08/28/98	135	08/28/98	540	810	
3)	C-T&M IDIQ	TAMSCO				130	05/19/98	150	05/19/98	600	880	
4)	C-T&M PSLA	LSI				50	07/01/00	50	07/01/01	200	300	
Subtotal Product Development:						1822		1829		1700	5351	

Remark: **NOTES:**

Performing Activity & Location

CSC/BAH- Computer Science Corporation, support contractor Booz, Allen & Hamilton – Eatontown, NJ
 C3I – C3I Systems Group Inc, Award date 8/28/98 with 3 option years- Tinton Falls, NJ
 TAMSCO – TAMSCO Inc, Award date 5/19/98 with 5 opti ons years- Calverton, MD
 LSI – Lear Sigler Inc, Lakehurst, NJ

Contract Method and Type

C-T&M – Competitive, Time and Materials
 -AF- Award Fee
 -Rqmts-Requirements
 -IDIQ-Indefinite Delivery Indefinite Quantit
 -PSLA- Purchase Service Labor Agreement

II. Support Costs: Not applicable

III. Test and Evaluation: Not applicable

V. Management Services: Not applicable

DATE **February 1999**

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
**0604805A Command, Control, Communcations
Systems - Engineering Development**

Project Total Cost:					1822		1829		1700	5351
---------------------	--	--	--	--	------	--	------	--	------	------

--	--	--	--	--	--	--	--	--	--	--

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604807A Medical Materiel - Engineering Development
---	--

COST <i>(In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
Total Program Element (PE) Cost	4200	5299	9705	9448	9386	11917	10490	10695	Continuing	Continuing
D812 Military Human Immunodeficiency Virus (HIV) Vaccine and Drug-Engineering Development	0	282	2372	3249	3659	3606	1719	1912	Continuing	Continuing
D832 Combat Medical Materiel-Engineering Development	2198	2415	3395	2248	3178	3334	3537	3532	Continuing	Continuing
D834 Soldier System Protection-Engineering Development	873	867	685	690	890	1560	1847	1847	Continuing	Continuing
D849 Infectious Disease Drug and Vaccine-Engineering Development	1129	1735	3253	3261	1659	3417	3387	3404	Continuing	Continuing

A. Mission Description and Budget Item Justification: This engineering and manufacturing development program funds: (1) improved medical equipment and drugs essential to counteracting lethal and human performance degrading effects of infectious diseases, and (2) medical equipment essential to meeting medical requirements on the integrated battlefield, with emphasis on decreased size, weight and high mobility, yet supporting large numbers of combat casualties. Additionally, foreign medical materiel may be procured for exploitation of advanced technology and development to meet Army medical defense goals. This program element supports the full-scale development of vaccines, prophylactic and therapeutic drugs, resuscitation fluids and drug products for Acquired Immune Deficiency Syndrome (AIDS). This program funds engineering and manufacturing development for both large and small combat casualty care end items for location of casualty, diagnosis, rapid intensive care delivery, intensive care evacuation platforms, and rapidly mobile, lightweight surgical facilities and equipment. Additionally, the program element funds engineering and manufacturing development of medical equipment that provides protection against physiological, psychological or environmental factors that degrade physical performance. This includes engineering development of vision corrective devices for protective masks. This program is primarily managed by the U.S. Army Medical Research and Materiel Command.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE
February 1999

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604807A Medical Materiel - Engineering Development

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	4345	5338	7264	8011
Appropriated Value	4483	5338		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-138	-39		
b. SBIR / STT	-109			
c. Omnibus or Other Above Threshold Adjustments	-36			
d. Below Threshold Reprogramming				
e. Rescissions				
Adjustments to Budget Years Since <u>FY 1999</u> P			2441	1437
Current Budget Submit (FY 2000 / 2001 PB)	4200	5299	9705	9448

Change Summary Explanation: FY2000/2001 – Funding increased to begin the advanced development on far-forward medical diagnostic kits and accelerate the development of products used to prevent or treat militarily relevant infectious diseases.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604807A Medical Materiel - Engineering Development				PROJECT D812		
<i>COST (In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D812 Military Human Immunodeficiency Virus (HIV) Vaccine and Drug-Engineering Development	0	282	2372	3249	3659	3606	1719	1912	Continuing	Continuing

A. Mission Description and Justification: This project funds Congressionally mandated, militarily relevant HIV medical countermeasures. This provides for engineering and manufacturing development of sufficient candidate vaccines and drugs to permit large-scale field testing and education/training materials. Efforts are directed to answer militarily unique needs affecting manning, mobilization and deployment. The major contractor is Henry M. Jackson Foundation for the Advancement of Military Medicine, Rockville, MD.

FY 1998 Accomplishments: Project not funded in FY 1998.

FY 1999 Planned Program:

- 275 Provide regulatory affairs support for New Drug Application submission of GP120 recombinant protein HIV vaccine.
- 7 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs

Total 282

FY 2000 Planned Program:

- 2372 Expand Phase 2/3 efficacy field trials for GP120 recombinant protein HIV vaccine.

Total 2372

FY 2001 Planned Program:

- 3249 Continue expanded Phase 2/3 efficacy field trials for GP120 recombinant protein HIV vaccine.

Total 3249

B. Other Program Funding Summary: Not applicable.

C. Acquisition Strategy: Test and evaluate commercially developed vaccine candidates in government-managed trials.

D. Schedule Profile: Not applicable.

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604807A Medical Materiel - Engineering Development	PROJECT D812
---	--	-------------------------------

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. No individual product/contacting cost grater than \$1 million		WRAIR/AFRIMS		282		2372		3249		Continue	Continue	
Subtotal Product Development:				282		2372		3249		Continue	Continue	

II. Support Costs: None

III. Test and Evaluation: None

IV. Management Services: None

Project Total Cost:				282		2372		3249		Continue	Continue	
---------------------	--	--	--	-----	--	------	--	------	--	----------	----------	--

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604807A Medical Materiel - Engineering Development	PROJECT D832
---	--	-------------------------------

COST (<i>In Thousands</i>)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D832 Combat Medical Materiel-Engineering Development	2198	2415	3395	2248	3178	3334	3537	3532	Continuing	Continuing

A. Mission Description and Justification: The project supports engineering and manufacturing development to field new and improved medical materiel essential fo combat casualty care to reduce the logistical support requirements and minimize loss. The major contract is United Defense Technologies, San Jose, CA.

FY 1998 Accomplishments:

- 200 Conducted Patient Movement Item (field gurney) testing at military laboratories.
 - 1889 Built Armored Medical Evacuation Vehicle (AMEV) prototype. Finished final design and testing of Armored Medical Treatment Vehicle (AMTV).
 - 83 Completed final evaluation of Hypertonic Saline Dextran.
 - 26 Built Special Operations Surgical Table that is sturdy, lightweight and capable of being broken down for transport.
- Total 2198

FY 1999 Planned Program:

- 99 Complete final evaluation of Patient Movement Item.
 - 258 Begin initial operational test and evaluation (IOT&E) of initial version of Life Support for Trauma and Transport (LSTAT).
 - 1995 Participate in National Training Center (NTC) rotation, conduct concept experimentation program test (CEPT) and incorporate test recommendation in redesign of AMEV.
 - 63 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 2415

FY 2000 Planned Program:

- 491 Conduct technology cost-benefit trade-off analysis and initiate formal acquisition program for upgraded LSTAT device.
 - 1204 Conduct a production qualification test (PQT) and begin low rate initial production (LRIP) for the AMEV.
 - 1000 Conduct clinical trials for the fibrin bandage program and prepare the Product License Application (PLA) and Establishment License Application (ELA).
 - 700 Conduct clinical trials and continue development of the Food and Drug Administration (FDA) submission of thawed blood processing system.
- Total 3395

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604807A Medical Materiel - Engineering Development	PROJECT D832
---	--	-------------------------------

FY 2001 Planned Program:

- 1000 Continue IOT&E of initial version of LSTAT.
- 118 Conduct clinical trials on next generation jet injector.
- 50 Prepare IOT&E and conduct Milestone II/III In-process Review (IPR) for Warrior Medic program.
- 1080 Conduct Milestone III for AMEV.

Total 2248

B. Other Program Funding Summary: Not applicable.

C. Acquisition Strategy: Evaluate commercially developed materiel in government-managed trials.

D. <u>Schedule Profile</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
AMEV - MSIII						4Q01				
LSTAT - MSII							4Q02			

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604807A Medical Materiel - Engineering Development						PROJECT D832		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. AMEV	MIPR	PM Bradley, Warren MI	1938	2051	Nov 98	1204	Nov 99	1780	Nov 00	Continue	Continue	
b. LSTAT	TBD	TBD				2191	Nov 99					
Subtotal Product Development:			1938	2051		3395		1780		Continue	Continue	
II. Support Costs: No product/contract costs greater than \$1M individual												
III. Test and Evaluation No product/contract costs greater than \$1M individual												
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. No product/contract costs greater than \$1M individual			260	364				468		Continue	Continue	
Subtotal Management Services:			260	364				468		Continue	Continue	
Project Total Cost:			2198	2415		3395		2248		Continue	Continue	

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604807A Medical Materiel - Engineering Development	PROJECT D834
---	--	-------------------------------

COST (<i>In Thousands</i>)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D834 Soldier System Protection-Engineering Development	873	867	685	690	890	1560	1847	1847	Continuing	Continuing

A. Mission Description and Justification: This project supports engineering development of preventive medicine materiel, including devices, pharmacologicals and other tools to provide protection, sustainment, and enhancement of the physiological and psychological capabilities of soldiers in the face of combat operations under all environmental conditions. Focus is on reduction in the incidence of personnel losses due to preventable disease and nonbattle injuries through development of environmental and physiological performance monitors and other preventive medicine countermeasures. A major contractor is Stanford Research Institute, Palo Alto, CA.

FY 1998 Accomplishments:

- 198 Supported training and maintenance effort for Corps Warfighter Exercise.
- 199 Planned and built external interface options to Composite Health Care System (CHCS), the Theater Army Medical Management Information System (TAMMIS), and the Defense Blood Standard System (DBSS).
- 238 Provided system engineering support for hardware infrastructure for the Theater Medical Information Program (TMIP) early user test.
- 238 Provided system engineering support for system integration with the Combat Service Support Control System (CSSCS) and the Global Combat Support System (GCSS).

Total 873

FY 1999 Planned Program:

- 633 Provide system engineering support for system integration with the Force XXI Battle Command - Brigade and Below (FBCB2) and GCSS.
- 211 Provide hardware infrastructure support for TMIP block 1 initial operational test and evaluation (IOT&E).
- 23 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs

Total 867

FY 2000 Planned Program:

- 255 Provide integration support for TMIP block 2 IOT&E.
- 296 Prepare for Phase 2/3 clinical trial and regulatory affairs support for secondary indication for modafinil to counter warfighter fatigue.
- 134 Prepare New Drug Application (NDA) supplement for filing with the Food and Drug Administration (FDA) on second indication for modafinil.

Total 685

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604807A Medical Materiel - Engineering Development	PROJECT D834
--	---	------------------------

FY 2001 Planned Program:

- 259 Provide integration support for TMIP block 3 IOT&E.
 - 184 Provide initial manufacture support of leishmania skin test antigen (LSTA) kits for Phase 2 clinical trials.
 - 247 Continue program and regulatory affairs support for secondary indication for modafinil to counter warfighter fatigue.
- Total 690

C. Acquisition Strategy: Test and evaluate in-house and commercially developed vaccine candidates in government-managed trials to meet FDA requirements.

D. Schedule Profile	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
TMIP block 1 - MS III				3Q99						
TMIP block 1 infrastructure support - MS III				3Q99						
TMIP block 2 - MS III					3Q00					
TMIP block 2 infrastructure support - MS III					3Q00					
TMIP block 3 - MS III						3Q01				
TMIP block 3 infrastructure support - MS III						3Q01				

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE **February 1999**

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604807A Medical Materiel - Engineering Development

PROJECT
D834

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
c. No product/contract costs greater than \$1M individuall			674	649		296		372		Continue	Continue	
Subtotal Product Development:			674	649		296		372		Continue	Continue	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. No product/contract costs greater than \$1M individuall						134		59		Continue	Continue	
Subtotal Support Costs:						134		59		Continue	Continue	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. No product/contract costs greater than \$1M individuall			199	218						Continue	Continue	
Subtotal Test and Evaluation			199	218						Continue	Continue	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604807A Medical Materiel - Engineering Development					PROJECT D834		
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
b. No product/contract costs greater than \$1M individuall						255		259		Continue	Continue	
Subtotal Management Services:						255		259		Continue	Continue	
Project Total Cost:			873	867		685		690		Continue	Continue	

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604807A Medical Materiel - Engineering Development	PROJECT D849
---	--	-------------------------------

COST (<i>In Thousands</i>)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D849 Infectious Disease Drug and Vaccine-Engineering Development	1129	1735	3253	3261	1659	3417	3387	3404	Continuing	Continuing

A. Mission Description and Justification: This project funds engineering and manufacturing development of sufficient candidate medical countermeasures to permit large-scale field testing and complete studies required for Food and Drug Administration (FDA) licensure. Work performed in laboratories and among troop populations is directed to prevention, diagnosis, and treatment of viral, bacterial and parasitic diseases to prevent casualties, sustain operational performance and minimize deaths and disability of armed forces during military operations.

Acquisition Strategy: Test and evaluate in-house and commercially developed vaccine candidates in government-managed trials to meet FDA requirements.

FY 1998 Accomplishments:

- 457 Completed Phase 2 challenge study of Campylobacter vaccine.
- 672 Completed Phase 2 clinical trial in Egyptian children of Enterotoxigenic *Eschericha coli* (ETEC) vaccine.
- Total 1129

FY 1999 Planned Program:

- 475 Conduct full-scale expanded Phase 3 field trials to evaluate efficacy of antimalarial drug WR238605.
- 283 Conduct Phase 3 treatment study of antimalarial drug WR238605.
- 260 Conduct Phase 2/3 proof of concept field trial of Campylobacter vaccine.
- 80 Conduct Phase 1 safety trial of new adjuvant lot of Campylobacter vaccine.
- 365 Conduct Phase 3 study in Egyptian infants and children of ETEC vaccine.
- 244 Conduct Phase 3 pivotal trial in Israel of ETEC vaccine.
- 28 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 1735

FY 2000 Planned Program:

- 488 Complete Phase 3 long-term prophylaxis study in Kenya of antimalarial drug WR238605.
- 487 Complete Phase 3 clinical trials for long-term prophylaxis study of antimalarial drug WR238605 with the French military.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604807A Medical Materiel - Engineering Development	PROJECT D849
---	--	-------------------------------

- 409 Complete Phase 3 treatment study of antimalarial drug WR238605.

- FY 2000 Planned Program: (continued)**
- 78 Provide regulatory affairs support for New Drug Application submission of antimalarial drug WR238605.
- 199 Complete Phase 2/3 proof of concept field trial of Campylobacter vaccine.
- 199 Complete Phase 1 safety trial of new adjuvant lot of Campylobacter vaccine.
- 597 Initiate Phase 3 pivotal trial of Campylobacter vaccine.
- 398 Continue Phase 3 study in Egyptian infants and children of ETEC vaccine.
- 398 Continue Phase 3 pivotal trial in Israel of ETEC vaccine.
- Total 3253

FY 2001 Planned Program:

- 688 Complete Phase 3 study in Egyptian infants and children of ETEC vaccine.
- 690 Complete Phase 3 pivotal trial in Israel of ETEC vaccine.
- 685 Complete Phase 3 pivotal trial of Campylobacter vaccine.
- 798 Initiate Phase 2/3 trials for Leishmania skin test antigen.
- 200 Initiate Phase 3 trials for licensure of malaria rapid diagnostic device.
- 200 Provide regulatory affairs support for licensure of malaria rapid diagnostic device.
- Total 3261

B. Other Program Funding Summary: Not Applicable.

C. Acquisition Strategy: Test and evaluate in-house and commercially developed vaccine candidates in government-managed trials to meet FDA requirements.

D. Schedule Profile	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Leishmania skin test - MS III							4Q02			
Camouflage face paint - MS II/III						3Q01				
WR238605 antimalarial - MS III							1Q02			
Dengue rapid diagnostic device - MS III									1Q04	
Paromomycin antileishmanial - MS III								4Q03		
ETEC vaccine - MS III									1Q04	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE **February 1999**

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604807A Medical Materiel - Engineering Development

PROJECT
D849

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. No product/contract costs greater than \$1M individuall			43									
Subtotal Product Development:			43									

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. No product/contract costs greater than \$1M individuall			29	52		98		98		Continue	Continue	
Subtotal Support Costs:			29	52		98		98		Continue	Continue	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. No product/contract costs greater than \$1M individuall			677	1075		2017		2021		Continue	Continue	
Subtotal Test and Evaluation			677	1075		2017		2021		Continue	Continue	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604807A Medical Materiel - Engineering Development					PROJECT D849		
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. No product/contract costs greater than \$1M individuall			380	608		1138		1142		Continue	Continue	
Subtotal Management Services:			380	608		1138		1142		Continue	Continue	
Project Total Cost:			1129	1735		3253		3261				

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604808A Landmine Warfare/Barrier - Engineering Development						
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
Total Program Element (PE) Cost	4040	52680	40916	39187	37801	42920	31205	21443	Continuing	Continuing
D016 Mine Systems Engineering Development	0	25829	18363	12615	9007	22098	19357	9613	Continuing	Continuing
D415 Mine Neutralization/Detection	4040	26851	22553	26572	28794	20822	11848	11830	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program element provides for engineering and manufacturing development of mine and countermine systems. Project D016, Mine Systems Engineering Development, provides for the increased tactical effectiveness and responsiveness of landmines by supporting the development of a minefield command and control (C2) system for the Wide Area Mine (WAM), the Intelligent Combat Outpost (Raptor), the Area Denial Artillery Munition (ADAM)/Remote Anti-Armor Mine (RAAM) Upgrade (which has been renamed the Remote Area Denial Artillery Munition – RADAM), Non-Self-Destructing Anti-Personnel Landmine Alternatives (NSD-A), and an upgrade for the Volcano Dispenser Control Unit. Project D415, Mine Neutralization/Detection Engineering Development, is the engineering and manufacturing development for the Airborne Standoff Minefield Detection System (ASTAMIDS), Explosive Standoff Minefield Clearer (ESMC), and Handheld Stand-off Minefield Detection System (HSTAMIDS). It provides a group of mutually supported mine detection and neutralization devices to counter a variety of threat mines, minefields and obstacles necessary for implementing the Army's Countermines Modernization Plan.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604808A Landmine Warfare/Barrier - Engineering Development
--	---

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	13818	46905	48389	61163
Appropriated Value	8732	52905		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-414	-225		
b. SBIR / STT	-209			
c. Omnibus or Other Above Threshold Reductions	-69			
d. Below Threshold Reprogramming	-4000			
Adjustments to Budget Years Since <u>FY 1999</u> PB			-7473	-21976
Current Budget Submit (FY 2000 / 2001 PB)	4040	52680	40916	39187

Change Summary Explanation:

Funding: FY 1998: Funds reprogrammed from project D415 to the M1 Breacher (Grizzly) program in PE 064649A G25 to support a higher Army priority Requirement (-4000).

FY 2000: Decrease due to termination of ESMC program (project D415).

FY 2001: Decrease to Raptor /D016 (-5600) based on program restructure and extension of Program Development and Risk Reduction (PDRR) phase through FY02 and decrease to project D415 (-16376) associated with the termination of ESMC program. Congressional notification has been provided.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604808A Landmine Warfare/Barrier - Engineering Development				PROJECT D016		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D016 Mine Systems Engineering Development	0	25829	18363	12615	9007	22098	19357	9613	Continuing	Continuing
<p>A. <u>Mission Description and Justification:</u> Provides for engineering and manufacturing development of new smart munitions and intelligent/autonomous coordination of their use for increased effectiveness. Also addresses Presidential directive to eliminate reliance on the use of Anti-Personnel Landmines.</p> <p>FY 1998 Accomplishments: Program not funded in FY98.</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 8800 Provide test hardware (1540 articles) for prototype assessment test (PAT) for NSD-A program • 3700 Provide NSD-A PAT instrumentation, execution, analysis, downselect for MSI/II. • 3357 Remote Area Denial Artillery Munition (RADAM) hybrid design/development • 400 Design verification testing (RADAM) • 1000 Load, Assemble and Pack (LAP) Plant facilitation for RADAM • 350 Fabricate RADAM process prove-out hardware (200 test items) • 1750 Conduct process prove-out and technical tests for RADAM • 5788 Studies of NSD-A designs/ Mixed System replacement • 684 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 25829</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 12800 Award NSD-A EMD contract to initiate NSD-A tactical design efforts • 3100 Provide engineering support for NSD-A design producibility/manufacturing development • 2463 Provide general engineering support for NSD-A design efforts <p>Total 18363</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 2750 Continue NSD-A government design efforts • 8400 Continue NSD-A contractor design and conduct contractor qualification testing • 1465 Provide general engineering support for NSD-A design and testing efforts 										
Project D016			Page 3 of 11 Pages				Exhibit R-2A (PE 0604808A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604808A Landmine Warfare/Barrier - Engineering Development	PROJECT D016
---	--	-------------------------------

Total 12615

B. <u>Other Program Funding Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Compl	Total Cost
RDTE, BA4, PE 0603619A, Proj D005	685	3920	4099	12840	11466	9000	30121	37572	Cont	Cont
Remote Area Denial Artillery Munition E67505			48250	48170	48598	48568				
Non-Self Destruct Anti-Pers Landmine E91700					91293	122883	122799	127580		

C. Acquisition Strategy: Raptor; decision to go sole source or competitive will be based on evaluation of sole source PDRR contractor results. NSD-A, 12 solicitation respondents will be requested to submit proposals for their alternative concept. Cost Plus Incentive Fee (CPIF) contracts for two of the best concepts will be awarded for the Early User Experiment (EUE) phase. At the conclusion of the EUE one contractor will be selected to continue into the EMD and Production phases. ADAM/RAAM Armament Research, Development and Engineering Center (ARDEC) (In-house) will lead the design and development effort. A government owned Load, Assemble, and Pack (LAP) facility will develop processes and tooling for the download of ADAM and RAAM and the creation of the hybrid projectile.

D. <u>Schedule Profile</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
Complete NSD-A PAT			2Q							
NSD-A MS I/II			2Q							
NSD-A MS III					4Q					
RADAM MS III			3Q							
RADAM Material release			4Q							

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE **February 1999**

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604808A Landmine Warfare/Barrier - Engineering
Development

PROJECT
D016

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
NSD-A test Hardware	CPIF	TBD	0	8800	Jan 99						8800	
NSD-A EMD	CPIF	TBD	0	0		12800	Oct 99	8400	Oct 00	0	21200	
RADAM EMD	N/A	ARDEC	0	3957	Oct 98	0	0	0		0	3957	
RADAM test hardware/facilitation	CP	LAP Facilit	0	1350	Dec 98	0	0	0		0	1350	
NSD-A Design/mixed System replacement		Various (TBD)		5788							5788	
Subtotal Product Development:				19895		12800		8400			41095	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Eng. support NSD-		ARDEC	0	1900	Oct 98	2900	Oct 99	2515	Oct 00	0	7315	
b. Eng. Support NSD-		OGA Misc.	0	0		2463	various	1500	various	0	3963	
Subtotal Support Costs:				1900		5363		4015			11278	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PAT support NSD-A		Government (TBD)	0	2184	Jan 99	0		0		0	2184	
b. Process Prove-out test RADAM		TECOM	0	1450	May 99	0		0			1450	
Subtotal Test and Evaluation				3634							3634	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604808A Landmine Warfare/Barrier - Engineering Development					PROJECT D016		
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
NSD-A and RADAM Program Management		PM-MCD	0	400	Oct 98	200	Oct 99	200	Oct 00	0	800	
Subtotal Management Services:				400		200		200			800	
Project Total Cost:				25829		18363		12615			56807	

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604808A Landmine Warfare/Barrier - Engineering Development					PROJECT D415	
<i>COST (In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D415 Mine Neutralization/Detection	4040	26851	22553	26572	28794	20822	11848	11830	Continuing	Continuing
<p>A. <u>Mission Description and Justification:</u> This project provides engineering and manufacturing development for the Airborne Standoff Minefield Detection System (ASTAMIDS), Explosive Standoff Minefield Clearer (ESMC), Handheld Stand-off Mine Detection System (HSTAMIDS), and Ground Standoff Mine Detection System (GSTAMIDS). It provides a group of mutually supported mine detection and neutralization devices to counter a variety of threat mines, minefields and obstacles necessary for implementing the Army's Countermines Modernization Plan.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 800 Prepared for and conducted ESMC MSII • 700 Developed ESMC manufacturing process • 700 Developed insensitive munition compliant rocket for ESMC • 1840 Prepared ESMC EMD contract solicitation and initiated contract EMD design effort. <p>Total 4040</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 2500 Complete preliminary ESMC EMD design • 6946 Fabricate ESMC test hardware (11 reloads, 2 trailers) • 2000 Conduct ESMC Government/contractor testing • 3384 Validate ESMC manufacturing processes and insensitive munition rocket • 805 Conduct source selection for GSTAMIDS EMD • 3095 Initiate development of a GSTAMIDS Block I prototype • 8121 Initiate HSTAMIDS EMD design efforts <p>Total 26851</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 1251 Conduct GSTAMIDS block I testing • 4897 Continue GSTAMIDS EMD design effort • 6000 Fabricate two GSTAMIDS test units 										
Project D415			<i>Page 7 of 11 Pages</i>				Exhibit R-2A (PE 0604808A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604808A Landmine Warfare/Barrier - Engineering Development	PROJECT D415
---	--	-------------------------------

- 304 Fabricate 10 HSTAMIDS test units
- FY 2000 Planned Program: (continued)**
- 7412 Complete HSTAMIDS EMD design
 - 1833 Conduct HSTAMIDS PQT/IOTE
 - 856 Prepare milestone III documentation and production contract solicitation
- Total 22553
- FY 2001 Planned Program:**
- 7625 Complete GSTAMIDS EMD design
 - 2630 Conduct combined DT/OT for GSTAMIDS
 - 615 Prepare GSTAMIDS MSIII documentation
 - 15702 Initiate ASTAMIDS EMD phase design efforts
- Total 26572

B. <u>Other Program Funding Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
PE 0603619A, Project D606, Countermine/Barrie Advanced Development	14160	2787	0	6992	8246	9443	5777	6671	Cont	Cont
E72800, APOBS	0	0	5668	6580	0	0	0	0	0	12248
R68200, HSTAMIDS	0	0	0	9992	13000	13125	6883	6930	Cont	Cont
R68100, GSTAMIDS	0	0	0	0	10285	16099	16663	19720	Cont	Cont
M80100, IVMMD	12113	3765	0	0	0	0	0	0	0	15878
S11500, ASTAMIDS	0	0	0	0	0	6100	0	0	Cont	Cont

C. Acquisition Strategy: ASTAMIDS, and HSTAMIDS - contractors (two for each project) competitively selected for PDRR phase competition which will lead to a down select for the EMD phase. GSTAMIDS will leverage the Vehicle Mounted Mine Detector ATD effort with two competitively selected contractors for a total of five competing contractors in PDRR. One contractor will continue into EMD. Successful EMD contractors will be awarded initial production contract (sole source) with multiple option year buys. ESMC competitively selected PDRR phase contractor will be awarded a sole source EMD contract upon completion of PDRR phase and MDA approval. Sole source Production contract with multiple options is anticipated for successful EMD contractor.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604808A Landmine Warfare/Barrier - Engineering Development	PROJECT D415
--	---	------------------------

D. Schedule Profile	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
MS II review for ESMC	2Q*									
MS II for GSTAMIDS		1Q*								
GSTAMIDS Block I MSIII				4Q						
GSTAMIDS Block II MS III						4Q				
MS II for HSTAMIDS				1Q						
MS III for HSTAMIDS						4Q				

*Denotes completed milestone

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE **February 1999**

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604808A Landmine Warfare/Barrier - Engineering
Development

PROJECT
D415

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
ESMC EMD	CPIF	TRACOR Aerospace	1323	11930	Oct 98	0		0		0	13253	
GSTAMIDS EMD.	CPIF	TBD	0	2757	Apr 99	9625	Oct 99	7308	Oct 00	Cont	19690	
HSTAMIDS EMD	CPIF	TBD	0	6324	Dec 99	6686	Oct 99	0		0	13010	
ASTAMIDS EMD	CPIF	TBD	0	0		0		13902	Dec 00	Cont	13902	
Subtotal Product Development:			1323	21011		16311		21210			59855	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Engineering support ESCM		NVESD/ CECOM	2147	2100	Oct 98	0		0		0	4247	
Eng. support GSTAMIDS		NVESD/ CECOM	0	500	Dec 98	840	Oct 99	500	Oct 00	Cont	1840	
Eng. support HSTAMIDS		NVESD/ CECOM	0	1408	Dec 98	1479	Oct 99	0		0	2887	
Eng Support ASTAMIDS		NVESD/CECOM	0	0		0		1400	Dec 00	Cont	1400	
Subtotal Support Costs:			2147	4008		2319		1900			10374	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Test support ESCM		TECOM	175	500	Jun 99	0		0		0	675	
Test support GSTAMIDS		TECOM	0	210	Jan 99	1251	Dec 99	2630	Apr 01	Cont	4091	
Test support GSTAMIDS		TECOM	0	0		1833	May 00	0		Cont	1833	
Subtotal Test and Evaluation			175	710		3084		2630			6599	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604808A Landmine Warfare/Barrier - Engineering Development	PROJECT D415
---	--	-------------------------------

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Program management		PM-MCD	395	1122	Oct 98	839	Oct 99	832	Oct 00	Cont	3188	
Subtotal Management Services:			395	1122		839		832			3188	

Project Total Cost:			4040	26851		22553		26572			80016	
---------------------	--	--	------	-------	--	-------	--	-------	--	--	-------	--

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE February 1999																																																									
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604814A Sense and Destroy Armor Munition - Engineering Development																																																													
<i>COST (In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost																																																							
Total Program Element (PE) Cost	10485	31602	19366	9775	1827	0	0	0	0	1019541																																																							
D2ST SADARM Operational Test	4864	0	0	0	0	0	0	0	0	5156																																																							
D644 Generic SADARM Engineering Development	5621	31602	19366	9775	1827	0	0	0	0	1014385																																																							
<p>A. <u>Mission Description and Budget Item Justification:</u> Sense and Destroy Armor (SADARM) munitions will provide an enhanced fire/counterfire capability for 155mm howitzer delivery systems. SADARM can attack targets well beyond the Forward Line of Troops (FLOT) in a fire-and-forget mode. SADARM can be used in day and night, inclement weather and degraded battlefield conditions.</p> <p>These capabilities will be enhanced by the SADARM Product Improvement (PI) program which began in FY 1997. The PI SADARM submunition will have an enlarged footprint (permitting each submunition to cover approximately three times the area of the baseline SADARM), and improved infrared sensor to see targets from higher altitudes. As a result, the PI SADARM will be more effective against all of its targets. When ejected from the 155mm projectile, the PI SADARM submunitions deploy and descend toward the ground at a constant velocity and spin rate. The submunitions contain an improved sensing mechanism which combines a dual-mode millimeter wave sensor with an improved infrared sensor array. If a target is present within the scan area (approximately 53,000 square meters or 12 football fields), the submunition detects and destroys the target.</p>																																																																	
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="text-align: left;"><u>B. Program Change Summary</u></td> <td style="text-align: center;"><u>FY 1998</u></td> <td style="text-align: center;"><u>FY 1999</u></td> <td style="text-align: center;"><u>FY 2000</u></td> <td style="text-align: center;"><u>FY 2001</u></td> </tr> <tr> <td>Previous President's Budget (FY 1999 PB)</td> <td style="text-align: right;">10847</td> <td style="text-align: right;">20813</td> <td style="text-align: right;">12873</td> <td style="text-align: right;">1960</td> </tr> <tr> <td>Appropriated Value</td> <td style="text-align: right;">11494</td> <td style="text-align: right;">31813</td> <td></td> <td></td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>a. Congressional General Reductions</td> <td style="text-align: right;">-647</td> <td style="text-align: right;">-211</td> <td></td> <td></td> </tr> <tr> <td>b. SBIR / STT</td> <td style="text-align: right;">-272</td> <td></td> <td></td> <td></td> </tr> <tr> <td>c. Other Above Threshold Reductions</td> <td style="text-align: right;">-90</td> <td></td> <td></td> <td></td> </tr> <tr> <td>d. Below Threshold Reprogramming</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>e. Rescissions</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Adjustments to Budget Years Since FY 1999 PB</td> <td></td> <td></td> <td style="text-align: right;">+6493</td> <td style="text-align: right;">+7815</td> </tr> <tr> <td>Current Budget Submit (FY 1999 / 2000 PB)</td> <td style="text-align: right;">10485</td> <td style="text-align: right;">31602</td> <td style="text-align: right;">19366</td> <td style="text-align: right;">9775</td> </tr> </table>											<u>B. Program Change Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	Previous President's Budget (FY 1999 PB)	10847	20813	12873	1960	Appropriated Value	11494	31813			Adjustments to Appropriated Value					a. Congressional General Reductions	-647	-211			b. SBIR / STT	-272				c. Other Above Threshold Reductions	-90				d. Below Threshold Reprogramming					e. Rescissions					Adjustments to Budget Years Since FY 1999 PB			+6493	+7815	Current Budget Submit (FY 1999 / 2000 PB)	10485	31602	19366	9775
<u>B. Program Change Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>																																																													
Previous President's Budget (FY 1999 PB)	10847	20813	12873	1960																																																													
Appropriated Value	11494	31813																																																															
Adjustments to Appropriated Value																																																																	
a. Congressional General Reductions	-647	-211																																																															
b. SBIR / STT	-272																																																																
c. Other Above Threshold Reductions	-90																																																																
d. Below Threshold Reprogramming																																																																	
e. Rescissions																																																																	
Adjustments to Budget Years Since FY 1999 PB			+6493	+7815																																																													
Current Budget Submit (FY 1999 / 2000 PB)	10485	31602	19366	9775																																																													
<p>Change Summary Explanation: Funding - FY 2000: Transfer from SADARM Procurement to RDTE to fund a restructured SADARM PI program (+6748)</p>																																																																	

DATE
February 1999

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
**0604814A Sense and Destroy Armor Munition -
Engineering Development**

FY 2001: Transfer from SADARM Procurement to RDTE to fund a restructured SADARM PI program (+7946).

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604814A Sense and Destroy Armor Munition - Engineering Development				PROJECT D644		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D644 Generic SADARM Engineering Development	5621	31602	19366	9775	1827	0	0	0	0	1014385
<p>A. <u>Mission Description and Justification:</u> : Sense and Destroy Armor (SADARM) munitions will provide an enhanced fire/counterfire capability for 155mm howitze delivery systems. SADARM can attack targets well beyond the Forward Line of Troops (FLOT) in a fire-and-forget mode. SADARM can be used in day and night, inclement weather and degraded battlefield conditions.</p> <p>These capabilities will be enhanced by the SADARM Product Improvement (PI) program which began in FY 1997. The PI SADARM submunition will have an enlarged footprint (permitting each submunition to cover approximately three times the area of the baseline SADARM), improved infrared sensor to see targets from higher altitudes. As a result, the PI SADARM will be more effective against all of its targets. When ejected from the 155mm projectile, the PI SADARM submunitions deploy and descend toward the ground at a constant velocity and spin rate. The submunitions contain an improved sensing mechanism which combines a dual-mode millimeter wave sensor with an improved infrared sensor array. If a target is present within the scan area (approximately 53,000 square meters or 12 football fields), the submunition detects and destroys the target.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 100 Simulation trade studies with Hardware in-the-loop (HWIL) to investigate application of Commercial Off-the-Shelf (COTS) technologies. • 1500 Warhead design improvements to maintain lethality at longer ranges. • 1830 Defined sensor component requirements and software interfaces. • 681 Procurement of long lead component level sensor hardware. • 1510 Government participation in joint design Integrated Product Teams (IPT's). <p>Total 5621</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 1000 Continue simulation efforts with HWIL to conduct hardware/software trade studies for PI SADARM. • 4698 Select optimum warhead design and begin lethal mechanism range firings. • 13564 Sensor Development: <ul style="list-style-type: none"> - Prototype development and initial fabrication of component level sensor hardware. - Mechanical design changes to increase footprint size. - Testing to assure gun survivability of sensor components. 										
Project D644	Page 2 of 6 Pages					Exhibit R-2A (PE 0604814A)				

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604814A Sense and Destroy Armor Munition - Engineering Development	PROJECT D644
---	--	-------------------------------

- Upgrade of test instrumentation to support the program Captive Flight Tests (CFT).

FY 1999 Planned Program: (continued)

- 4128 Continued procurement and fabrication of test hardware.
 - 7380 Continued government support to IPT design and gun survivability testing.
 - 832 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 31602

FY 2000 Planned Program:

- 700 Support HWIL for the qualification of the improved sensor electronics.
 - 5500 Complete lethal mechanism optimization and conduct qualification testing to meet PI lethality requirements.
 - 7182 Conduct captive flight tests of improved sensor and begin system integration activities.
 - 3402 Fabrication of system test hardware consisting of sensor units and inert flight hardware.
 - 2582 Government support to IPT's, CFT and system level integration tests.
- Total 19366

FY 2001 Planned Program:

- 700 Complete sensor qualification with HWIL simulation.
 - 2422 Complete lethal mechanism qualification and prepare engineering change proposals for production.
 - 3578 Complete system level qualification.
 - 1445 Fabrication of system level test hardware consisting of inert flight hardware and 12 tactical projectiles.
 - 1630 Government support to complete PI Engineering Manufacturing and Development (EMD) and the transition of design changes into production.
- Total 9775

B. <u>Other Program Funding Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
Procurement, Ammunition, Army, SSN E66300 Proj, Arty, 155mm SADARM, M898	65343	31453	54546	63605	76486	92792	154629	82829	1266700	2056700

C. Acquisition Strategy R&D: The cost plus incentive fee (CPIF) contracts were awarded in FY 1986 to Aerojet Electrosystems and Honeywell. In FY 1991, a design select eliminated the Honeywell competition. Aerojet then selected Honeywell (now Alliant Techsystems) as their prime sub-contractor and they have continued this relationship into production. The Engineering and Manufacturing Development contract with Aerojet has been completed.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604814A Sense and Destroy Armor Munition - Engineering Development	PROJECT D644
--	---	------------------------

The SADARM Submunition Product Improvement Program was awarded on 24 February 1997 to GenCorp Aerojet, Azusa, CA for the design, development, fabrication, integration, and testing of improvements on a sole source basis in accordance with FAR 6.302-1, Only One Responsible Source. Due to a funding decrement in FY98, contract restructure modification P00013 was signed on 19 March 1998 reflecting a no cost 5-month period of performance extension (from April 2001 to September 2001).

D. Schedule Profile	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2004</u>	<u>FY 2005</u>
Award Second LRP Contract	2Q*									
Award Product Improvement Contract	2Q*									
IOTE		4Q*								
ASARC/Full Rate Production Decision			1Q							
First Unit Equipped Basic SADARM			4Q							
PI Captive Flight Tests 1 st Qtr				1Q						
PI SADARM System Qualification Test					3Q					
Complete PI EMD Contract					4Q					

* Denotes completed milestone

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE
February 1999

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
**0604814A Sense and Destroy Armor Munition -
Engineering Development**

PROJECT
D644

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Prod Improv: Contract	SS/CPAF	Aerojet- Azusa, CA	10612	22060	OCT 98	16384	OCT 99	6865	OCT 00	0	55921	55921
b. Basic SADARM Contract	C/CPIF	Aerojet- Azusa, CA	436202							0	436202	
c. Government Support			60493								60493	
d. Basic SADARM Contract	C/CPIF	Alliant Tech Sys Hopkins, MN	188038							0	188038	
e. MLRS Rocket Integration	SS/CPIF	Loral Vought Sys Dallas, TX	90535							0	90535	
f. Miscellaneous	MIPR		7645							0	7645	
Subtotal Product Development:			793525	22060		16384		6865			838834	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PM SADARM	Allot	Picatinny Arsenal, NJ	761	400		450		450		300	2361	
b. ARDEC Eng Support	MIPR	Picatinny Arsenal, NJ	16918	3601	OCT 98	1232	OCT 99	1060	OCT 00	556	23367	
c. MLRS Rocket Integration	MIPR	PMO-MLRS, Huntsville, AL	16266								16266	
d. Miscellaneous	MIPR		8868	1032	DEC 98	100	DEC 99	300	DEC 00	671	10971	
Subtotal Support Costs:			42813	5033		1782		1810		1527	52965	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Projectile Testing	MIPR	YPG Yuma, AZ	21117	550		200	DEC 99	200	DEC 00	0	22067	
b. Rocket Testing	MIPR	WSMR New Mexico	26487							0	26487	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604814A Sense and Destroy Armor Munition - Engineering Development					PROJECT D644		
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
c. Miscellaneous	MIPR		67118	120	DEC 98	300	DEC 99	200	DEC 00	0	67738	
d. HWIL SADARM PI	MIPR	MICOM, Huntsville, Ala	755	1000	DEC 98	700	DEC 99	700	DEC 00	300	3455	
e. Army Research Lab	MIPR	Adelphi, MD		2007							2007	
Subtotal Test and Evaluation			115477	3677		1200		1100		300	121754	
IV. Management Services:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
SBIR/STTR				832							832	
Subtotal Management Services				832							832	
Project Total Cost:			951815	31602		19366		9775		1827	1014385	

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604817A Combat Identification
---	---

COST (<i>In Thousands</i>)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	19227	13379	8658	2395	0	0	0	0	0	137636
D482 Ground Combat Identification (CID)	12603	7851	7178	2395	0	0	0	0	0	120945
D901 All Services Combat ID Evaluation Team	1561	0	0	0	0	0	0	0	0	4322
D902 Dismounted Soldier CID	5063	5528	1480	0	0	0	0	0	0	13071

A. Mission Description and Budget Item Justification: The dominant maneuver that allows smaller, more lethal, forces to succeed on the modern battlefield also increases the potential for friendly fire casualties. Thus, a key enabler of complex coalition warfare or dominant maneuver is the rapid, reliable identification of friends, foes and neutrals. Positive identification at the point-of-engagement is complicated by the capabilities of modern weapons that allow engagements well beyond the range where visual identification is possible, significantly increasing the potential for fratricide. This Program Element (PE) is directed toward the design and development of distinct technology devices to help minimize this battlefield deficiency. Project D482 addresses the ground-to-ground vehicle mounted mission area; Project D901 addresses improvement of tactics, techniques and procedures across all mission areas (FY 1999-03 funded under JCS PE: 0603857J); and Project D902 addresses the ground-to-ground dismounted mission area.

B. <u>Program Change Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (<u>FY 1999 PB</u>)	19026	13471	7032	2010
Appropriated Value	19784	13471		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-758	-92		
b. SBIR/STT	-458			
c. Omnibus or Other Above Threshold Reductions	-151			
d. Below Threshold Reprogramming	+810			
e. Rescissions				
Adjustments to Budget Years Since <u>FY 1999 PB</u>			+1626	+385
Current Budget Submit (<u>FY 2000/2001 PB</u>)	19227	13379	8658	2395

Change Summary Explanation: Funding - FY 00 increase represents plus up to project 902 to continue E&MD effort.
 FY 01 increase represents continuation of Combat Identification NATO I interoperability Wave Form effort.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604817A Combat Identification				PROJECT D482		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D482 Ground Combat Identification (CID)	12603	7851	7178	2395	0	0	0	0	0	120945
<p>A. Mission Description and Justification: The Battlefield Combat Identification System (BCIS) is an all weather, day/night, millimeter wave, Low Probability of Intercept/Low Probability of Detection (LPI/LPD), digitally encrypted question and answer system that provides positive identification of friendly platforms out to 5.5 km (clear weather). BCIS was developed to minimize fratricide while maximizing combat effectiveness given rapidly changing and intense tactical situations. BCIS provides positive identification of friendly platforms to aid the gunner or commander to make a rapid shoot/don't shoot decision at the point of engagement. BCIS also provides short range (out to 1 km, in clear weather), LPI/LPD situational awareness messages at the platoon level. Any situational awareness data received by BCIS will be sent through the platform Applique for integration with other position sources to form the full situational awareness database. BCIS has been designated as a Horizontal Technology Integration program and coordinates A kit integration with host platforms.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 2910 Completed fabrication, assembly and contractor test of four brassboard models that incorporate design changes for production configuration. • 6480 Initiated upgrade of four brassboard models to fully functional engineering development models for platform compatibility tests, logisti demonstration and Government technical testing. • 2683 Initiated development, design, and fabrication of installation kits (A kit) for the Abrams M1A1 and Bradley M2 ODS platforms. • 530 Conducted successful US/French interoperable waveform test <p>Total 12603</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 3954 Complete upgrade, assembly and contractor test of fully functional engineering development models for platform (M1A1/M2A2 ODS) test, log demonstration and Govt. technical test. waveform and NSA certification. • 1605 Complete development, design, and fabrication of installation kits (A kit) for the Abrams/Bradley (M1A1/M2 ODS) vehicles for platform compatibility test. • 1583 Initiate A-kit design and development for host platforms (M4 C2V, HMMWV M1114/M998, M113A2 APC, M106A2 Mortar Vehicle, and M1068) in coordination with fielding to 1/22 INF Battalion , 1st Bde, 4th ID, identified as First Unit Equipped in FY01. • 508 Develop and integrate the BCIS software models into M1A1 and M2A2 ODS Close Combat Tactical Trainer (CCTT) Facility at 4th ID, Ft Hood, Texas • 201 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 7851</p>										
Project D482	Page 2 of 10 Pages					Exhibit R-2A (PE 0604817A)				

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604817A Combat Identification	PROJECT D482
--	--	------------------------

FY 2000 Planned Program:

- 4443 Continue host platform A kit design and development for additional vehicles in 1st Bde, 4th ID for fielding in FY02 (M9 ACE, M88 ARV, M109A6, M992, Avenger, M6 Linebacker, etc.).
 - 350 Conduct logistics verification demonstration (MANPRINT, maintenance, manuals, etc.).
 - 500 Conduct host platform compatibility test/demo for M1A1 and M2A2 ODS.
 - 1025 Conduct Government technical testing (electromagnetic interference, azimuth resolution, probability of ID, range min/max, reliability/availability and maintainability, etc.).
 - 410 Develop and integrate BCIS software models into M1A1 and M2A2 ODS Conduct of Fire Trainer (COFT) at 4th ID, T Hood, Texas
 - 450 Combat Identification (CI) Interoperability Demonstration: Continue development of a NATO STANAG for CI based upon the Battlefield Combat Identification System (BCIS) and the completed interoperability trials of prototype systems in Munster, GE. (Partners: France, Germany, United Kingdom)
- Total 7178

FY 2001 Planned Program:

- 1850 Complete host platform A kit design and development effort for the remaining vehicle types (M93A1, HMETT, MLRS, Wolverine) in 4th ID for fielding in FY03.
 - 65 Provide technical support for Initial Operational Test (IOT). Programming/budgeting of funds for actual test being coordinated with OPTEC.
 - 480 Combat Identification (CI) Interoperability Demonstration: Develop a NATO STANAG for CI based upon the Battlefield Combat Identification System (BCIS) and the completed interoperability trials of prototype systems in Munster, GE. (Partners: France, Germany, United Kingdom)
- Total 2395

B. Other Program Funding Summary:	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
RDTE, A BA 5, PE 0203735, Proj 330, Abram Tank Improve Prog			4933							4933
RDTE, A BA 5, PE 0203735, Proj 371, Bradle Base Sustainment			986							986
OPA2, SSN BA0510 Combat Identification Prog	0	4876	7568	10954	10574	8157			Cont	Cont
MSLS, SSN CE8710 Avenger Mods				99	80	123				302
MSLS, SSN C67500 MLRS Mods			16	53	28	71				168
OPA1, SSN DV0210, HMMWV			414	1325	1204	746				3689
SPARES, SSN MA4501, M9 Mod Kits			123	165	79	117				484
WTCV, SSN GA0400, Howitzer Mod			47	80	255	294				676
WTCV, SSN GZ3000, AVLB Mod			153	106	353	295				907

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604817A Combat Identification	PROJECT D482
--	--	------------------------

B. Other Program Funding Summary:	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
WTCV, SSN GZ2300, FIST Vehicle Mod			177	185	165	88				615
WTCV, SSN GA0700, M1 Abrams Tank Mod			1998	3822	9350	2014				17185
WTCV, SSN GZ3200, Breacher System Mod				927	734	182				1847
WTCV, SSN GA0570, M88 Mod			192	165	318	330				1005
WTCV, SSN GA8010, FAASV PIP			115	79	154	265				613
WTCV, SSN G80717, Bradley Base Sustain			2651	8691	4566	612				16520

BCIS is an Army Horizontal Technology Integration (HTI) program. In compliance with Army HTI policy, funding for production of both the mounted system (BCIS) and the host platform installation kit are budgeted within the host system line as applicable.

C. Acquisition Strategy: A competitive, cost plus award fee contract for 46 EMD units and option quantities, was awarded Aug 93. An additional 65 units were procured for participation in TF XXI AWE and the Combat ID International Demonstration. This contract has been modified to include follow-on design/producibility engineering and test efforts and delivery of four engineering models.

D. Schedule Profile	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
LRIP Award		3Qtr						
Govt Technical Test			1 Qtr					
Conduct Initial Operational Test (IOT)				2 Qtr				
Milestone III				4 Qtr				

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604817A Combat Identification					PROJECT D482		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. B Kit Development	C/CPAF	TRW, CA	64398	3368	1Qtr	450	1 Qtr	480			68696	68696
b. A Kit Devel(Abrams)	CPFF	GDLS, M	9225	1296	2Qtr						10521	10521
c. A Kit Devel(Bradley)	CPFF	United Defense, CA	2366	259	2Qtr						2625	2625
d. A Kit Devel (various)	MISC	E&S, TRW, UDLP, AM General, Boeing	1593	1517	2Qtr	4378	1 Qtr	1850	1 Qtr		9338	9338
e. Close Combat Tactical Trainer/Conduct of Fire Trainer Development	MIPR	Lockheed Martin		508	3Qtr	410					918	918
f. SBIR/STTR				201							201	201
Subtotal Product Development:			77582	7149		5238		2330			92299	92299
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Sys Eng/Tech Assistance	MIPR	CECOM	7765	163	1 Qtr						7928	7928
b. Sys Eng/Tech Assistance	T&M/MIPR	SYTEX, MTC, etc.	7057								7057	7057
Subtotal Support Costs:			14822	163							14985	14985
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Technical Test, Log Demo, etc.	MIPR	TECOM, YPG, AZ	1850			1755	1 Qtr				3605	3605
b. Test Planning	MIPR	NVES, CECOM	0	115	1 Qtr	120	1 Qtr	65	1 Qtr		300	300
c. Limited User Test	MIPR	TEXCOM	673								673	673
d. ASCIET	MIPR	Misc	3973								3973	3973
Subtotal Test and Evaluation			6496	115		1875		65			8551	8551

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604817A Combat Identification	PROJECT D482
--	--	------------------------

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Management		PM, Combat ID	4621	424	1 Qtr	65	1 Qtr				5110	5110
Subtotal Management Services:			4621	424		65					5110	5110

Project Total Cost:			103521	7851		7178		2395			120945	120945
---------------------	--	--	--------	------	--	------	--	------	--	--	--------	--------

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604817A Combat Identification	PROJECT D901
--	--	------------------------

COST (<i>In Thousands</i>)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D901 All Services Combat ID Evaluation Team	1561	0	0	0	0	0	0	0	0	4322

A. Mission Description and Justification: All Service Combat Identification Evaluation Team (ASCIET) Support. ASCIET is an expanding effort aimed at fostering improved tactics, techniques, and procedures (TTP) across all combat identification mission areas. ASCIET is chartered to employ the equipment and personnel of all Services to evaluate, investigate and assess various concepts of combat identification on the battlefield. ASCIET will also offer Federally Funded Research and Development Centers (FFRDCs), Service Battle Laboratories, and industry the opportunity to review and evaluate emerging technologies in multi-Service environment on a noninterference basis as a risk reduction and verification opportunity during ASCIET evaluations.

FY 1998 Accomplishments:

- 412 Assessed Situational Awareness (SA) impact on surface-to-surface operations.
 - 501 Assessed surface-to-air results from ASCIET 97 with particular attention given to Air defense interoperability.
 - 648 Conducted site surveys to research and investigate surface-to-surface instrumentation options to meet ASCIET 99 requirements.
- Total 1561

FY 1999 Planned Program: Project not funded in FY 1999

FY 2000 Planned Program: Project not funded in FY 2000

FY 2001 Planned Program: Project not funded in FY 2001

B. Other Program Funding Summary: None

C. Acquisition Strategy: Not applicable

D. <u>Schedule Profile</u>	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Assessed SA impact on surface-to-surface opera	1-2 Qtr							
Assessed surface-to-air results from ASCIET 97	1-2 Qtr							
Conducted site surveys for surface-to-surface inst	3-4 Qtr							

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604817A Combat Identification				PROJECT D902		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D902 Dismounted Soldier CID	5063	5528	1480	0	0	0	0	0	0	13071
<p>A. Mission Description and Justification: The Combat Identification System for the Dismounted Soldier (CIDDS) is a lightweight, laser-based, question and answer type system, used to positively identify friendly soldiers. The system includes a compact, eyesafe, diode laser interrogator; a laser detector assembly; an electronic processo unit; and an omni-directional RF responder. The laser transmitter also includes a near infrared aiming laser pointer for aiming the soldier's weapon at night when using Night Vision Goggles and provides an embedded training capability that is interoperable with MILES/MILES 2000. The system will provide range of at least 1.1 kilometers under clear weather conditions and will exceed the soldier's target acquisition capability under degraded atmospheric conditions and it will have sufficient angular resolution to resolve individual targets. The system will also be directly interoperable with the integrated soldier-to-soldier combat ID functions to be embedded in the Land Warrior equipment suite. The system will fulfill requirements stated in the Operational Requirements Document for use by Army, Marine and Special Operations applications.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 708 Continued weapons integration kit design • 3080 Continued hardware and software design • 1000 Initiated MILES/MILES 2000 interoperability/integration effort • 275 Initiated Near IR aiming laser pointer interoperability/integration effort <p>Total 5063</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 1050 Complete hardware and software design • 278 Complete weapons integration kit design • 4060 Initiate fabrication, assembly and test of 148 EMD hardware systems for technical/operational testing. • 140 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 5528</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 1480 Partially complete fabrication, assembly and test of 148 EMD hardware systems for technical/operational testing. <ul style="list-style-type: none"> - Conduct government technical test. - Provide technical support to Initial Operational Test (IOT). Programming/budgeting of funds for actual test being coordinated with OPTEC. <p>Total 1480</p>										
Project D902			Page 8 of 10 Pages				Exhibit R-2A (PE 0604817A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604817A Combat Identification	PROJECT D902
--	--	------------------------

B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Compl	Total Cost
OPA2, SSN BA0515 Combat ID/Aiming Light	0	0	9486	11098	16626	13554	16216	19832	60104	146835

C. Acquisition Strategy: A competitive, cost plus incentive fee (CPIF) contract for the design, fabrication and testing of 148 units for IOT was awarded in July 1997. A follow-on sole source low rate production contract will be awarded in April 2000 to initiate fielding to 10th Mountain Division..

D. Schedule Profile	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Govt. Technical Test			1 Qtr					
Initial Operational Test (IOT)			2 Qtr					
LRIP IPR			2 Qtr					
LRIP Award			3 Qtr					
Milestone III				1Qtr				
FUE				1Qtr				

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604817A Combat Identification					PROJECT D902		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Hardware	C/CPIF	Motorola, Scottsdale, AZ	5485	4594	1 Qtr						10079	10079
b. Kit Development	MIPR	Small Arms, ARL	0	115							115	115
c. SBIR/STT				140							140	140
Subtotal Product Development:			5485	4849							10334	10334
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Sys Eng/Tech Assis	C/T&M	Misc	120								120	120
b. CECOM	MIPR	Misc	217	95	1Qtr	30	1 Qtr				342	342
Subtotal Support Costs:			337	95		30					462	462
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Test Planning	MIPR	CECOM, TECOM, WSMR, SLAD, etc	0	204	1 Qtr						204	204
b. Development Test	MIPR	Yuma Proving Gd, AZ	0			1315	2Qtr				1315	1315
Subtotal Test and Evaluation				204		1315					1519	1519
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Management		PM Combat ID	241	380	1 Qtr	135	1 Qtr				756	756
Subtotal Management Services:			241	380		135					756	756
Project Total Cost:			6063	5528		1480					13071	13071

Project D902

Page 10 of 10 Pages

Exhibit R-3 (PE 0604817A)

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604818A Army Tactical Communications and Control Hardware & Software
---	--

COST (<i>In Thousands</i>)	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost t Complete	Total Cost
Total Program Element (PE) Cost	20600	32548	35299	33610	37616	36027	23482	23797	Continuing	Continuing
DC34 Army Tactical C2 Systems (ATCCS) Engineering	9448	15759	17862	16314	16627	16797	8848	9074	Continuing	Continuing
DC39 Tactical Operations Centers (TOCs)	0	5960	6282	6064	7958	6020	0	0	Continuing	Continuing
D323 Common Hardware Softwar	11152	10829	11155	11242	13031	13210	14634	14723	Continuing	Continuing

A. Mission Description and Budget Item Justification: The umbrella program to exploit automation technology for the conduct of combat operations is the Arm Tactical Command and Control System (ATCCS) program which is a component of the Army Battle Command System (ABCS). The ATCCS program provides automation in the five battlefield functional areas (BFAs) with the following specific systems: (1) Maneuver Control System (MCS); (2) Advanced Field Artillery Tactical Data System (AFATDS); (3) All Source Analysis System (ASAS) for Intelligence/Electronic Warfare; (4) Forward Area Air Defense Command, Control and Intelligence System (FAADC2I); and (5) Combat Service Support Control System (CSSCS) and to other Army Joint and Allied systems. To provide an overall technically sound, cost effective, and operationally responsive approach, the design and development of ATCCS must be accomplished on a total systems basis. The ATCCS Engineering program provides the required systems engineering to assure integrated Army tactical command and control, and the utilization of common hardware and software throughout the five ATCCS nodal systems. This project includes the Central Technical Support Facility(CTSF) which provides a single technical “center of mass” for software checkout and physical system integration. The Common Hardware Software (CHS) project provides common hardware and software to customers to meet their developmental and fielding needs. The Tactical Operations Centers(TOCs) project designs and develops the TOCs that form the structural backbone of the Army’s digitized fielding concept.

B. Program Change Summary	FY 1998	FY 1999	FY 2000	FY 2001
Previous President’s Budget (FY 1999 PB)	19184	32929	36641	35065
Appropriated Value	20022	32929		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-838	-381		
b. SBIR / STT	-438			
c. Omnibus or Other Above Threshold Reductions	-145			
d. Below Threshold Reprogramming	+1999			
e. Rescissions				
Adjustments to Budget Years Since FY 1999 PB			-1342	-1455
Current Budget Submit (FY 2000 / 2001 PB)	20600	32548	35299	33610

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604818A Army Tactical Communications and Control Hardware & Software				PROJECT DC34		
COST (In Thousands)	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost t Complete	Total Cost
DC34 Army Tactical C2 Systems (ATCCS) Engineering	9448	15759	17862	16314	16627	16797	8848	9074	Continuing	Continuing
<p>A. <u>Mission Description and Budget Item Justification:</u> Project DC34 – Army Tactical C2 Systems(ATCCS) Engineering: The Air/Land Battle Doctrine requires military leaders to make sound and timely command and control decisions to direct the activities of assigned and supporting units. The umbrella program to exploit automation technology in support of this mission is the ATCCS program, a component of the Army Battle Command System(ABCS). The effort to achieve horizontal integration of the ATCCS BFAs, although going on independently in each BFA, was not disciplined enough to address all connections and needs within the entire spectra of command, control, and communications. Therefore, to ensure this horizontal integration effort is complete and fully automated, a significant management, systems engineering and integration effort is required. A key component of the overall effort is the Central Technical Support Facility(CTSF) which provides a centralized on-the-ground capability to ensure interoperability among various digitized platforms and serves as the final integration and maturation facility for Common Operating Environment(COE). The CTSF acts as an enabler for rapid integration of dissimilar software and hardware systems through real time on-site integration of soldiers, contractors, testers, Program Managers, and the requirements community. The CTSF provides a single technical “center of mass” for software checkout and system integration and provides a controlled environment with connectivity to other C4I systems either on-site or through the Army Interoperability Network(AIN) to support digital integration and fielding.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 300 Performed functional analysis and updated command post analysis to support ABCS • 1250 Continued ABCS/AWE system level training and logistics development • 3213 Continued ABCS/AWE interoperability engineering and system level engineering support/perform dependency analyses and verification and validation of all BFA fielded software, including common and unique applications • 1450 Conducted and supported system configuration development/operational demonstrations in conjunction with BFA tests • 800 Implemented the ABCS data architecture and standardization program for all BFAs to facilitate ATA compliance • 500 Developed and implemented the ABCS security architecture • 1935 Augmented Central Technical Support Facility (CTSF) with manpower and tech support which provided field integration and integration support for Division XXI Advanced Warfighter Exercise (DAWE) <p>Total 9448</p>										
Project DC34			Page 2 of 11 Pages				Exhibit R-2A (PE 0604818A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE February 1999
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604818A Army Tactical Communications and Control Hardware & Software	PROJECT DC34
<p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 300 Perform functional analysis and update command post analysis to support ABCS • 1200 Continue ABCS/AWE system level training and logistics development • 3540 Continue ABCS/AWE interoperability engineering and system level engineering support/perform dependency analyses and verification and validation of all BFA fielded software, including common and unique applications • 1450 Conduct and support system configuration development/operational demonstrations in conjunction with BFA tests • 800 Continue to implement the ABCS data architecture and standardization program for all BFAs to facilitate ATA compliance • 500 Continue to develop and implement the ABCS security architecture • 7551 Central Technical Support Facility(CTSF) efforts to meet the Army's digital fielding requirements • 418 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 15759</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 347 Perform functional analysis and update command post analysis to support ABCS • 1419 Continue ABCS/AWE system level training and logistics development • 3540 Continue ABCS/AWE interoperability engineering and system level engineering support/perform dependency analyses and verification and validation of all BFA fielded software, including common and unique applications • 1448 Conduct and support system configuration development/operational demonstrations in conjunction with BFA tests • 700 Continue to implement the ABCS data architecture and standardization program for all BFAs to facilitate ATA compliance • 529 Continue to develop and implement the ABCS security architecture • 543 Continue Knowledge Center Suppor • 9336 Central Technical Support Facility(CTSF) efforts to meet the Army's digital fielding requirements <p>Total 17862</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 200 Perform functional analysis and update command post analysis to support ABCS • 1000 Continue ABCS/AWE system level training and logistics development • 3166 Continue ABCS/AWE interoperability engineering and system level engineering support/perform dependency analyses and verification and validation of all BFA fielded software, including common and unique applications • 1200 Conduct and support system configuration development/operational demonstrations in conjunction with BFA tests • 600 Continue to implement the ABCS data architecture and standardization program for all BFAs to facilitate ATA compliance 		
Project DC34	Page 3 of 11 Pages	Exhibit R-2A (PE 0604818A)

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)							DATE February 1999	
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604818A Army Tactical Communications and Control Hardware & Software			PROJECT DC34	
<p>FY 2001 Planned Program: (continued)</p> <ul style="list-style-type: none"> • 500 Continue to develop and implement the ABCS security architecture • 100 Continue Knowledge Center Support • 9548 Central Technical Support Facility(CTSF) efforts to meet the Army's digital fielding requirements <p>Total 16314</p> <p>B. <u>Other Program Funding Summary:</u> Not applicable</p> <p>C. <u>Acquisition Strategy:</u> This project provides the technical and programmatic disciplines required for systems engineering and integration, experimentation, acquisition management, testing, software development, interoperability, fielding, and sustainment to insure an interoperable and affordable ATCCS. The Program Executive Office for Command , Control, and Communications(PEO C3S) has planned an evolutionary approach to fielding ATCCS as soon as possible.</p>								
D. <u>Schedule Profile</u>								
	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
FBCB2 LUT	4Q							
CORPS/JTF		1Q						
NTC 99-05		2Q						
Prairie Warrior 99		3Q						
ABCS Interoperability Test		3Q						
Corps UFL		4Q						
ISYCON LUT		4Q						
FBCB2 FDT&E		4Q						
FBCB2 IOTE			1Q					
NTC 00-05			2Q					
AFATDS 99 LUT			3Q					
Prairie Warrior 00			3Q					
JCF AWE			4Q					
FDD			4Q					
NTC 01-1				1Q				
Strike Force			2Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Corps Army Warfighter Exercise						1Q		
Project DC34		Page 4 of 11 Pages			Exhibit R-2A (PE 0604818A)			

DATE
February 1999

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
**0604818A Army Tactical Communications and
Control Hardware & Software**

Global Challenge								1Q	
------------------	--	--	--	--	--	--	--	----	--

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604818A Army Tactical Communications and Control Hardware & Software						PROJECT DC34		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TRW	PWD	Fort Mon/Fort Hood	1000	725	Oct 98	822	Oct 99	750	Oct 00	Cont	3297	
b. CSC	PWD	Fort Mon/Fort Hood	10132	3150	Jan 99	4303	Jan 00	3192	Jan 01	Cont	20777	
c. MITRE	MIPR	Ft Mon/Eatontown, NJ	1904	6837	Dec 98	7840	Dec 99	6970	Dec 00	Cont	23551	
d. MANTECH	PWD	Fort Mon/Fort Hood		1705	Jan 99	1204	Jan 00	1858	Jan 01	Cont	4767	
e. Misc Contracts	PWD	Fort Mon/Fort Hood	2500	2068	Oct 98	2344	Oct 99	2142	Oct 00	Cont	9054	
Subtotal Product Development:			15536	14485		16513		14912			61446	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. In-House Support	Various	Fort Mon/Fort Hood	3406	1274	Oct 98	1349	Oct 99	1402	Oct 00	Cont	7431	
Subtotal Support Costs:			3406	1274		1349		1402			7431	
III. Test and Evaluation: None												
IV. Management Services: None												
Project Total Cost:			18942	15759		17862		16314			68877	

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604818A Army Tactical Communications and Control Hardware & Software				PROJECT DC39		
COST (In Thousands)	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost t Complete	Total Cost
DC39 Tactical Operations Centers (TOCs)	0	5960	6282	6064	7958	6020	0	0	Continuing	Continuing
<p>A. <u>Mission Description and Budget Item Justification:</u> Project DC39: The Tactical Operations Centers (TOCs) project designs and develops the TOCs that form the structural backbone of the Army's digitized fielding concept. The Army Tactical Operations Center (TOC) program provides commanders and staff at all echelons of command from Battalion to Corps with integrated digitized command and control facilities to exploit the enhanced situational awareness and force multiplier effect gained through digitization. The objective is dominance using interoperable, robust Army Battle Command System (ABCS) systems operating in an Defense Information Infrastructure (DII)/Common Operating Environment (COE) compliant architecture.</p> <p>FY 1998 Accomplishments: Project not funded in FY 1998</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 2000 Sustain Division XXI prototype TOCs • 2802 System and design engineering, technology assessments, and technology integration for First Digitized Division (FDD) • 1000 Program planning, integrated logistics support, program management, test planning, and program integration for FDD. • 158 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 5960</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 1500 Sustain Division XXI prototype TOCs • 3214 System and design engineering, technology assessments, and technology integration for First Digitized Division (FDD) • 1568 Program planning, integrated logistics support, program management, test planning, and program integration for FDD. <p>Total 6282</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 3032 System and design engineering, technology assessments, and technology integration for the First Digitized Corps. • 3032 Program planning, integrated logistics support, program management, test planning, and program integration for First Digitized Corps. <p>Total 6064</p>										
Project DC39			Page 6 of 11 Pages				Exhibit R-2A (PE 0604818A)			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604818A Army Tactical Communications and Control Hardware & Software	PROJECT DC39
---	--	-------------------------------

B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Compl</u>	Total <u>Cost</u>
Other Procurement Army 2 – SSN: BZ9865		26630	28098	26984	29628	32572	0	0	Cont	Cont

C. Acquisition Strategy: The acquisition strategy relies upon full and open competition for performance against a performance specification utilizing Government Furnished Property and Commercial off-the shelf/non-developmental items for integration into Army Tactical Operations Centers to provide commanders and staff at all echelons of command from Battalion to Corps with integrated digitized command and control facilities to exploit situational awareness the battlefield.

D. Schedule Profile	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Fielding 4 th Infantry Division & 1 st Cavalry					3Q					
Participate in IOTE for FBCB2					3Q					
III Corp					1Q	4Q				
3 rd ACR 3D BDE (41D)								3Q		

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604818A Army Tactical Communications and Control Hardware & Software	PROJECT DC39
---	--	-------------------------------

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Contract TBD	TBD			420	2Q	440		424			1284	
b. Contract TBD	TBD			3323	2Q	3455		3336			10114	
c. In-House/Gov't Support	Various			554		628		606			1788	
d. Engineering Support				883		942		910			2735	
Subtotal Product Development:				5180		5465		5276			15921	

Remark: Source Selection Evaluation is currently ongoing; therefore, funding breakouts and all cost information is tentative and is classified "Competition Sensitive"

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. SETA Contract	MIPR	OG		780	2Q	817		788			2385	
Subtotal Support Costs:				780		817		788			2385	

Remark: Source Selection Evaluation is currently ongoing; therefore, funding breakouts and all potential cost information is tentative and is classified "Competition Sensitive"

III. Test and Evaluation: None

IV. Management Services: None

Project Total Cost:				5960		6282		6064			18306	
---------------------	--	--	--	------	--	------	--	------	--	--	-------	--

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604818A Army Tactical Communications and Control Hardware & Software				PROJECT D323		
COST (In Thousands)	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost t Complete	Total Cost
D323 Common Hardware Softwar	11152	10829	11155	11242	13031	13210	14634	14723	Continuing	Continuing
<p>A. <u>Mission Description and Budget Item Justification:</u> Project D323 Common Hardware/Software (CHS): CHS is the program through which the Army builds its integrated efforts for tying together the Army Battle Command Systems (ABCS). The project provides vehicles (contracts) through which customers can acquire state-of-the-art common hardware/software and associated peripherals to meet developmental and fielding needs. The project also provides software technology support and command post internal structures within shelters. The common software supports Army, other Services and Joint systems. The CHS program is instrumental in digitizing the battlefield.</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 1371 Continued management of the acquisition and delivery of CHS equipment (LCU/CHS-2) in support of customer requirements • 3150 Continued execution of common hardware, software technology and software reuse programs • 575 Continued supporting customers testing efforts with CHS equipment • 610 Continued the exploration of state of the art technology insertion in support of ABCS programs • 5446 Continued developing and upgrading DII COE products/integrate into ABCS systems and other Army systems <p>Total 11152</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 1350 Continue management of the acquisition and delivery of CHS-2/LCU equipment in support of customer requirements. • 3007 Continue execution of common hardware, software technology and software reuse programs • 550 Continue supporting customers testing efforts with CHS equipment • 545 Continue exploring state of the art technology insertion in support of ABCS programs • 5167 Continue developing and upgrading DII COE products/integrate into ABCS systems and other Army systems • 210 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 10829</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 1395 Continue management of the acquisition and delivery of CHS-2 equipment in support of customer requirements • 3379 Continue execution of common hardware, software technology and software reuse program 										
Project D323			Page 9 of 11 Pages				Exhibit R-2A (PE 0604818A)			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604818A Army Tactical Communications and Control Hardware & Software	PROJECT D323
--	---	------------------------

FY 2000 Planned Program: (continued)

- 575 Continue supporting customers testing efforts with CHS equipment
 - 510 Continue exploring state of the art technology insertion in support of ABCS programs
 - 5296 Continue developing and upgrading DII COE products/integrate into ABCS systems and other Army systems
- Total 11155

FY 2001 Planned Program:

- 1561 Continue management of the acquisition and delivery of CHS-2 equipment in support of customer requirements and proceed to CHS-3 contract award
 - 3300 Continue execution of common hardware, software technology and software reuse program
 - 550 Continue supporting customers testing efforts with CHS equipment
 - 575 Continue exploring state of the art technology insertion in support of ABCS programs
 - 5256 Continue developing and upgrading DII COE products/integrate into ABCS systems and other Army systems
- Total 11242

B. Other Program Funding Summary: Not Applicable

C. Acquisition Strategy: The overall goal is to improve interoperability and lower life cycle costs by standardizing Battlefield Command and Control (C2) automation through centralized buys of non-developmental items (NDI), standardized protocols and reusable software. Four NDI hardware versions are available to meet specific needs of each Battlefield Functional Area (BFA): handheld, portable, transportable and lightweight computer unit.

D. <u>Schedule Profile</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
Last CHS-1 order processed	4Q							
Last LCU order processed		3Q						
CHS-2 Technology Insertion (continuous)	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Initiate follow-on CHS ABCS Information Technology (AIT) Contract Requirements effort				2Q				
CHS AIT contract awar					3Q			

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE **February 1999**

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604818A Army Tactical Communications and Control Hardware & Software

PROJECT
D323

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Matrix-CECOM	MIPR	Ft. Monmouth	18791	2100		2100		1900		Cont'd	24891	
b. In-House		PM ATCCS, FM, NJ	18273	1850		2048		2188		Cont'd	24359	
c. Primary Contract	PWD	Ft. Monmouth	6798	200		275		350		Cont'd	7623	
d. Misc Contract	PWD	Ft. Monmouth	27378	1350		1126		1128		Cont'd	30982	
e. CSC	PWD	Ft. Monmouth	6055	4699		4886		4956		Cont'd	20596	
f. MITRE (FFRDC)	PWD	MITRE, Eatontown, NJ	9148	630		720		720		Cont'd	11218	
Subtotal Product Development:			86443	10829		11155		11242			119669	

II. Support Costs: None

III. Test and Evaluation: None

IV. Management Services: None

Project Total Cost:			86443	10829		11155		11242			119669	
---------------------	--	--	-------	-------	--	-------	--	-------	--	--	--------	--

Remark:

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)									DATE February 1999	
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604820A Radar Development				PROJECT DE10	
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DE10 Sentinel	0	6742	5128	8481	10067	0	0	0	0	166156
<p>A. Mission Description and Budget Item Justification: The Sentinel, AN/MPQ-64, consists of a radar-based sensor with its prime mover/power, identification friend or foe (IFF), and FAAD Command, Control, and Intelligence (C2I) interfaces. The sensor is an advanced three-dimensional battlefield X-Band air defense phased-array rada with an instrumented range of 40 km. The Sentinel is capable of operating day or night, in adverse weather conditions, in the battlefield environments of dust, smoke aerosols, and enemy countermeasures. It provides 360 degree azimuth coverage for acquisition tracking. The Sentinel contributes to the digital battlefield by automaticall detecting, classifying, identifying, and reporting targets (cruise missiles, unmanned aerial vehicles, rotary wing and fixed wing aircraft). This Pre-Planned Product Improvement (P3I) Program will improve Sentinel's capability against evolving threats. The P3I will provide increased capabilities for the Sentinel to keep abreast of th evolving technological threat of small radar cross-section targets such as cruise missiles and unmanned aerial vehicles.</p> <p>FY 1998 Accomplishments: This project line was not funded in FY 1998 but a Congressional plus up to PE 0604741A, project D126 for the Sentinel transmitter upgrad was provided and placed on contract in FY 1998.</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 1853 Conduct Transmitter Prototype Design and Development • 1800 Adjunct Sensor Test Article • 529 Adjunct Sensor Technical Testing • 318 Participation in Technical Test Data Reduction for Adjunct Sensor • 212 Adjunct Sensor Performance Specification Development • 514 Conduct Waveform Prototype Design and Development • 635 Adjunct Sensor Integration • 703 Adjunct Sensor Survivability Improvement/Cost Reduction Initiatives Design and Development • 178 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 6742</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 1670 Complete Transmitter Prototype Design and Development • 2707 Conduct Waveform Prototype Design and Development • 751 Conduct Beam Steering Unit Prototype Design and Development <p>Total 5128</p>										
Project DE10			Page 1 of 5 Pages				Exhibit R-2 (PE 0604820A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604820A Radar Development	PROJECT DE10
---	---	-------------------------------

FY 2001 Planned Program:

- 5530 Complete Waveform Prototype Design and Development
 - 846 Integration and Test of Waveforms
 - 2105 Conduct Classification Prototype Design and Development
- Total 8481

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	0	2786	5544	8593
Appropriated Value		6786		
Adjustments to Appropriated Value				
a. Congressional General Reductions		-44		
b. SBIR / STTR				
c. Omnibus or Other Above Threshold Reduction				
d. Below Threshold Reprogramming				
e. Rescissions				
Adjustments to Budget Years Since FY 1999 PB			-416	-112
Current Budget Submit (FY 2000/2001 PB)	0	6742	5128	8481

Change Summary Explanation: A \$4000K congressional plus-up in FY99 to begin the Adjunct Sensor Development.

C. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To</u> <u>Compl</u>	<u>Total</u> <u>Cost</u>
RDTE 0604741 (Project D126)	20591	6363	7502	8203	9186	9607	9674	9982	Continue	Continue
Other Procurement, Army 2 (SSN WK 5053)	58858	57877	38379	24362	23769	26220	35079	37869	Continue	Continue
Other Procurement, Army 2 (SSN WK 5057)	0	0	0	7112	9484	20052	24674	26260	Continue	Continue
Spares (SSN BS 9732)	5258	7161	4358	2070	3223	684	3897	2844	2500	32319

D. Acquisition Strategy: The modernization program will award a sole source CPAF contract to the production manufacturer. The effort will aggressively implement the tenets of Cost As Independent Variable (CAIV) to assure Total Ownership Costs of the Sentinel are reduced. The contractor will be incentivized to reduce both acquisition and operational support costs for the Sentinel program. The program will take advantage of already developed items and certain off the shelf technologies to minimize risk while insuring cost schedule and performance goals are achieved.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604820A Radar Development	PROJECT DE10
--	--	------------------------

E. Schedule Profile	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Adjunct Sensor Technical Evaluation Testing		4Q						
Transmitter Test and Acceptance			4Q					
Waveform Test and Acceptance				4Q	1Q			
Target Classification Test and Acceptance					1Q			
Adjunct Sensor Test and Acceptance					4Q			

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604820A Radar Development	PROJECT DE10
---	---	-------------------------------

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. System Development	C/FFP	Hughes Aircraft Co. Fulleton, CA	56836								56836	56836
b. Technical requirement definition, corrective action & simulation	MIPR	Various AMCOM contractors/locations	18704								18704	18704
c. Adjunct Sensor Survivability Analysis	MIPR	Dynetics Huntsville, AL		664	2Q						664	664
d. Misc requirements definition, ECM and survivability efforts.	MIPR	Various other agency contractors/locations	5270								5270	5270
e. Adjunct Sensor	SS/CPAF	Lockheed Martin Sunny Vale, CA		1700	2Q					5040	6740	6740
f. Adjunct Sensor Integration	SS/CPAF	Raytheon Company El Segundo, CA		600	2Q						600	600
g. P3I Developments	SS/CPAF	Raytheon Company El Segundo, CA		2235	2Q	4087	2Q	7252	2Q	1817	15391	15391
h. SBIR/STTR	Various	Various		178	2Q						178	178
Subtotal Product Development:			80810	5377		4087		7252		6857	104383	104383

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Support Services	MIPR	AMCOM Redstone Arsenal, AL	9945	372	2Q	165	2Q	195	2Q	187	10864	
b. Other Agency Support Services	MIPR	Various	1707								1707	
Subtotal Support Costs:			11652	372		165		195		187	12571	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604820A Radar Development						PROJECT DE10		
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. IOT&E	MIPR	OPTEC Alexandria, VA	24180								24180	
b. Other/Misc Test and Evaluation Activit	MIPR	Various	7703	800	2Q						8503	
c. Technical Test	MIPR	Redstone Technical Test Center Redstone Arsenal, AL	1213			670	2Q	804	1Q	2798	5485	
Subtotal Test and Evaluation			33096	800		670		804		2798	38168	
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Product Manager Support	MIPR	PM Sentinel/AMCOM Redstone Arsenal, AL	10180	128	2Q	70	2Q	82	2Q	80	10540	
b. Contractor Support to Product Manager	FP	Vista Tech, Huntsville, AL /TBD		65	2Q	136	2Q	148	2Q	145	494	
Subtotal Management Services:			10180	193		206		230		225	11034	
Project Total Cost:			135738	6742		5128		8481		10067	166156	

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604823A Firefinder				PROJECT DL85		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
DL85 Firefinder AN/TPQ-47	2400	20583	32353	37589	5615	0	0	0	0	100970
<p>A. <u>Mission Description and Budget Item Justification:</u> The Firefinder Block II program will replace the AN/TPQ-37 Artillery Locating Radar. This program is in response to the approved Mission Need Statement (MNS) for the Advanced Firefinder System which describes an urgent need for a longer range and less manpower intensive radar. An Operational Requirements Document (ORD) for Firefinder Block II was approved 25 September 1996. Firefinder Block II will double the current artillery range performance out to 60km and improve the target throughput up to 50 targets per minute in a highly mobile, transportable and survivable system. The Firefinder Block II will provide a new capability of missile and rocket detection at ranges of 150-300 km and will be capable of alerting Theater Missile Defense Systems. The system will be capable of C-130 roll-on/roll-off transportability for rapid deployment. Crew size will be reduced from 12 to 8. This program will leverage off the AN/TPQ-36(V)8 Electronics Upgrade program by using the same man-machine interface. The Firefinder Block II will be integrated into the Army Tactical Command and Control System (ATCCS) by interfacing with the Advanced Field Artillery Tactical Data System (AFATDS).</p> <p>FY 1998 Accomplishments:</p> <ul style="list-style-type: none"> • 185 Finalized and issued solicitation for Engineering & Manufacturing Development (EMD) contract award • 221 Completed development of simulator to support Source Selection Evaluation • 608 Conducted Source Selection Evaluation Board (SSEB) • 1138 Awarded EMD contract and initiate program planning • 100 Initiated development of target, clutter and electronic countermeasures (ECM) simulation models • 148 Developed Partnering Agreement and established Integrated Product Teams (IPTs) <p>Total 2400</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 417 Complete programming planning and conduct Integrated Baseline Review (IBR) • 852 Begin development and order parts for the Radar Environmental Simulator (RES) • 1635 Award major subcontract for development of solid state Power Amplifier Module • 1270 Award subcontract for development of Joint Technical Architecture-Army (JTA-A) compliant operational software • 9789 Complete development of radar hardware/software design • 625 Complete development of target, clutter and ECM simulation models • 5459 Procure long lead items and begin build of three (3) systems • 536 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 20583</p>										
Project DL85			Page 1 of 5 Pages				Exhibit R-2 (PE 0604823A)			

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604823A Firefinder	PROJECT DL85
---	--	-------------------------------

- FY 2000 Planned Program:**
- 428 Continue development of the RES
 - 924 Continue subcontract for development of JTA-A compliant operational softwar
 - 4668 Complete software coding and unit test for three (3) systems
 - 2250 Complete development and manufacture solid state Power Amplifier Modules for three (3) systems
 - 16087 Complete build of three (3) systems
 - 2572 Prepare training course materials, Interactive Electronic Technical Manuals (IETMs), and other logistics data
 - 5424 Begin integration and contractor engineering test of three (3) systems
- Total 32353
- FY 2001 Planned Program:**
- 200 Complete development of the RES
 - 10682 Complete integration and contractor engineering test of systems
 - 434 Complete subcontract for development of JTA-A compliant operational softwar
 - 3792 Begin Development Test & Evaluation (DT&E)
 - 690 Begin Limited User Test (LUT)
 - 14028 Initiate development of Operator and Maintenance Trainers
 - 5347 Initiate Survivability Enhancement Program
 - 1850 Develop Electronic Support Modeling and Simulation Facilit
 - 566 Initiate extension of IETMs from operator level to higher level maintenance support
- Total 37589

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	2484	19822	33448	39000
Appropriated Value	2564	20722		
Adjustments to Appropriated Value				
a. Congressional General Reductions	-80	-139		
b. SBIR / STT	-63			
c. Omnibus or Other Above Threshold Reduction	-21			
d. Below Threshold Reprogramming				
e. Rescissions				
Adjustments to Budget Years Since FY 1999 PB			-1095	-1411
Current Budget Submit (FY 2000/2001 PB)	2400	20583	32353	37589

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 1999
---	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604823A Firefinder	PROJECT DL85
--	---	------------------------

C. <u>Other Program Funding Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To Compl</u>	<u>Total Cost</u>
Other Procurement, Army OPA2										
SSN: BA5100 Firefinder P3I					94840	105088	171130	108094	372200	851352

D. Acquisition Strategy: A competitive EMD contract was awarded on 19 May 1998 to Raytheon Systems Company, El Segundo, CA. The EMD contract is a 43-month effort which began 1 July 1998 and will provide three (3) production representative systems. Production will begin to begin in 2QFY02.

E. <u>Schedule Profile</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2004</u>	<u>FY 2005</u>
Obtained Milestone II Approval	1Q								
Finalized and issued solicitation for EMD	1Q								
Completed development of simulato	2Q								
Conducted SSEB	3Q								
Awarded EMD Contract	3Q								
Conduct Integrated Baseline Review (IBR)		1Q							
Complete development of hardware/software design		4Q							
Complete build of three (3) systems			4Q						
Initiate Survivability Enhance Program				1Q					
Award contract for Operator/Maintenance Trainers				2Q					
Complete integration and contractor engineering test				2Q					
Begin DT&E				3Q					
Begin LUT				4Q					
Complete DT&E					1Q				
Complete LUT					1Q				
Complete Initial Operational Test & Evaluation (IOT&E)					2Q				
Milestone III Decision					2Q				
Production Contract Awar					2Q				

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE **February 1999**

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604823A Firefinder

PROJECT
DL85

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Primary Hardware Dev	C/CPIF	Raytheon Sys, CA/MS	900	15600	1Q-2Q	29200	1Q-2Q	10300	1Q-2Q	1300	57300	57300
b. Ancillary Hardware Dev	TBD	Various	321	1452	1Q-2Q	350	1Q	6781	1Q-2Q	669	9573	
c. Trainers Dev	SS/TBD	Raytheon Sys, CA/MS						12700	2Q	1211	13911	
d. Sys Engr (Contractor)	C/FP	Various	1353	653	1Q	100	1Q	1025	1Q	200	3331	
e. Sys Engr (Government)	MIPR	Various	352	450	1Q	186	1Q	188	1Q	180	1356	
f. Software Engineering	C/FP	Telos, OK	137	260	1Q	150	1Q	150	1Q	234	931	
g. SSEB-Contractor	C/FP	Various	272								272	
h. SSEB-Government	MIPR	Various	336								336	
Subtotal Product Development:			3671	18415		29986		31144		3794	87010	

Remark - Primary Hardware Development: As part of the Firefinder Block II EMD contract, Raytheon Systems committed to an investment of \$16.4M. The total contract value is \$73.7M, comprised of the Government portion of \$57.3M and the contractor investment of \$16.4M. To implement the investment, Raytheon will bill for only 50% of all allowable costs for the first \$32.8M of the program.

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Development Support - Contractor	C/FP	Various		24		408	1Q	560	1Q		992	
b. Development Support - Government	MIPR	Various	282	145	1Q	88	1Q	93	1Q	81	689	
c. Integrated Logistics Spt (ILS) - Contractor	TBD	Various		0	2Q	0	2Q	458	2Q	108	566	
d. ILS Support-Government	MIPR	CECOM, Ft Mon, NJ	36	55	1Q	108	1Q	108	1Q	61	368	
e. Configuration Mgmt Spt-Government	MIPR	CECOM, Ft Mon, NJ		148	1Q	231	1Q	300	1Q	110	789	
Subtotal Support Costs:			318	372		835		1519		360	3404	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE **February 1999**

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604823A Firefinder

PROJECT
DL85

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Development Test & Evaluation (DT&E)	MIPR	Yuma, AZ						2418	3Q	215	2633	
b. LUT/IOT&E	MIPR	Various						525	4Q	560	1085	
c. Test Support	MIPR	Various	219	198	1Q	153	1Q	595	1Q	265	1430	
Subtotal Test and Evaluation			219	198		153		3538		1040	5148	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Management - Contractor	C/FP	Various	303	236	1Q-2Q	494	1Q-2Q	494	1Q-2Q	71	1598	
b. Program Management - Government	MIPR	CECOM, Ft Mon, NJ	45	106	1Q	210	1Q	219	1Q	50	630	
c. Product Manger Office - Internal Support		CECOM, Ft Mon, NJ	274	720	1Q-4Q	675	1Q-4Q	675	1Q-4Q	300	2644	
d. SBIR/STTR				536							536	
Subtotal Management Services:			622	1598		1379		1388		421	5408	

Project Total Cost:			4830	20583		32353		37589		5615	100970	
---------------------	--	--	------	-------	--	-------	--	-------	--	------	--------	--

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604824A Commercial Operating & Support Savings Initiative (COSSI)				PROJECT D112		
COST (In Thousands)	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D112 Commercial Operating & Support Savings Initiative	0	21457	0	0	0	0	0	0	0	21457
<p>A. <u>Mission Description and Budget Item Justification:</u> The mission of Commercial Operations and Support Savings Initiative (COSSI) is to develop and test a method for reducing Army Operations and Support (O&S) costs by routinely inserting commercial items into fielded military systems. The insertion of commercial items is expected to reduce O&S costs by reducing the costs of parts and maintenance, reducing the need for specialized equipment, increasing reliability, and increasing the efficiency of subsystems. An appropriate fielded military system is one that has some current operational capability and is not near the end of its useful life. Selected proposals will develop, manufacture, and deliver prototype "kits" to the military for installation into a fielded Army system. Each kit will consist of a commercial item, o a combination of items, and readied for insertion or use in a fielded military system. COSSI seeks proposals submitted by firms or teams that include at least one for-profit firm. Proposals must also include the written support of a "Military Customer" who has the authority to modify the system and purchase the kits. COSSI is a two-stage process. In Stage 1 of each selected project, COSSI and the chosen proposer will share the costs of developing and testing the kit, with the proposer contributing at least 25% of the estimated costs of Stage 1. If Stage 1 is successful, Stage II will be initiated. In Stage II, the military customer may then purchase reasonable production quantities of the kit. Payment for the kits and their insertion into the fielded system will be the responsibility of the military customer. COSSI was funded in DOD PE 0603805E through FY1998, transferred to an Army PE 0604824 in FY1999, and is restructured to PE 0708045A in FY2000.</p> <p>FY 1998 Accomplishments: Program funded in DOD PE 0603805E.</p> <p>FY 1999 Planned Program: FY 1999 funding will be for new Stage I COSSI projects.</p> <ul style="list-style-type: none"> • 20889 Per Congress guidance, the Army requested White Papers from Industry in January 1998 and a solicitation is expected for fall 1998 for FY99 ne Stage I projects. Some examples of possible Stage I efforts are Universal Military Cleaning Systems, Switchable Eyesafe Lase Rangefinder/Designator (SELRD) for the AH-64 A/D Apache, Rechargeable 9-volt Battery System, TACMS 2000 Guidance Kit, Military Qualification of CT7-8, and Power Supply for ASN-128 and ASN-128 B/C. It is expected that the Army will receive White Papers in the following areas: product re-engineering, information technology, training, automation, and rapid prototyping of spares. • 568 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 21457</p> <p>FY 2000 Planned Program: Program funded in PE 0708045A.</p> <p>FY2001 Planned Program: Program funded in PE 0708045A.</p>										
Project D112	Page 1 of 2 Pages					Exhibit R-2 (PE 0604824A)				

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)		DATE September 1998
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604824A Commercial Operating & Support Savings Initiative (COSSI)	PROJECT D112

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 1999 PB)	0	33600	31800	31850
Appropriated Value		21600		
Adjustments to Appropriated Value				
a. Congressional General Reductions		-143		
b. SBIR / STT				
c. Omnibus or Other Above Threshold Reductions				
d. Below Threshold Reprogramming				
e. Rescissions				
Adjustments to Budget Years Since <u>FY 1999 PB</u>			-31800	-31850
Current Budget Submit (FY 2000 / 2001 PB)	0	21457	0	0

Change Summary Explanation: Funding - FY 1999 – Appropriated value reflects Congressional reduction (-12000).
 FY2000/2001 – Program restructured from PE 0604824A to PE 0708045A.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE February 1999																																																																				
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604854A Artillery Systems - Engineering Development																																																																								
<i>COST (In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost																																																																		
Total Program Element (PE) Cost	0	1093	65806	327883	440370	278524	300819	44099	10000	1468584																																																																		
D509 Advanced Towed Cannon Artillery System	0	993	4833	11485	29023	17122	0	0	0	63456																																																																		
D503 Crusader - Engineering Development*	0	0	60577	315253	411147	258072	295415	23988	0	1364442																																																																		
D2KT Crusader Operational Test	0	100	396	1145	200	3330	5404	20111	10000	40686																																																																		
*In FY 2002/2003 the database amounts of 411143 and 258066 erroneously reflect the spread of the pay increase to this line. What appears above is the correct amounts for FY 2002/2003.																																																																												
<p>A. Mission Description and Budget Item Justification : This program element supports the Engineering and Manufacturing Development (EMD) efforts for the Joint Light Weight (LW) 155mm Howitzer-Engineering Development program, the Crusader-Engineering Development program and the Crusader Operational Test program. The Crusader system is the Army's next generation artillery system consisting of a self-propelled howitzer (SPH) and a resupply vehicle (RSV). Crusader will have significantly increased capabilities in the areas of lethality, mobility, survivability, resupply, command and control, and sustainability by capitalizing on emerging, advanced technologies. The SPH will also achieve increased lethality levels through independent operations. The RSV will have significantly increased capabilities in the areas of resupply, mobility and survivability and will provide a single source of ammunition, fuel, propellant and other supplies for the SPH. The LW 155mm Towed Howitzer, a joint program with the Marine Corps, will provide the replacement for the M198, 155mm Howitzer and achieve significant strategic, tactical mobility and automated digital fire control improvements.</p>																																																																												
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td colspan="2">B. Program Change Summary</td> <td style="text-align: center;"><u>FY 1998</u></td> <td style="text-align: center;"><u>FY 1999</u></td> <td style="text-align: center;"><u>FY 2000</u></td> <td style="text-align: center;"><u>FY 2001</u></td> </tr> <tr> <td colspan="2">Previous President's Budget (FY 1999 PB)</td> <td style="text-align: center;">0</td> <td style="text-align: center;">100</td> <td style="text-align: center;">55410</td> <td style="text-align: center;">338811</td> </tr> <tr> <td colspan="2">Appropriated Value</td> <td></td> <td style="text-align: center;">1100</td> <td></td> <td></td> </tr> <tr> <td colspan="2">Adjustments to Appropriated Value</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="2">a. Congressional General Reductions</td> <td></td> <td style="text-align: center;">-7</td> <td></td> <td></td> </tr> <tr> <td colspan="2">b. SBIR / STT</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="2">c. Omnibus or Other Above Threshold Reductions</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="2">d. Below Threshold Reprogramming</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="2">e. Rescissions</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="2">Adjustments to Budget Years Since FY 1999 PB</td> <td></td> <td></td> <td style="text-align: center;">+10396</td> <td style="text-align: center;">-10928</td> </tr> <tr> <td colspan="2">Current Budget Submit (FY 2000 / 2001 PB)</td> <td style="text-align: center;">0</td> <td style="text-align: center;">1093</td> <td style="text-align: center;">65806</td> <td style="text-align: center;">327883</td> </tr> </table>											B. Program Change Summary		<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	Previous President's Budget (FY 1999 PB)		0	100	55410	338811	Appropriated Value			1100			Adjustments to Appropriated Value						a. Congressional General Reductions			-7			b. SBIR / STT						c. Omnibus or Other Above Threshold Reductions						d. Below Threshold Reprogramming						e. Rescissions						Adjustments to Budget Years Since FY 1999 PB				+10396	-10928	Current Budget Submit (FY 2000 / 2001 PB)		0	1093	65806	327883
B. Program Change Summary		<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>																																																																							
Previous President's Budget (FY 1999 PB)		0	100	55410	338811																																																																							
Appropriated Value			1100																																																																									
Adjustments to Appropriated Value																																																																												
a. Congressional General Reductions			-7																																																																									
b. SBIR / STT																																																																												
c. Omnibus or Other Above Threshold Reductions																																																																												
d. Below Threshold Reprogramming																																																																												
e. Rescissions																																																																												
Adjustments to Budget Years Since FY 1999 PB				+10396	-10928																																																																							
Current Budget Submit (FY 2000 / 2001 PB)		0	1093	65806	327883																																																																							

DATE
February 1999

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
**0604854A Artillery Systems - Engineering
Development**

Change Summary Explanation: FY 2000 program increase to support the purchase of additional EMD long-lead items.

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604854A Artillery Systems - Engineering Development	PROJECT D509
---	---	-------------------------------

COST <i>(In Thousands)</i>	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost t Complete	Total Cost
D509 Advanced Towed Cannon Artillery System	0	993	4833	11485	29023	17122	0	0	0	63456

A. Mission Description and Budget Item Justification: The Light Weight (LW) 155mm Towed Howitzer, a joint program with the Marine Corps, will provide the replacement for the M198, 155mm Howitzer and achieve significant strategic and tactical mobility improvements. Project D509 supports the EMD for the Army Product Improvement Suite to the Basic LW155 Towed Howitzer, a USMC /Army Joint Program. A portion of the funds in FY02 and FY03 will be used to support the Digitization of all current and future developmental US 155MM Towed Artillery Systems.

FY 1998 Accomplishments: Project not funded in FY1998.

FY 1999 Planned Program:

- 967 Draft Performance Spec, RFT and Acquisition Strategy, Conduct Milestone I/II.
 - 26 Small Business Innovative Research/Small Business Technology Transfer Program
- Total 993

FY 2000 Planned Program:

- 459 Provide Government matrix engineering program support and participation in Integrated Product Teams (IPRs) for the prime development contract.
 - 220 Provide Government Program Management Support
 - 4154 Continue Prime EMD contract to develop the digitization suite
- Total 4833

FY 2001 Planned Program:

- 605 Provide Government matrix engineering program support and participation in Integrated Product Teams (IPRs) for the prime development contract.
 - 230 Provide Government Program Management Support
 - 8900 Continue Prime EMD contract to develop the digitization suite
 - 1750 Begin Developmental Testing at Component level.
- Total 11485

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
--	------------------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604854A Artillery Systems - Engineering Development	PROJECT D509
---	---	-------------------------------

B. Other Program Funding Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To Compl	Total Cost
RDTE, N LW155 Towed How 060363M	36180	25409	23588	12300						97477
PMC LW155 Towed How Prod, Bli 218500				10002	93900	118724	148514	90933		462073
Procurement, WCTV, Army, G01700					688	16518	18333	52456	320200	408195

C. Acquisition Strategy: The overall program acquisition strategy parallels the USMC EMD and Production phases for their LW155 howitzers. Using the baseline model design, identified P3I modules will evolve through a generational process which leverages technology demonstration successes (2nd Generation) funded through the Army's Rapid Force Projection Initiative (RFPI). The follow-on Army funded R&D effort will then refine the advanced modules to be incorporated onto Army and USMC howitzers. The principal strategy for the Army funded P3I Suite is to negotiate a contract with a single contractor to build, test, and evaluate P3I technologies prior to Army LW155 production. The Marine Corps will monitor, assess and opt to retrofit those P3Is deemed appropriate for the current expeditionary operational environment.

D. Schedule Profile	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
MS I/II					1 st Qtr					
Contract Awar					2 nd Qtr					
Developmental Testing Begins						1 st Qtr				
Developmental Testing Ends							4 th Qtr			
Multi-service Operational Testing Begins								1 st Qtr		
Multi-service Operational Testing Ends								2 nd Qtr		
Milestone III								4 th Qtr		
Production									1 st Qtr	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604854A Artillery Systems - Engineering Development					PROJECT D509		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. P3I/Digitization	CPIF	TBD	0	0		4154	2 nd Qtr	8900		43247	56301	
b. Govt Eng Spt	MIPR	Picatinny Arsenal		967		459	1 st Qtr	605	1 st Qtr	268	2299	
Subtotal Product Development:				967		4613		9505		43515	58600	
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PM Management	Allotment	JPM LW155, NJ				220	1 st Qtr	230	1 st Qtr	480	930	
Subtotal Support Costs:						220		230		480	930	
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Developmental Tests	MIPR	Yuma Proving Ground						1750	1 st Qtr	1900	3650	
b. Multi-service Oper Test	MIPR	Yuma Proving Ground								250	250	
Subtotal Test and Evaluation								1750		2150	3900	
IV. Management Services:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
SBIR/STTR				26							26	
Subtotal Mgt Services:				26							26	
Project Total Cost:				993		4833		11485		46145	63456	

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604854A Artillery Systems - Engineering Development					PROJECT D503	
<i>COST (In Thousands)</i>	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost t Complete	Total Cost
D503 Crusader - Engineering Development*	0	0	60577	315253	411147	258072	295415	23988	0	1364442
<p>*In FY 2002/2003 the database amounts of 411143 and 258066 erroneously reflect the spread of the pay increase to this line. What appears above is the correct amounts for FY 2002/2003.</p> <p>A. <u>Mission Description and Budget Item Justification:</u> This project element supports the Engineering and Manufacturing Development (EMD) efforts for the Crusader-Engineering Development program. The Crusader system is the Army's next generation artillery system consisting of a self-propelled howitzer (SPH) and a resupply vehicle (RSV). Crusader will have significantly increased capabilities in the areas of lethality, mobility, survivability, resupply, command and control, and sustainability by capitalizing on emerging, advanced technologies. The SPH will also achieve increased lethality levels through independent operations. The RSV will have significantly increased capabilities in the areas of resupply, mobility and survivability and will provide a single source of ammunition, fuel, propellant and other supplies for the SPH.</p> <p>FY 1998 Accomplishments: Project not funded in FY1998.</p> <p>FY 1999 Planned Program: Project not funded in FY1999.</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 60577 Product Development: Initiate developmental efforts under Crusader EMD contract. Initiate EMD long lead item buys. <p>Total 60577</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 300225 Product Development: Initiate system fabrication of EMD prototypes. Initiate production facility and design activity. Continue long lead item buys. Continue developmental efforts under Crusader EMD contract. • 9659 Support and Management: Continue project management activities, to include; engineering analysis, product development team support and engineering management activities. Finalize EMD continuation decision. • 5369 Test and Evaluation: Continue System Reliability Growth Testing. Complete Ballistic Hull and Turret Survivability Testing. Purchase of ammunition and propellant to support program testing. <p>Total 315253</p>										
B. <u>Other Program Funding Summary</u>										
	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To Comp</u>	<u>Total Cost</u>
Project D503										

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 1999
---	-----------------------

BUDGET ACTIVIT 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604854A Artillery Systems - Engineering Development	PROJECT D503
---	---	-------------------------------

B. <u>Other Program Funding Summary</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To Comp</u>	<u>Total Cost</u>
RDTE, BA4, Army, PE 0603854, D505	298012	311257	282937	120457	4	6			0	1241461
Procurement, WCTV, Army, G83500					41607	95543	382601	628003	9437130	10584884
Procurement, WCTV, Army, G83600					32967	80240	314331	499726	7633500	8560764
RDTE, BA5, Army, PE 0604854, D2KT		100	396	1145	200	3330	5404	20111	10000	40686
RDTE, BA4, Army, PE 0603640, DB91	7983								0	115572
Procurement, Ammo, Army, ER 8021			42938	55602	73182	93248	54184	78394	Cont	Cont
RDTE, BA5, Army, PE 0604645, D175		4470	2899	2214					0	43281
Procurement, Ammo, Army, ER 8017		1510	14061	45917	53257	53921	54032	56430	Cont	Cont

C. Acquisition Strategy: On 29 December 1994, a Sole Source-CPIF contract award was made selecting United Defense, Limited Partnership (UDLP) as the prime contractor for the PDRR phase of Crusader. General Dynamics Land Systems (Warren, MI) and General Dynamics Armament Systems (Burlington, VT) are the major sub-contractors in the areas of mobility and resupply respectively. On 19 March 1996, the Army changed the armament system for Crusader from liquid propellant (LP) to solid propellant (SP) as a consequence of cost and persistent technical problems. In March 1996, the contract with UDLP was restructured to reflect the change from LP to SP. In June 1996, UDLP selected the government's Advanced Solid Propellant Armament system [XM297 cannon and Modular Artillery Charge System (MACS) as the basis for SP Crusader]. On 6 November 1996, TACOM-ARDEC signed a Memorandum of Agreement (MOA) with UDLP establishing a unique teaming arrangement for the Government to provide engineering services to UDLP for the development of the SP armament system. On 29 January 1997, UDLP signed a contract modification worth \$804.9M that definitized the remainder of PDRR and details the scope of work through MSII. Delay in the decision to switch from LP to SP and alignment of program activities to match fiscal profile required an adjustment in the schedule portion of the Acquisition Program Baseline (APB). On 23 October 1997, the Office of the Secretary of Defense approved Crusader's revised APB. The revised APB leverages acquisition reform initiatives and features a single continuous objective development path. The seamless transition from PDRR to EMD eliminates inefficiencies in ramping down/up during the milestone decision.

D. <u>Schedule Profile</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
PEO/Cmdt In-Process-Review (IPR)	4 th Qtr							
Integration Checkout		4 th Qtr						
Safety Certification Activit		4 th Qtr						
Select Production Facilit			4 th Qtr					
Milestone II				2 nd Qtr				
EMD Continuation Review				4 th Qtr				
LRIP IPR						4 th Qtr		
FUE								4 th Qtr

DATE
February 1999

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
**0604854A Artillery Systems - Engineering
Development**

* Milestone completed

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)

DATE
February 1999

BUDGET ACTIVIT
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604854A Artillery Systems - Engineering Development

PROJECT
D503

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Systems Contract	SS/CPIF	UDLP, Minneapolis, MN	0	0	-	60577	Oct-99	296275	Oct-00	886588	1243440	
b. System Development Engineering	PO	ARDEC, Picatinn Arsenal, NJ	0	0	-	0	-	2000	Oct-00	1500	3500	
c. System Development Engineering	PO	TACOM, Warren, M	0	0	-	0	-	448	Oct-00	2662	3110	
d. System Development Engineering	PO	ARL, Adelphi, MD	0	0	-	0	-	400	Oct-00	2400	2800	
e. System Development Engineering	PO	Various OGAs	0	0	-	0	-	788	Oct-00	358	1146	
f. System Development Engineering	Various	Various contracts	0	0	-	0	-	314	Oct-00	0	314	
Subtotal Product Development:						60577		300225		893508	1254310	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Development Support	PO	PM Crusader, Picatinny Arsenal, NJ	0	0	-	0	-	3397	Oct-00	21716	25113	
b. Development Support	PO	ARDEC, Picatinn Arsenal, NJ	0	0	-	0	-	3654	Oct-00	24009	27663	
c. Integrated Logistics Support	PO	RIA, Rock Island, IL	0	0	-	0	-	80	Oct-00	493	573	
d. Development Support	PO	TACOM, Warren, M	0	0	-	0	-	788	Oct-00	5663	6451	
e. Development Support	PO	ARL, Adelphi, MD	0	0	-	0	-	404	Oct-00	2625	3029	
f. Development Support	PO	Various OGAs	0	0	-	0	-	368	Oct-00	2316	2684	
g. Development Support	Various	Various contracts	0	0	-	0	-	81	Oct-00	810	891	
Subtotal Support Costs:								8772		57632	66404	

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604854A Artillery Systems - Engineering Development					PROJECT D503		
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Development Test and Evaluation	PO	TECOM (YPG, AZ; CSTA, APG, MD)	0	0	-	0	-	2149	Oct-00	22611	24760	
b. Ammunition and propellant	PO	Various	0	0	-	0	-	3220	Oct-00	10422	13642	
Subtotal Test and Evaluation								5369		33033	38402	
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Project Management Support	SS/FP	Various	0	0	-	0	-	440	Oct-00	1554	1994	
b. Systems Engineering Support	SS/FP	Various	0	0	-	0	-	257	Oct-00	1685	1942	
c. Software Development Support	SS/FP	Various	0	0	-	0	-	190	Oct-00	1200	1390	
Subtotal Management Services:								887		4439	5326	
Project Total Cost:						60577		315253		988612	1364442	

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604854A Artillery Systems - Engineering Development				PROJECT D2KT		
<i>COST (In Thousands)</i>	FY1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost t Complete	Total Cost
D2KT Crusader Operational Test	0	100	396	1145	200	3330	5404	20111	10000	40686
<p>A. <u>Mission Description and Justification:</u> This project support Crusader Operational Testing which will be conducted to answer issues relating to system effectiveness and suitability. Testing will be performed using simulations and physical testing to project Crusader capabilities from section level (individual howitzer or resuppl vehicles) to platoon, battery and battalion levels to determine Crusader mission effectiveness and force structure suitability.</p> <p>FY 1998 Accomplishments: Project not funded in FY 1998.</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 98 Planning and preparation for Crusader Early User Experiment. • 2 Small Business Innovative Research/Small Business Technology Transfer Program <p>Total 100</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 396 Conduct Crusader Early User Experiment. <p>Total 396</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 1145 Conduct Crusader Early User Test. <p>Total 1145</p>										
B. <u>Other Program Funding Summary</u>										
	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To Comp</u>	<u>Total Cost</u>
RDTE, BA4, Army, PE 0603854, D505	298012	311257	282937	120457					0	1241461
RDTE, BA5, Army, PE 0604854, D503			60577	315253	411143	258066	295415	23988	0	1364442
Procurement, WCTV, Army, G83500					41607	95543	382601	628003	9437130	10584884
Procurement, WCTV, Army, G83600					32967	80240	314331	499726	7633500	8560764
<p>Project D2KT Page 9 of 11 Pages Exhibit R-2A (PE 0604854A)</p>										

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)							DATE February 1999	
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604854A Artillery Systems - Engineering Development			PROJECT D2KT	
C. <u>Acquisition Strategy:</u> Not applicable								
D. Schedule Profile								
	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Planning and preparation for Crusader Early Use Experiment		4 th Qtr						
Conduct Crusader Early User Experiment			4 th Qtr					
Conduct Crusader Early User Testing				4 th Qtr				
Conduct Crusader RAM Testing					4 th Qtr			
Conduct Crusader Limited User Testing						4 th Qtr		
Conduct Crusader LFT&E							4 th Qtr	
Conduct Crusader IOT&E								4 th Qtr

UNCLASSIFIED

ARMY RDT&E COST ANALYSIS (R-3)										DATE February 1999		
BUDGET ACTIVIT 5 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604854A Artillery Systems - Engineering Development					PROJECT D2KT		
I. Product Development: Not applicable												
II. Support Costs: Not applicable												
III. Test and Evaluation												
Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract	
a. Operational Testing	PO	TECOM (YPG, AZ; CSTA, APG, MD); Ft. Sill, OK; OPTEC, V	0	98	Oct-98	396	Oct-99	1145	Oct-00	39045	40684	
Subtotal Test and Evaluation			98		396		1145		39045	40684		
IV. Management Services												
Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract	
a. SBIR/STTR			2							2		
Subtotal Management Services:			2							2		
Project Total Cost:			100		396		1145		39045	40686		

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

APPENDIX A

**RDT&E CONGRESSIONAL DESCRIPTIVE SUMMARIES
MAILING LIST**

PRINT

ADDRESS

3	DOD Compt, INV, Pentagon, Room 4B916, Washington, DC 20301-1100
1	DOD Compt, P&S, Pentagon, Room 3A862, Washington, DC 20301-1100
1	DOD Compt, MILCON, Pentagon, Room 3D841, Washington, DC 20301-1100
1	DOD Compt, Management Improvement, Pentagon, Room 1A658, Washington, DC 20301-1100
1	USD (Policy), Pentagon, Roo 4B926, Washington, DC 20301-2100
1	USD(A&T), Mailroom, Pentagon, Room 3D139, Washington, DC 20310
1	OSD, ATTN: DOT&E, Pentagon, Roo 3E318, Washington, DC 20301
1	ASD(C3I), Pentagon, Roo 3E209, Washington, DC 20301
1	ASD(IS), Pentagon, Roo 4B938, Washington, DC 20301
1	ASD(LA), Pentagon, Roo 3D918, Washington, DC 20301
1	USD(P&R), Room 3C980, Washington, DC 20301-4000
1	ASD(RA), Pentagon, Roo 2D528, Washington, DC 20301
1	ASD (PA&E), Pentagon, Roo 2D278, Washington, DC 20301
1	ASD(PA), Pentagon, Room 2D278, Washington, DC 20301
1	JCS(J-8), Pentagon, Room 1E963, Washington, DC 20301
*	HQDA, (SAUS-OR), Pentagon, Roo 2E600, Washington, DC 20310
*	HQDA (SAILE), Pentagon, Roo 2E614, Washington, DC 20310
1	HQDA (SAFM-BUI), Pentagon, Room 3C652, Washington, DC 20310-0109
2	HQDA (SAFM-BUI-A), Pentagon, Room 2E673, Washington, DC 20310-0109
8	HQDA (SAFM-BUI-A), Suite 11500, 2511 South Jefferson Davis Highway, Arlington, 22202-3925

***Distributed electronically – accessed via Office, Assistant Secretary of the Army (Financial Management and Comptroller)
Worldwide Web Site (<http://www.ASAFM.army.mil>)**

UNCLASSIFIED

UNCLASSIFIED

APPENDIX A

**RDT&E CONGRESSIONAL DESCRIPTIVE SUMMARIES
MAILING LIST**

PRINT

ADDRESS

* HQDA (SARD-DEP), Pentagon, Roo 2E673, Washington, DC 20310
1 HQDA (SARD-TS), Suite 9000, 2511 South Jefferson Davis Highway, Arlington, VA 22202
* HQDA (SAFM-CAZ-A), 5611 Columbia Pike, Falls Church, VA 22041-5050
* HQDA (SFIS-API), Hoffman 1, Room 1012, Alexandria, VA 22331-0302
* HQDA (DACS-DPD), Pentagon, Room 3C738, Washington, DC 20310
* HQDA (DACS-DP), Pentagon, Roo 1C460, Washington, DC 20310
* HQDA (SAIS-PPG), Pentagon, Roo 1D679, Washington, DC 20310
* HQDA (DACS-DP), Pentagon, Roo 3C747, Washington, DC 20310
* HQDA (DACS-DMC), Pentagon, Roo 3D631, Washington, DC 20310
* HQDA (DACS-TE), Pentagon, Roo 3C571, Washington, DC 20310
* HQDA (DAIM-ZR), Pentagon, Roo 2B683, Washington, DC 20310
* HQDA (DAMI-ZXM), Pentagon, Roo 2D474, Washington, DC 20310
* HQDA (DAMI-PBB), Pentagon, Roo 2E477, Washington, DC 20310
* HQDA (DAPE-ZXO), Pentagon, Roo 2D735, Washington, DC 20310
* HQDA (DALO-RMP), Pentagon, Roo 1E565, Washington, DC 20310
* HQDA (DALO-Z), Pentagon, Roo 3E560, Washington, DC 20310
* HQDA (DAMO-ZR), Pentagon, Roo 3D526, Washington, DC 20310
* HQDA (DAMO-FDR), Pentagon, Roo 2D570, Washington, DC 20310
* HQDA (DAAR-CO), Pentagon, Roo 1D432, Washington, DC 20310
* HQDA (NGB-ZA), Pentagon, Roo 2E394, Washington, DC 20310

***Distributed electronically – accessed via Office, Assistant Secretary of the Army (Financial Management and Comptroller)
Worldwide Web Site (<http://www.ASAFM.army.mil>)**

UNCLASSIFIED

UNCLASSIFIED

APPENDIX A

**RDT&E CONGRESSIONAL DESCRIPTIVE SUMMARIES
MAILING LIST**

PRINT

ADDRESS

- * HQDA (DASG-ZA), 5111 Leesburg Pike , Room 638, Falls Church, VA 22041-3258
- * HQDA (DASG-RMZ), 5111 Leesburg Pike, Room 554, Falls Church, VA 22041-3258
- * HQDA (DASG-RDZ), Pentagon, Room 3E368, Washington, DC 20310-2300
- * HQDA (DAIM-ED), Pentagon, Room 1E682, Washington, DC 20310
- * HQDA (DAIM) Pentagon, Roo 1E665, Washington, DC 20310
- * HQDA (SAPA), Pentagon, Roo 2E641, Washington, DC 20310
- * HQDA (CSSD-RM-W), P.O. Box 15280, Arlington, VA 22215-0150
- * HQDA (SAAG-PRP), Room 1309, 3101 Park Center Drive, Alexandria, VA 22302-1596
- * HQDA (DAMH-ZB), Pulaski Bldg, Room 4229, 20 Massachusetts Avenue, Washington, DC 20314
- * US Army Cost And Economic Analysis Center, ATTN: SFFM-CA-PI, 5611 Columbia Pike, Falls Church, VA 22041-5050
- * BMDO/RM, Pentagon, Room 1E1037, Washington, DC 20310
- * HQDA, (JDRS-PBD), Pentagon, Room 1E610, Washington, DC 20310
- * HQ, PACOM, R&D Requirements (J531), BOX 15, USPACOM Staff, Camp H.M. Smith, HI, 96861
- * Commander, US Army Intelligence and Security Command, ATTN: IARM-PB, Fort Belvoir, VA 22060-5370
- * Commander, US Army Nuclear and Chemical Agency, ATTN: MONA-OPS, Bldg 2073, Backlick Road, Springfield, VA 22150
- * Commander, US Army Medical R&D Command, ATTN: SGRD-RMC, Fort Detrick, Frederick, MD 21701-5012
- * Commander, US Army Medical R&D Command, ATTN: SGRD-PR, Fort Detrick, Frederick, MD 21701-5012
- * Commander, US Army Training and Doctrine Command, ATTN: ATCD-E, Fort Monroe, VA 23651-5000
- * CMDT, Army Field Artillery School, ATTN: ATSF-CSI-P, ATSF-CBL, Ft. Sill, OK 73503-5600
- * CDR, Army Aviation Ctr & Ft. Rucker, ATTN: ATZS-CDI, Ft. Rucker, AL 36362-5000

***Distributed electronically – accessed via Office, Assistant Secretary of the Army (Financial Management and Comptroller)
Worldwide Web Site (<http://www.ASAFM.army.mil>)**

UNCLASSIFIED

UNCLASSIFIED

APPENDIX A

**RDT&E CONGRESSIONAL DESCRIPTIVE SUMMARIES
MAILING LIST**

PRINT

ADDRESS

- * CDR, Army Intelligence Ctr and FT. Huachuca, ATTN: ATZS-CDI-I, ATZS-CDT, Ft. Huachuca, AZ 85613-7000
- * CMDT, U.S. Army Signal Ctr, ATTN: ATZH-CDM, ATZH-BLT, Ft. Gordan, GA 30905-5000
- * Force Design Directorate, ATTN: ATCD-F, 415 Sherman Ave., Ft. Leavenworth, KS 66027-5000
- * CDR, USACHCS, ATTN: ATSC-CD, Ft. Monmouth, NJ 07703-5612
- * CDR, U.S. Army Medical Center & School, ATTN: HSMC-FCM, Ft. Sam Houston, TX 78234
- * CMDT, U.S. Army Air Defense Artillery School, ATTN: ATSA-CDM, Ft. Bliss, TX 79916
- * CMDT, U.S. Army Infantry School, ATTN: ATSH-IWC, ATSH-MLS, Ft. Benning, GA 31905-5400
- * CMDT, U.S. Army Armor School, ATTN: ATZK-CD-ML, ATZK-MW, Ft. Knox, KY 40121-5200
- * CMDT, U.S. Army Engineer School, ATTN: ATSE-CD-M, Ft. Leonard Wood, MO 65473-5000
- * CMDT, U.S. Army Chemical School, ATTN: ATZN-CM-CS, Ft. McClellan, AL 36205-5020
- * CMDT, U.S. Army Military Police School, ATTN: ATZN-MP-CM, Ft. McClellan, AL 36205-5020
- * Commander, US Army Research Institute for the Behavioral and Social Sciences, ATTN: PERI-MB, 5001 Eisenhower Avenue, Alexandria, VA 22333-5600
- * Commander, US Army Operational Test and Evaluation Command, ATTN: CSTE-RMZ, Park Center IV, 4501 Ford Avenue, Alexandria, VA 22302-1458
- * Commander, US Army Materiel Command, ATTN: AMCRD-AB, 5001 Eisenhower Avenue, Alexandria, VA 22333-0001
- * Commander, US Army Materiel Command, ATTN: AMCAE-P, 5001 Eisenhower Avenue, Alexandria, VA 22333
- * Commander, US Army Materiel Command, ATTN: AMCAQ-B-TILO, 5001 Eisenhower Avenue, Alexandria, VA 22333
- * Commander, US Army Communications-Electronics Command, ATTN: AMSEL-CG, Ft. Monmouth, NJ 07703-5000
- * Commander, US Army Communication-Electronics Command, ATTN: AMSEL-ACSB-BT, Ft. Monmouth, NJ 07703-5008
- * Commander, US Army Missile Command, ATTN: AMSMI-AS (Library), Bldg 5250, RMC-147, Redstone Arsenal, AL 35898-5000

***Distributed electronically – accessed via Office, Assistant Secretary of the Army (Financial Management and Comptroller)
Worldwide Web Site (<http://www.ASAFM.army.mil>)**

UNCLASSIFIED

UNCLASSIFIED

APPENDIX A

**RDT&E CONGRESSIONAL DESCRIPTIVE SUMMARIES
MAILING LIST**

PRINT

ADDRESS

- * Commander, US Army Test and Evaluation Command, ATTN: AMSTE-RM, Aberdeen Proving Ground, MD 21005-5055
- * Commander, US Army CECOM, Technical Industrial Liaison Office, ATTN: AMSEL-AC-SP-BL (Sandra Vermont), Ft. Monmouth, NJ 07703-5008
- * Commander, US Army Tank-Automotive Command, ATTN: AMSTA-CG, Warren, MI 48397-5000
- * Commander, US Army Laboratory Command, ATTN: AMSLC-CG, Adelphi, MD 20783-1145
- * Commander, US Army Armament Research, Development and Engineering Center, ATTN: SMCAR-CO, Dover, NJ 07806-5000
- * Commander, Environmental Center, ATTN: SFIM-AEC-RM, Edgewood Area, Aberdeen Proving Ground, MD 21010-5055
- * Commander, US Army Materiel Systems Analysis Activity, ATTN: AMXSU-PB, Aberdeen Proving Ground, MD 21005-5071
- * Commander, US Army Chemical, Biological and Defense Command, ATTN: AMSCB-RR, Aberdeen Proving Ground, MD 21010-5423
- * Commander, US Army Chemical, Biological and Defense Command, ATTN: SCBRD-ASA, Aberdeen Proving Ground, MD 21010-5423
- * Commander, US Army Chemical, Biological and Defense Command, ATTN: AMSCB-EO, Aberdeen Proving Ground, MD 21010-5423
- * Commander, US Army Aviation and Troop Command, ATTN: AMSAT-D-C, 4300 Goodfellow Blvd, St. Louis, MO 63120-1798
- * Program Manager, Instrumentation, Targets and Threat Simulators, ATTN: AMCPM-ITTS, 12350 Research Parkway, Orlando, FL 32826
- * Program Manager, Tank Main Armament Systems, ATTN: AMCPM-TMD PMD, Picatinny Arsenal NJ 07806-5000
- * Program Executive Officer, Missile Defense, ATTN: SF E-MD-DP-P, Building 5250, Redstone Arsenal, Alabama 35898-5750
- * Program Executive Officer, Field Artillery Systems, ATTN: SFAE-FAS, Building 171, Picatinny Arsenal, Picatinny, NJ 07806-5000
- * Program Executive Officer, Armored Systems Modernization, ATTN: SFAE-HFM-P, Warren, MI 48397-5000
- * Program Executive Officer, Aviation, ATTN: SFAE-AV, 4300 Goodfellow Boulevard, St. Louis, MO 63120-1798
- * Program Executive Officer, Tactical Wheeled Vehicles, ATTN: SFAE-TWV, Warren, MI 48397-5000
- * Program Executive Officer, Command and Control Systems, ATTN: SFAE-CC-PMO, Ft. Monmouth, NJ 07703-5000

***Distributed electronically – accessed via Office, Assistant Secretary of the Army (Financial Management and Comptroller)
Worldwide Web Site (<http://www.ASAFM.army.mil>)**

UNCLASSIFIED

UNCLASSIFIED

APPENDIX A

**RDT&E CONGRESSIONAL DESCRIPTIVE SUMMARIES
MAILING LIST**

PRINT

ADDRESS

- * Program Executive Officer, Communication Systems, ATTN: SFAE-COM, Ft. Monmouth, NJ 07703-5000
- * Program Executive Officer, Tactical Missiles, ATTN: SFAE-MSL, Redstone Arsenal, AL 35898-8000
- * Program Executive Officer, Intelligence and Electronic Warfare, ATTN: SFAE-IEW-BM, Ft. Monmouth, NJ 07703
- * Commander, US Army Space and Strategic Defense Command, ATTN: CSSD-RM-BP, P.O. Box 1500, Huntsville, AL 35807-3801
- * Commander, US Army Corps of Engineers, ATTN: CERD-L, Washington, DC 20314
- * Commander, US Army Force Integration Support Agency, ATTN: MOFI-TRED-O, Building 2588, Fort Belvoir, VA 22060-5587
- * Commander, 902d MI Group, ATTN: IAGPA-OPOP, Ft. Meade, MD 20755-5910
- * Commander, HQ US Army Missile & Space Intelligence Center, ATTN: AIAMS-YCC, Redstone Arsenal, AL 35898-5000
- * Commander, US Army Countermeasures/Counter Counter Measures Center, ATTN: AMX-CM-RF, 2800 Powder Mill Rd, Adelphi, MD 20783
- * Commander, US Army Belvoir Research, Development & Engineering Center, ATTN: STRBE-Z, Ft. Belvoir, VA 22060-5606
- * Commander, US Army Research Office, ATTN: SLCRO-AO (Security Officer), P.O. Box 12211, Research Triangle Park, NC 27709
- * Inspector General, ATTN: A&IM/FMD, 400 Army-Navy Drive Arlington, VA 22202-2884
- * HQ USAF/FMBMC, Pentagon, Room 5C129, Washington, DC 20330-5012
- * HQ US Marine Corps, Deputy Chief of Staff for RD&S, Code (MC-RDP-30), Washington, DC 20380
- * Commandant, US Army War College, ATTN: Library, Carlisle Barracks, PA 17013-5050
- * Defense Advanced Research Projects Agency, ATTN: Comptroller, 3701 North Fairfax Drive, Arlington, VA 22203-1714
- * Institute for Defense Analyses, 1801 North Beauregard Street, Alexandria, VA 22311
- * Headquarters, National Aeronautical and Space Administration, Code ID, ATTN: Deputy DOD Affairs, Washington, DC 20546
- * Pentagon Library, ATTN: Army Studies, Room 1A518, Washington, DC 20310
- * Director, Defense Finance and Accounting Service-Indianapolis Center, ATTN: DFAS-I-PA, Indianapolis, IN 46249

***Distributed electronically – accessed via Office, Assistant Secretary of the Army (Financial Management and Comptroller)
Worldwide Web Site (<http://www.ASAFM.army.mil>)**

UNCLASSIFIED

UNCLASSIFIED

APPENDIX A

**RDT&E CONGRESSIONAL DESCRIPTIVE SUMMARIES
MAILING LIST**

PRINT

ADDRESS

- * Defense Technical Information Center (DTIC), ATTN: Ms. Mawby, Ft. Belvoir Headquarters Complex (FBHC), Suite 0944
8725 John J. Kingman Road, , Ft. Belvoir, VA 22060-6220
- * Defense Technical Information Center (DTIC), ATTN: OCC, Ft. Belvoir Headquarters Complex (FBHC), Suite 0928,
8725 John J. Kingman Road, Ft. Belvoir, VA 22060-6220
- * National Technical Information Service (NTIS), ATTN: Military Publications, 5285 Port Royal Road, Springfield, VA 22161

HAND DELIVERY

- 1 DOD(C)(CFO), Room 1B728
- 11 SAFM-BUL, Room 3A652
- 9 SAFM-BUC-F, Room 3B663
- * SAFM-BUC-I, Room 3A674
- * SAFM-RB, Room 3A720
- 27 SALL, Room 2C638

77 Total Print

***Distributed electronically – accessed via Office, Assistant Secretary of the Army (Financial Management and Comptroller)
Worldwide Web Site (<http://www.ASAFM.army.mil>)**

UNCLASSIFIED

UNCLASSIFIED

APPENDIX A

**RDT&E CONGRESSIONAL DESCRIPTIVE SUMMARIES
MAILING LIST**

PRINT

ADDRESS

Any changes to this distribution list should be provided to HQDA (SAFM-BUI-A), Washington, DC 20310

***Distributed electronically – accessed via Office, Assistant Secretary of the Army (Financial Management and Comptroller)
Worldwide Web Site (<http://www.ASAFM.army.mil>)**

UNCLASSIFIED