

**UNCLASSIFIED**

Supporting Data FY 2011 Budget Estimate  
Submitted to OSD – February 2010

**DESCRIPTIVE SUMMARIES OF THE**



**RESEARCH, DEVELOPMENT, TEST AND EVALUATION  
Army Appropriation, Budget Activity 3**

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

*Persuasive in Peace, Invincible in War*

**VOLUME III**

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**DESCRIPTIVE SUMMARIES FOR PROGRAM ELEMENTS  
OF THE  
RESEARCH, DEVELOPMENT, TEST AND  
EVALUATION, ARMY  
FY 2011  
BUDGET ESTIMATE SUBMISSION  
FEBRUARY 2010**

**VOLUME III  
Budget Activity 3**

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

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**FY 2011 RDT&E, ARMY  
PROGRAM ELEMENT DESCRIPTIVE SUMMARIES**

**INTRODUCTION AND EXPLANATION OF CONTENTS**

**1. General.** The purpose of this document is to provide summary information concerning the Research, Development, Test and Evaluation, Army 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), R-3 (Army RDT&E Cost Analysis), R-4 (Schedule Profile), R-4A (Schedule Profile Detail) and R-5 (Termination Liability Funding for MDAPs) Exhibits, which provide narrative information on all RDT&E program elements and projects for FY 2009 through FY 2011.

**2. Relationship of the FY 2011 Budget Submitted to Congress to the FY 2010 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-2A Exhibits.

<b><u>OLD</u></b> <b><u>PE/PROJECT</u></b>	<b><u>NEW PROJECT TITLE</u></b>	<b><u>NEW</u></b> <b><u>PE/PROJECT</u></b>
0603308A/978	Long Endurance Multi-Intelligence Vehicle	0305205A/LE4
0604270A/L16	TROJAN – RH12-MIP	0303032A/RH5
0604802A/S23	SLAMRAAM	0605455A/S35
0604805A/589	Joint Battle Command – Platform (JBC-P)	0604805A/593
0604869A/M06	PAC-3/MSE Missile	0605456A/PA3
0303140/5PM	Biometrics Enabled Intelligence – MIP	0307665A/BI7
0303140/5PM	Intelligence Support to Cyber (ISC) – MIP	0203347A/CY7
0305204A/114	RQ-7 Shadow UAV	0305233A/RQ7
0305204A/D10	RQ-11 Raven (MIP)	0305232A/RA7
0307207A/024	Aerial Common Sensor – SDD	0605626A/AC5

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**B. Developmental Transitions.** Explanations for these changes can be found in the narrative sections of the Program Element R-2/R-3 Exhibits.

<b>OLD</b>	<b>NEW PROJECT TITLE</b>	<b>NEW</b>
<b><u>PE/PROJECT</u></b>		<b><u>PE/PROJECT</u></b>
0305204A/D09	ER/MP Unmanned Aircraft System (MIP)	0604276A/TU1
0307207A/024	Aerial Common Sensor (ACS)	0605626A/AC5

**C. Establishment of New FY 2011 Program Elements/Projects.** There are no major system new starts.

<b><u>TITLE</u></b>	<b><u>PE/PROJECT</u></b>
Aerial Common Sensor – SDD	0605626A/AC5
Armed Scout Helicopter	0604220A/53Z
Army Integrated Air and Missile Defense (AIAMD)	0605457A/S40
Army Integrated Military Human Resources System (A-IRMS)	0605018A/HR5
Biometrics Enabled Intelligence – MIP	0307665A/BI7
ER/MP Unmanned Aircraft System (MIP)	0604276A/TU1
Intelligence Support to Cyber (ISC) – MIP	0203347A/CY7
Joint Battle Command - Platform (JBC-P)	0604805A/593
Long Endurance Multi-Intelligence Vehicle	0305205A/LE4
MQ-1 Sky Warrior – Army UAV (MIP)	0305219A/MQ1
PAC-3/MSE Missile	0605456A/PA3
RQ-7 Shadow UAV	0305233A/RQ7
RQ-11 Raven (MIP)	0305232A/RA7
SLAMRAAM	0605455A/S35
Suicide Prevention/Mitigation	0602787A/VJ4
TROJAN – RH12-MIP	0303032A/RH5
Advanced Geospatial Intelligence (AGI)	0304348A/NI7

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**D. FY 2011 programs for which funding existed in the FY 2010 President's Budget Submit (May 2009), but which are no longer funded in the FY 2011 President's Budget Submit.**

<b><u>PE/PROJECT</u></b>	<b><u>TITLE</u></b>	<b><u>BRIEF EXPLANATION</u></b>
0603004A/L94	Electric Gun System Demo	Program restructured
0604270A/L12	Signals Warfare Development (MIP)	Program moved to a separate MIP PE
0604270A/L16	TROJAN Development (MIP)	Program moved to a separate MIP PE
0604666A/FC7	FCS – Spin Out Technology/Capability Integration	Terminated
0604802A/S23	Surface Launched Advanced Medium Range Air-to-Air Missile (SLAMRAAM)	Program moved to a separate missile defense PE
0604818A/C15	Mounted Battle Command On-The-Move (MBCOTM)	Terminated
0604818A/C39	Tactical Operations Center (TOCs)	Terminated
0303142A/562	Multi-band Integrated Satellite Terminal (MIST)	Terminated
0307207A/024	Aerial Common Sensor (MIP)	Program transitioned to BA 5 for proper execution

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

0203801A/DF8/DF9	0603005A/C66	0604328A
0203808A	0603006A/DF7	
0301359A	0603009A	
0304348A	0603020A	
0602122A	0603322A	

**4. Performance Metrics.** Performance metrics used in the preparation of this justification book may be found in the FY 2010 Army Performance Budget Justification Book, dated March 2009.

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 Department of the Army  
 FY 2011 RDT&E Program  
 President's Budget FY 2011

Exhibit R-1

01-Feb-2010

Summary

<u>Summary Recap of Budget Activities</u>	Thousands of Dollars				
	FY2009	FY2010	FY2011	FY2011 OCO	FY2011 Total
Basic research	422,136	431,777	406,873	0	406,873
Applied Research	1,224,889	1,337,114	841,364	0	841,364
Advanced technology development	1,438,797	1,373,609	696,592	0	696,592
Advanced Component Development and Prototypes	1,010,485	932,004	746,248	57,900	804,148
System Development and Demonstration	5,025,850	4,454,743	5,021,546	13,500	5,035,046
Management support	1,470,157	1,196,744	1,142,383	0	1,142,383
Operational system development	1,482,756	1,823,380	1,473,939	79,506	1,553,445
<b>Total</b> RDT&E, Army	<b>12,075,070</b>	<b>11,549,371</b>	<b>10,328,945</b>	<b>150,906</b>	<b>10,479,851</b>

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 Department of the Army  
 FY 2011 RDT&E Program  
 President's Budget FY 2011

Exhibit R-1

Appropriation: 2040 A RDT&E, Army

01-Feb-2010

Program				Thousands of Dollars				
Line	Element	Act	Item	FY2009	FY2010	FY2011	FY2011 OCO	FY2011 Total
Basic research								
1	0601101A	01	IN-HOUSE LABORATORY INDEPENDENT RESEARCH	19,357	19,568	21,780		21,780
2	0601102A	01	DEFENSE RESEARCH SCIENCES	193,968	197,471	195,845		195,845
3	0601103A	01	UNIVERSITY RESEARCH INITIATIVES	87,485	99,400	91,161		91,161
4	0601104A	01	UNIVERSITY AND INDUSTRY RESEARCH CENTERS	121,326	115,338	98,087		98,087
Tota Basic research				422,136	431,777	406,873	0	406,873
Applied Research								
5	0602105A	02	MATERIALS TECHNOLOGY	80,686	99,447	29,882		29,882
6	0602120A	02	SENSORS AND ELECTRONIC SURVIVABILITY	76,213	70,272	48,929		48,929
7	0602122A	02	TRACTOR HIP	17,659	14,250	14,624		14,624
8	0602211A	02	AVIATION TECHNOLOGY	46,232	49,273	43,476		43,476
9	0602270A	02	ELECTRONIC WARFARE TECHNOLOGY	20,058	22,303	17,330		17,330
10	0602303A	02	MISSILE TECHNOLOGY	57,502	70,924	49,525		49,525
11	0602307A	02	ADVANCED WEAPONS TECHNOLOGY	22,638	21,964	18,190		18,190
12	0602308A	02	ADVANCED CONCEPTS AND SIMULATION	18,205	27,330	20,582		20,582
13	0602601A	02	COMBAT VEHICLE AND AUTOMOTIVE TECHNOLOGY	84,436	78,923	64,740		64,740
14	0602618A	02	BALLISTICS TECHNOLOGY	84,827	78,034	60,342		60,342
15	0602622A	02	CHEMICAL, SMOKE AND EQUIPMENT DEFEATING TECHNOLOGY	8,873	13,622	5,324		5,324
16	0602623A	02	JOINT SERVICE SMALL ARMS PROGRAM	9,165	7,634	7,893		7,893
17	0602624A	02	WEAPONS AND MUNITIONS TECHNOLOGY	106,253	144,864	42,645		42,645
18	0602705A	02	ELECTRONICS AND ELECTRONIC DEVICES	99,118	134,532	60,859		60,859
19	0602709A	02	NIGHT VISION TECHNOLOGY	45,329	50,877	40,228		40,228
20	0602712A	02	COUNTERMINE SYSTEMS	27,827	23,621	19,118		19,118
21	0602716A	02	HUMAN FACTORS ENGINEERING TECHNOLOGY	42,208	30,446	21,042		21,042
22	0602720A	02	ENVIRONMENTAL QUALITY TECHNOLOGY	15,786	25,469	18,364		18,364
23	0602782A	02	COMMAND, CONTROL, COMMUNICATIONS TECHNOLOGY	45,350	30,036	25,573		25,573
24	0602783A	02	COMPUTER AND SOFTWARE TECHNOLOGY	7,786	5,609	6,768		6,768
25	0602784A	02	MILITARY ENGINEERING TECHNOLOGY	58,671	60,779	79,189		79,189
26	0602785A	02	MANPOWER/PERSONNEL/TRAINING TECHNOLOGY	16,096	16,614	22,198		22,198
27	0602786A	02	WARFIGHTER TECHNOLOGY	35,866	38,347	27,746		27,746

UNCLASSIFIED  
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 President's Budget FY 2011

Exhibit R-1

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Program				Thousands of Dollars				
Line No	Element Number	Act	Item	FY2009	FY2010	FY2011	FY2011 OCO	FY2011 Total
Basic research								
28	0602787A	02	MEDICAL TECHNOLOGY	198,105	221,944	96,797		96,797
Tota Applied Research				1,224,889	1,337,114	841,364	0	841,364
Advanced technology development								
29	0603001A	03	WARFIGHTER ADVANCED TECHNOLOGY	72,271	54,290	37,364		37,364
30	0603002A	03	MEDICAL ADVANCED TECHNOLOGY	329,258	339,752	71,510		71,510
31	0603003A	03	AVIATION ADVANCED TECHNOLOGY	102,207	112,388	57,454		57,454
32	0603004A	03	WEAPONS AND MUNITIONS ADVANCED TECHNOLOGY	112,544	89,861	64,438		64,438
33	0603005A	03	COMBAT VEHICLE AND AUTOMOTIVE ADVANCED TECHNOLOGY	270,195	240,190	89,499		89,499
34	0603006A	03	COMMAND, CONTROL, COMMUNICATIONS ADVANCED TECHNOLOGY	11,307	12,352	8,102		8,102
35	0603007A	03	MANPOWER, PERSONNEL AND TRAINING ADVANCED TECHNOLOGY	6,725	7,371	7,921		7,921
36	0603008A	03	ELECTRONIC WARFARE ADVANCED TECHNOLOGY	61,192	57,199	50,359		50,359
37	0603009A	03	TRACTOR HIKE	14,157	11,270	8,015		8,015
38	0603015A	03	NEXT GENERATION TRAINING & SIMULATION SYSTEMS	24,769	25,362	15,334		15,334
39	0603020A	03	TRACTOR ROSE	11,216	14,493	12,309		12,309
40	0603103A	03	EXPLOSIVES DEMILITARIZATION TECHNOLOGY	17,213	12,495			
41	0603105A	03	MILITARY HIV RESEARCH	14,867	29,502	6,688		6,688
42	0603125A	03	COMBATING TERRORISM - TECHNOLOGY DEVELOPMENT	12,656	11,927	10,550		10,550
43	0603270A	03	ELECTRONIC WARFARE TECHNOLOGY	32,544	21,877	18,350		18,350
44	0603313A	03	MISSILE AND ROCKET ADVANCED TECHNOLOGY	74,967	86,559	84,553		84,553
45	0603322A	03	TRACTOR CAGE	12,037	12,090	9,986		9,986
46	0603606A	03	LANDMINE WARFARE AND BARRIER ADVANCED TECHNOLOGY	36,883	34,855	26,953		26,953
47	0603607A	03	JOINT SERVICE SMALL ARMS PROGRAM	8,568	8,949	9,151		9,151
48	0603710A	03	NIGHT VISION ADVANCED TECHNOLOGY	69,778	72,250	39,912		39,912
49	0603728A	03	ENVIRONMENTAL QUALITY TECHNOLOGY DEMONSTRATIONS	16,782	16,121	15,878		15,878
50	0603734A	03	MILITARY ENGINEERING ADVANCED TECHNOLOGY	34,935	45,394	27,393		27,393
51	0603772A	03	ADVANCED TACTICAL COMPUTER SCIENCE AND SENSOR TECHNOLOGY	91,726	57,062	24,873		24,873
Tota Advanced technology development				1,438,797	1,373,609	696,592	0	696,592



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 FY 2011 RDT&E Program  
 President's Budget FY 2011

Exhibit R-1

Appropriation: 2040 A RDT&E, Army 01-Feb-2010

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Line No	Element Number	Act	Item	FY2009	FY2010	FY2011	FY2011 OCO	FY2011 Total
Basic research								
Advanced Component Development and Prototypes								
52	0603024A	04	UNIQUE ITEM IDENTIFICATION (UID)	628	1,990			
53	0603305A	04	ARMY MISSILE DEFENSE SYSTEMS INTEGRATION	90,552	71,788	11,455		11,455
54	0603308A	04	ARMY SPACE SYSTEMS INTEGRATION	53,416	118,610	27,551		27,551
55	0603327A	04	AIR AND MISSILE DEFENSE SYSTEMS ENGINEERING	115,567	166,061			
56	0603619A	04	LANDMINE WARFARE AND BARRIER - ADV DEV	13,789	17,445	15,596		15,596
57	0603627A	04	SMOKE, OBSCURANT AND TARGET DEFEATING SYS-ADV DEV	3,721	4,894	2,425		2,425
58	0603639A	04	TANK AND MEDIUM CALIBER AMMUNITION	39,590	33,757	42,183		42,183
59	0603653A	04	ADVANCED TANK ARMAMENT SYSTEM (ATAS)	76,072	89,828	136,302		136,302
60	0603747A	04	SOLDIER SUPPORT AND SURVIVABILITY	18,058	33,178	18,556	57,900	76,456
61	0603766A	04	TACTICAL ELECTRONIC SURVEILLANCE SYSTEM - ADV DEV	12,235	12,164	17,962		17,962
62	0603774A	04	NIGHT VISION SYSTEMS ADVANCED DEVELOPMENT	2,508				
63	0603779A	04	ENVIRONMENTAL QUALITY TECHNOLOGY - DEM/VAL	20,443	18,374	4,695		4,695
64	0603782A	04	WARFIGHTER INFORMATION NETWORK-TACTICAL - DEM/VAL	392,138	169,783	190,903		190,903
65	0603790A	04	NATO RESEARCH AND DEVELOPMENT	4,883	5,022	5,060		5,060
66	0603801A	04	AVIATION - ADV DEV	26,507	8,492	8,355		8,355
67	0603804A	04	LOGISTICS AND ENGINEER EQUIPMENT - ADV DEV	42,939	59,662	80,490		80,490
68	0603805A	04	COMBAT SERVICE SUPPORT CONTROL SYSTEM EVALUATION AN	17,267	9,817	14,290		14,290
69	0603807A	04	MEDICAL SYSTEMS - ADV DEV	29,572	35,886	28,132		28,132
70	0603827A	04	SOLDIER SYSTEMS - ADVANCED DEVELOPMENT	41,599	73,785	48,323		48,323
71	0603850A	04	INTEGRATED BROADCAST SERVICE	9,001	1,468	970		970
72	0305205A	04	ENDURANCE UAVS			93,000		93,000
Tota Advanced Component Development and Prototypes				1,010,485	932,004	746,248	57,900	804,148
System Development and Demonstration								
73	0604201A	05	AIRCRAFT AVIONICS	60,781	89,508	89,210		89,210
74	0604220A	05	ARMED, DEPLOYABLE HELOS	63,017	66,169	72,550		72,550
75	0604270A	05	ELECTRONIC WARFARE DEVELOPMENT	38,256	281,570	172,269	5,400	177,669
76	0604280A	05	JOINT TACTICAL RADIO			784		784
77	0604321A	05	ALL SOURCE ANALYSIS SYSTEM	13,211	13,039	22,574	8,100	30,674

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 FY 2011 RDT&E Program  
 President's Budget FY 2011

Exhibit R-1

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01-Feb-2010

Program				Thousands of Dollars				
Line	Element	Act	Item	FY2009	FY2010	FY2011	FY2011 OCO	FY2011 Total
Basic research								
78	0604328A	05	TRACTOR CAGE	16,300	16,201	23,194		23,194
79	0604601A	05	INFANTRY SUPPORT WEAPONS	57,677	83,178	80,337		80,337
80	0604604A	05	MEDIUM TACTICAL VEHICLES	2,169	5,653	3,710		3,710
81	0604609A	05	SMOKE, OBSCURANT AND TARGET DEFEATING SYS - ENG DEV	5,428	973	5,335		5,335
82	0604611A	05	JAVELIN			9,999		9,999
83	0604622A	05	FAMILY OF HEAVY TACTICAL VEHICLES	4,550	9,826	3,519		3,519
84	0604633A	05	AIR TRAFFIC CONTROL	16,092	7,538	9,892		9,892
85	0604642A	05	LIGHT TACTICAL WHEELED VEHICLES			1,990		1,990
86	0604646A	05	NON-LINE OF SIGHT LAUNCH SYSTEM	253,684	91,223	81,247		81,247
87	0604647A	05	NON-LINE OF SIGHT CANNON	87,038	47,964			
88	0604660A	05	FCS MANNED GRD VEHICLES & COMMON GRD VEHICLE	760,744	275,116			
89	0604661A	05	FCS SYSTEMS OF SYSTEMS ENGR & PROGRAM MGMT	1,022,165	912,399	568,711		568,711
90	0604662A	05	FCS RECONNAISSANCE (UAV) PLATFORMS	55,923	75,107	50,304		50,304
91	0604663A	05	FCS UNMANNED GROUND VEHICLES	104,571	124,962	249,948		249,948
92	0604664A	05	FCS UNATTENDED GROUND SENSORS	20,135	26,778	7,515		7,515
93	0604665A	05	FCS SUSTAINMENT & TRAINING R&D	819,721	655,745	610,389		610,389
94	0604666A	05	SPIN OUT TECHNOLOGY/CAPABILITY INSERTION	122,788				
95	0604710A	05	NIGHT VISION SYSTEMS - ENG DEV	96,678	57,111	52,549		52,549
96	0604713A	05	COMBAT FEEDING, CLOTHING, AND EQUIPMENT	2,422	2,081	2,118		2,118
97	0604715A	05	NON-SYSTEM TRAINING DEVICES - ENG DEV	36,826	30,052	27,756		27,756
98	0604741A	05	AIR DEFENSE COMMAND, CONTROL AND INTELLIGENCE - ENG D	21,737	28,785	34,209		34,209
99	0604742A	05	CONSTRUCTIVE SIMULATION SYSTEMS DEVELOPMENT	25,095	33,039	30,291		30,291
100	0604746A	05	AUTOMATIC TEST EQUIPMENT DEVELOPMENT	17,020	15,240	14,041		14,041
101	0604760A	05	DISTRIBUTIVE INTERACTIVE SIMULATIONS (DIS) - ENG DEV	18,999	15,645	15,547		15,547
102	0604778A	05	POSITIONING SYSTEMS DEVELOPMENT (SPACE)		9,396			
103	0604780A	05	COMBINED ARMS TACTICAL TRAINER (CATT) CORE	32,541	26,107	27,670		27,670
104	0604783A	05	JOINT NETWORK MANAGEMENT SYSTEM	659				
105	0604802A	05	WEAPONS AND MUNITIONS - ENG DEV	101,823	87,022	24,345		24,345
106	0604804A	05	LOGISTICS AND ENGINEER EQUIPMENT - ENG DEV	29,884	37,023	41,039		41,039
107	0604805A	05	COMMAND, CONTROL, COMMUNICATIONS SYSTEMS - ENG DEV	9,489	58,688	90,736		90,736
108	0604807A	05	MEDICAL MATERIEL/MEDICAL BIOLOGICAL DEFENSE EQUIPMENT	41,081	41,794	34,474		34,474
109	0604808A	05	LANDMINE WARFARE/BARRIER - ENG DEV	113,590	72,380	95,577		95,577
110	0604814A	05	ARTILLERY MUNITIONS - EMD	70,008	42,230	26,371		26,371
111	0604817A	05	COMBAT IDENTIFICATION	8,967	10,018	29,884		29,884

UNCLASSIFIED  
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 President's Budget FY 2011

Exhibit R-1

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Program				Thousands of Dollars				
Line	Element	Act	Item	FY2009	FY2010	FY2011	FY2011 OCO	FY2011 Total
Basic research								
112	0604818A	05	ARMY TACTICAL COMMAND & CONTROL HARDWARE & SOFTWARE	63,552	79,448	60,970		60,970
113	0604822A	05	GENERAL FUND ENTERPRISE BUSINESS SYSTEM (GFEBS)	50,308	23,777	13,576		13,576
114	0604823A	05	FIREFINDER	64,834	20,227	24,736		24,736
115	0604827A	05	SOLDIER SYSTEMS - WARRIOR DEM/VAL	20,086	19,683	20,886		20,886
116	0604854A	05	ARTILLERY SYSTEMS - EMD	32,261	115,811	53,624		53,624
117	0604869A	05	PATRIOT/MEADS COMBINED AGGREGATE PROGRAM (CAP)	454,665	566,215	467,139		467,139
118	0604870A	05	NUCLEAR ARMS CONTROL MONITORING SENSOR NETWORK	6,064	7,103	7,276		7,276
119	0605013A	05	INFORMATION TECHNOLOGY DEVELOPMENT	68,194	66,561	23,957		23,957
120	0605018A	05	ARMY INTEGRATED MILITARY HUMAN RESOURCES SYSTEM (A-IMHRS)			100,500		100,500
121	0605450A	05	JOINT AIR-TO-GROUND MISSILE (JAGM)	114,817	126,775	130,340		130,340
122	0605455A	05	SLAMRAAM			23,700		23,700
123	0605456A	05	PAC-3/MSE MISSILE			62,500		62,500
124	0605457A	05	ARMY INTEGRATED AIR AND MISSILE DEFENSE (AIAMD)			251,124		251,124
125	0605625A	05	MANNED GROUND VEHICLE		79,583	934,366		934,366
126	0605626A	05	AERIAL COMMON SENSOR			211,500		211,500
127	0303032A	05	TROJAN - RH12			3,697		3,697
128	0304270A	05	ELECTRONIC WARFARE DEVELOPMENT			21,571		21,571
Tota System Development and Demonstration				5,025,850	4,454,743	5,021,546	13,500	5,035,046
Management support								
129	0604256A	06	THREAT SIMULATOR DEVELOPMENT	22,015	25,091	26,158		26,158
130	0604258A	06	TARGET SYSTEMS DEVELOPMENT	13,124	13,544	8,614		8,614
131	0604759A	06	MAJOR T&E INVESTMENT	62,699	51,576	42,102		42,102
132	0605103A	06	RAND ARROYO CENTER	19,817	17,812	20,492		20,492
133	0605301A	06	ARMY KWAJALEIN ATOLL	169,367	162,662	163,788		163,788
134	0605326A	06	CONCEPTS EXPERIMENTATION PROGRAM	33,178	26,407	17,704		17,704
135	0605502A	06	SMALL BUSINESS INNOVATIVE RESEARCH	297,531				
136	0605601A	06	ARMY TEST RANGES AND FACILITIES	356,720	352,845	393,937		393,937
137	0605602A	06	ARMY TECHNICAL TEST INSTRUMENTATION AND TARGETS	84,905	84,389	59,040		59,040
138	0605604A	06	SURVIVABILITY/LETHALITY ANALYSIS	40,037	44,782	41,812		41,812
139	0605605A	06	DOD HIGH ENERGY LASER TEST FACILITY	6,772	7,352	4,710		4,710

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 Department of the Army  
 FY 2011 RDT&E Program  
 President's Budget FY 2011

Exhibit R-1

Appropriation: 2040 A RDT&E, Army 01-Feb-2010

Program				Thousands of Dollars				
Line	Element	Act	Item	FY2009	FY2010	FY2011	FY2011 OCO	FY2011 Total
Basic research								
140	0605606A	06	AIRCRAFT CERTIFICATION	5,001	3,746	5,055		5,055
141	0605702A	06	METEOROLOGICAL SUPPORT TO RDT&E ACTIVITIES	8,120	8,347	7,185		7,185
142	0605706A	06	MATERIEL SYSTEMS ANALYSIS	17,472	19,864	18,078		18,078
143	0605709A	06	EXPLOITATION OF FOREIGN ITEMS	3,908	5,403	5,460		5,460
144	0605712A	06	SUPPORT OF OPERATIONAL TESTING	76,231	77,471	68,191		68,191
145	0605716A	06	ARMY EVALUATION CENTER	61,461	67,555	61,450		61,450
146	0605718A	06	ARMY MODELING & SIM X-CMD COLLABORATION & INTEG	5,159	5,328	3,926		3,926
147	0605801A	06	PROGRAMWIDE ACTIVITIES	72,659	77,419	73,685		73,685
148	0605803A	06	TECHNICAL INFORMATION ACTIVITIES	44,051	51,351	48,309		48,309
149	0605805A	06	MUNITIONS STANDARDIZATION, EFFECTIVENESS AND SAFETY	44,326	72,851	53,338		53,338
150	0605857A	06	ENVIRONMENTAL QUALITY TECHNOLOGY MGMT SUPPORT	9,966	5,165	3,195		3,195
151	0605898A	06	MANAGEMENT HQ - R&D	15,586	15,784	16,154		16,154
152	0909999A	06	FINANCING FOR CANCELLED ACCOUNT ADJUSTMENTS	52				
Tota Management support				1,470,157	1,196,744	1,142,383	0	1,142,383
Operational system development								
153	0603778A	07	MLRS PRODUCT IMPROVEMENT PROGRAM	53,954	27,549	51,619		51,619
154	0102419A	07	AEROSTAT JOINT PROJECT OFFICE	344,850	328,356	372,493		372,493
155	0203347A	07	INTELLIGENCE SUPPORT TO CYBER (ISC) MIP			2,360		2,360
156	0203726A	07	ADV FIELD ARTILLERY TACTICAL DATA SYSTEM	16,200	29,174	24,622		24,622
157	0203735A	07	COMBAT VEHICLE IMPROVEMENT PROGRAMS	139,100	196,393	204,481		204,481
158	0203740A	07	MANEUVER CONTROL SYSTEM	36,072	21,283	25,540		25,540
159	0203744A	07	AIRCRAFT MODIFICATIONS/PRODUCT IMPROVEMENT PROGRAM	298,640	231,792	134,999		134,999
160	0203752A	07	AIRCRAFT ENGINE COMPONENT IMPROVEMENT PROGRAM	326	788	710		710
161	0203758A	07	DIGITIZATION	7,835	10,636	6,329		6,329
162	0203759A	07	FORCE XXI BATTLE COMMAND, BRIGADE AND BELOW (FBCB2)	22,688		3,935		3,935
163	0203801A	07	MISSILE/AIR DEFENSE PRODUCT IMPROVEMENT PROGRAM	34,189	39,068	24,280		24,280
164	0203802A	07	OTHER MISSILE PRODUCT IMPROVEMENT PROGRAMS	5,167	3,979			
165	0203808A	07	TRACTOR CARD	15,818	19,930	14,870		14,870
166	0208010A	07	JOINT TACTICAL COMMUNICATIONS PROGRAM (TRI-TAC)	892				
167	0208053A	07	JOINT TACTICAL GROUND SYSTEM	1,949	36,005	12,403		12,403

UNCLASSIFIED  
 Department of the Army  
 FY 2011 RDT&E Program  
 President's Budget FY 2011

Exhibit R-1

Appropriation: 2040 A RDT&E, Army 01-Feb-2010

Program				Thousands of Dollars				
Line No	Element Number	Act	Item	FY2009	FY2010	FY2011	FY2011 OCO	FY2011 Total
Basic research								
168	0208058A	07	JOINT HIGH SPEED VESSEL (JHSV)	2,986	3,066	3,153		3,153
169	0301359A	07	SPECIAL ARMY PROGRAM					
170	0303028A	07	SECURITY AND INTELLIGENCE ACTIVITIES	3,189	9,777			
171	0303140A	07	INFORMATION SYSTEMS SECURITY PROGRAM	39,679	60,866	54,784	63,306	118,090
172	0303141A	07	GLOBAL COMBAT SUPPORT SYSTEM	107,693	143,979	125,569		125,569
173	0303142A	07	SATCOM GROUND ENVIRONMENT (SPACE)	46,799	39,889	33,694		33,694
174	0303150A	07	WWMCCS/GLOBAL COMMAND AND CONTROL SYSTEM	12,599	11,972	13,024		13,024
175	0303158A	07	JOINT COMMAND AND CONTROL PROGRAM (JC2)	13,228				
176	0305204A	07	TACTICAL UNMANNED AERIAL VEHICLES	100,454	202,116	54,300		54,300
177	0305208A	07	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	88,483	188,465	103,002	16,200	119,202
178	0305219A	07	MQ-1 SKY WARRIOR A UAV			123,156		123,156
179	0305232A	07	RQ-11 UAV			1,599		1,599
180	0305233A	07	RQ-7 UAV			7,805		7,805
181	0307207A	07	AERIAL COMMON SENSOR (ACS)		115,430			
182	0307665A	07	BIOMETRICS ENABLED INTELLIGENCE			14,114		14,114
183	0702239A	07	AVIONICS COMPONENT IMPROVEMENT PROGRAM	991				
184	0708045A	07	END ITEM INDUSTRIAL PREPAREDNESS ACTIVITIES	88,975	102,867	61,098		61,098
Tota Operational system development				1,482,756	1,823,380	1,473,939	79,506	1,553,445
Total: RDT&E, Army				12,075,070	11,549,371	10,328,945	150,906	10,479,851

# Table of Contents - RDT&E - Volume I

Line No.	Program Element	Program Element Title	Page
1	0601101A	In-House Laboratory Independent Research	1
2	0601102A	DEFENSE RESEARCH SCIENCES	23
3	0601103A	University Research Initiatives	165
4	0601104A	University and Industry Research Centers	187
5	0602105A	MATERIALS TECHNOLOGY	271
6	0602120A	Sensors and Electronic Survivability	309
8	0602211A	AVIATION TECHNOLOGY	354
9	0602270A	Electronic Warfare Technology	375
10	0602303A	MISSILE TECHNOLOGY	393
11	0602307A	ADVANCED WEAPONS TECHNOLOGY	416
12	0602308A	Advanced Concepts and Simulation	428
13	0602601A	Combat Vehicle and Automotive Technology	444
14	0602618A	BALLISTICS TECHNOLOGY	482
15	0602622A	Chemical, Smoke and Equipment Defeating Technology	508
16	0602623A	JOINT SERVICE SMALL ARMS PROGRAM	518
17	0602624A	Weapons and Munitions Technology	525
18	0602705A	ELECTRONICS AND ELECTRONIC DEVICES	578
19	0602709A	NIGHT VISION TECHNOLOGY	636
20	0602712A	Countermine Systems	656
21	0602716A	HUMAN FACTORS ENGINEERING TECHNOLOGY	672
22	0602720A	Environmental Quality Technology	683
23	0602782A	Command, Control, Communications Technology	705
24	0602783A	COMPUTER AND SOFTWARE TECHNOLOGY	729
25	0602784A	MILITARY ENGINEERING TECHNOLOGY	740
26	0602785A	Manpower/Personnel/Training Technology	780
27	0602786A	Warfighter Technology	787

28	0602787A	MEDICAL TECHNOLOGY	816
29	0603001A	Warfighter Advanced Technology	928
30	0603002A	MEDICAL ADVANCED TECHNOLOGY	963
31	0603003A	AVIATION ADVANCED TECHNOLOGY	1125
32	0603004A	Weapons and Munitions Advanced Technology	1168
33	0603005A	Combat Vehicle and Automotive Advanced Technology	1209
34	0603006A	Command, Control, Communications Advanced Technology	1299
35	0603007A	Manpower, Personnel and Training Advanced Technology	1309
36	0603008A	Electronic Warfare Advanced Technology	1314
38	0603015A	Next Generation Training & Simulation Systems	1336
40	0603103A	Explosives Demilitarization Technology	1356
41	0603105A	MILITARY HIV RESEARCH	1368
42	0603125A	Combating Terrorism - Technology Development	1375
43	0603270A	Electronic Warfare Technology	1380
44	0603313A	Missile and Rocket Advanced Technology	1398
46	0603606A	Landmine Warfare and Barrier Advanced Technology	1430
47	0603607A	JOINT SERVICE SMALL ARMS PROGRAM	1442
48	0603710A	NIGHT VISION ADVANCED TECHNOLOGY	1447
49	0603728A	Environmental Quality Technology Demonstrations	1472
50	0603734A	Military Engineering Advanced Technology	1486
51	0603772A	Advanced Tactical Computer Science and Sensor Technology	1510

**UNCLASSIFIED**

**Exhibit R-2, PB 2011 Army RDT&E Budget Item Justification** **DATE:** February 2010

<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603001A: <i>Warfighter Advanced Technology</i>
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COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	72.271	54.290	37.364	0.000	37.364	38.411	40.888	42.843	46.169	0	369.600
242: <i>AIRDROP EQUIPMENT</i>	3.701	3.791	3.801	0.000	3.801	3.860	3.926	3.999	4.065	Continuing	Continuing
543: <i>AMMUNITION LOGISTICS</i>	1.242	1.346	1.347	0.000	1.347	1.369	1.394	1.419	1.443	Continuing	Continuing
C07: <i>JOINT SERVICE COMBAT FEEDING TECH DEMO</i>	2.251	2.342	2.361	0.000	2.361	2.413	2.467	2.516	2.568	Continuing	Continuing
J50: <i>FUTURE WARRIOR TECHNOLOGY INTEGRATION</i>	35.374	29.899	29.855	0.000	29.855	30.769	33.101	34.909	38.093	Continuing	Continuing
J52: <i>WARFIGHTER ADVANCED TECHNOLOGY INITIATIVES (CA)</i>	29.703	16.912	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This program element (PE) provides Soldiers and Small Combat Units with the most effective personal clothing, equipment, and rations at the least weight and sustainment burden. This PE supports the maturation and demonstration of technologies associated with air delivery of personnel and cargo (project 242), rapid ammunition/munitions deployability and resupply (project 543), combat rations and combat feeding equipment (project C07) and combat clothing and personal equipment (including protective equipment such as personal armor, helmets, and eye wear) (project J50). Project J52 funds congressional special interest items. The projects in this PE adhere to Tri-Service Agreements on clothing, textiles, and food with coordination provided through the Cross Service Warfighter Equipment Board, the Soldier as a System Integrated Concepts Development Team, and the DoD Combat Feeding Research and Engineering Board. Work in this PE is related to, and fully coordinated with, PE 0602786A (Warfighter Technology), PE 0602105A (Materials Technology), PE 0602618A (Ballistics Technology), PE 0602624A (Weapons and Munitions Technology), PE 0602705A (Electronics and Electronic Devices), PE 0603004A (Weapons and Munitions Advanced Technology), PE 0603008A (Command, Control, Communications Advanced Technology), and PEs 0602623A and 0603607A (Joint Service Small Arms Program). The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work is led, performed, and/or managed by the Natick Soldier Research, Development, and Engineering Center (NSRDEC), Natick, MA and the Armament Research, Development, and Engineering Center (ARDEC), Picatinny, NJ.

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<b>Exhibit R-2, PB 2011 Army RDT&amp;E Budget Item Justification</b>	<b>DATE:</b> February 2010
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603001A: <i>Warfighter Advanced Technology</i>
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**B. Program Change Summary (\$ in Millions)**

	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011 Base</u>	<u>FY 2011 OCO</u>	<u>FY 2011 Total</u>
Previous President's Budget	73.352	37.574	38.551	0.000	38.551
Current President's Budget	72.271	54.290	37.364	0.000	37.364
Total Adjustments	-1.081	16.716	-1.187	0.000	-1.187
• Congressional General Reductions		-0.284			
• Congressional Directed Reductions					
• Congressional Rescissions		0.000			
• Congressional Adds		17.000			
• Congressional Directed Transfers					
• Reprogrammings	0.831	0.000			
• SBIR/STTR Transfer	-1.912	0.000			
• Adjustments to Budget Years	0.000	0.000	-1.187	0.000	-1.187

**Change Summary Explanation**

FY10 Congressionally directed increases.

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R-1 Line Item #29

Page 2 of 35

929 of 1536

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603001A: <i>Warfighter Advanced Technology</i>				<b>PROJECT</b> 242: <i>AIRDROP EQUIPMENT</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
242: <i>AIRDROP EQUIPMENT</i>	3.701	3.791	3.801	0.000	3.801	3.860	3.926	3.999	4.065	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This project matures and demonstrates equipment and innovative techniques for aerial delivery of cargo and personnel. Aerial delivery is a key capability for rapid force projection and global precision delivery and provides a long-range, autonomous airdrop capability with the option to deliver separate and distinctive payloads to multiple locations with improved accuracy; enhancing cargo, crew, and aircraft survivability. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work is led, performed and/or managed by the Natick Soldier Research, Development, and Engineering Center (NSRDEC), Natick, MA.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Advanced Cargo Airdrop: This effort demonstrates enhancements for increasing the precision of airdrop delivery using components and technical breakthroughs from PE 0602786A/project 283. In FY09, optimized latest Guidance, Navigation & Control (GN&C) airdrop technologies in a precision airdrop concept designed for accurate resupply in complex, mountainous terrain with small, challenging drop zones; provided hardware and software GN&C component upgrades to demonstrate GN&C technology improvements in all weight classes of the Joint Precision Airdrop Delivery System (JPADS) family. In FY10, mature and demonstrate emerging GN&C component technologies and spiral promising GN&C components candidates for transition to PM Force Sustainment Systems (PM-FSS) and demonstrate 5K-20K lb. Advanced Low Velocity Airdrop System - Light (ALVADS-L) releases and modifications to existing inventory system. Transition to PM Force Sustainment Systems (PM FSS) mature advanced navigational aid and display technologies that improve situational awareness. In FY11, will mature and demonstrate sensor technologies for real-time monitoring of height (height sensors integrated with terrain data) as well as air properties (temperature, air density, velocity, changing pressure); will conduct scaled (i.e., weight, altitude and number of parachutes) airdrop testing of the 22K-42K lb. Advanced Low	3.701	3.704	3.041	0.000	3.041

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603001A: <i>Warfighter Advanced Technology</i>	<b>PROJECT</b> 242: <i>AIRDROP EQUIPMENT</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Velocity Airdrop System - Heavy (ALVADS -H). Evaluate results and select full scale design for 500 ft. Above Ground Level (AGL) delivery of heavy payloads.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #2</p> <p>Advanced Airborne Insertion (Personnel airdrop): This effort demonstrates enhancements for improved insertion safety and security using components and technical breakthroughs from PE 0602786A/Project 283. In FY11, will demonstrate payload-to-payload and person-to-person in-flight communications.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p>		0.000	0.000	0.760	0.000	0.760

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603001A: <i>Warfighter Advanced Technology</i>	<b>PROJECT</b> 242: <i>AIRDROP EQUIPMENT</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #3 Small Business Innovative Research/Small Business Technology Transfer Programs		0.000	0.087	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		3.701	3.791	3.801	0.000	3.801
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>D. Acquisition Strategy</b> N/A						
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>									<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603001A: <i>Warfighter Advanced Technology</i>				<b>PROJECT</b> 543: <i>AMMUNITION LOGISTICS</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
543: <i>AMMUNITION LOGISTICS</i>	1.242	1.346	1.347	0.000	1.347	1.369	1.394	1.419	1.443	Continuing	Continuing
<b>A. Mission Description and Budget Item Justification</b>											
<p>This project matures and demonstrates technologies for rapid munitions deployability, resupply, and unused ammunition returned from deployment for the Army's Future Force. It enhances force readiness and reduces the logistics footprint through improvements in Materials Handling Equipment (MHE), ammunition and missile packaging/palletization, explosives safety, weapons rearm, and asset throughput/management. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this project is performed and managed by the US Army Armament Research, Development, and Engineering Center (ARDEC), Picatinny Arsenal, NJ.</p>											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
							<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Program #1</p> <p>Tactical Ammunition Accountability (TAA): This effort demonstrates advanced supply chain procedures coupled with state-of-the-art remote surveillance devices at the weapon system/munition level to provide precise knowledge of ammunition count, location and health status throughout an Area Of Responsibility (AOR). In FY09, developed and validated software interfaces for tactical ammunition management systems and integrated them with health monitoring sensors. In FY10, fabricate an automated ammunition expenditure reporting prototype mounted on a surrogate weapon system; initiate demonstration of ammunition consumption transactions from weapons system to Army's property recording system using prototype. In FY11, will complete the automated expenditure reporting prototype demonstration; will conduct demonstration in a tactically relevant environment.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p>							1.242	1.316	1.347	0.000	1.347

**UNCLASSIFIED**

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603001A: <i>Warfighter Advanced Technology</i>	<b>PROJECT</b> 543: <i>AMMUNITION LOGISTICS</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #2  Small Business Innovative Research/Small Business Technology Transfer Programs  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	0.030	0.000	0.000	0.000
<b>Accomplishments/Planned Programs Subtotals</b>		1.242	1.346	1.347	0.000	1.347

**UNCLASSIFIED**

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>		<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603001A: <i>Warfighter Advanced Technology</i>	<b>PROJECT</b> 543: <i>AMMUNITION LOGISTICS</i>
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A		
<b>D. Acquisition Strategy</b> N/A		
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.		

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603001A: <i>Warfighter Advanced Technology</i>				<b>PROJECT</b> C07: <i>JOINT SERVICE COMBAT FEEDING TECH DEMO</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
<i>C07: JOINT SERVICE COMBAT FEEDING TECH DEMO</i>	2.251	2.342	2.361	0.000	2.361	2.413	2.467	2.516	2.568	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This project matures and demonstrates technologies for military combat feeding systems and combat rations to include processing, preservation, packaging, and equipment and energy technologies that reduce the logistics footprint. This project demonstrates combat feeding technology with reduced logistics (in component parts, weight, cube, fuel, and water) and labor requirements, while improving the quality of food service. The project, a Department of Defense (DoD) program for which the Army has Executive Agent responsibility, provides technology development for Joint Service Combat Feeding. The DoD Combat Feeding Research and Engineering Board provides oversight for this project. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this project is led, performed and/or managed by the US Army Natick Soldier Research, Development and Engineering Center (NSRDEC), Natick, MA. This project has collaborative efforts with the US Army Research Institute for Environmental Medicine.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Combat Feeding Equipment Technologies: This effort demonstrates technologies for military combat feeding systems. In FY09, demonstrated joint service Battlefield Kitchen based on using state-of-the-art power generation systems and transitioned to Program Manager - Force Sustainment Systems (PM-FSS); completed limited technology demonstration of Waste-to-Energy Converter and transitioned to Military Encampment Waste to Electrical Power System (MEWEPS). In FY10, integrate and demonstrate an ethylene control system (prolongs freshness) in refrigerated containers to extend the shelf-life of fresh fruits and vegetables and integrate technology improvements for waste to energy systems. In FY11, will demonstrate a JP8 powered flameless individual in-line water heater for heating dehydrated rations and beverages and will transition technologies successfully demonstrated within this effort to PM-FSS for Engineering and Manufacturing Development (EMD).	0.860	0.894	0.903	0.000	0.903

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603001A: <i>Warfighter Advanced Technology</i>	<b>PROJECT</b> C07: <i>JOINT SERVICE COMBAT FEEDING TECH DEMO</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #2</p> <p>Ration Stabilization, Packaging, Novel Nutrient Delivery, and Food Safety Technologies: This effort demonstrates technologies for enhancing nutrient composition/consumption, military ration packaging and food safety. In FY09, demonstrated effectiveness of providing phytonutrients (organic components of plants that promote human health) via buccal delivery (mouth tissue) and incorporated into ration components to demonstrate human performance optimization in validated military performance tasks (e.g., victim rescue, 30m combat rushes); conducted final technology demonstration of novel food pathogen diagnostic technologies incorporated into array systems and transitioned to Veterinary Services Activity/Office of the Surgeon General (VSA/OTSG) for procurement; demonstrated Hybrid Optimal Processing (HOP) techniques to reduce processing time and increase food quality and nutrient retention.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p>		1.391	0.000	0.000	0.000	0.000

**UNCLASSIFIED**

**UNCLASSIFIED**

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>								
<p>Program #3</p> <p>Ration Stabilization, Packaging, and Novel Nutrient Delivery Technologies (cont'd): This effort demonstrates technologies for enhancing nutrient composition/consumption, military ration packaging and food safety. In FY10, demonstrate shelf stability of probiotic enhanced ration components and encapsulated oils for ration systems; prepare field manual on validated assays/surveys for the analysis of food pathogens and biological agents and transition to the VSA/OTSG; demonstrate the optimal use of analytical food pathogen detection diagnostics and the accompanying procedures for high throughput screening of foods. In FY11, will demonstrate shelf stable sandwiches with emulsion based fillings; health benefits of probiotic ration components via efficacy studies, bacteriophage cocktail for bacterial reductions in fresh vegetables and component food matrices for incorporation of performance optimizing and nano-sized functional ingredients. Will develop packaging prototype using novel multilayer polymer films to enhance barrier's mechanical and insulating properties and transition ration, packaging and nutrient delivery technologies to PM-FSS.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p>				0.000	1.438	1.458	0.000	1.458

**UNCLASSIFIED**

**UNCLASSIFIED**

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #4 Small Business Innovative Research/Small Business Technology Transfer Programs		0.000	0.010	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		2.251	2.342	2.361	0.000	2.361
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>D. Acquisition Strategy</b> N/A						
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603001A: <i>Warfighter Advanced Technology</i>				<b>PROJECT</b> J50: <i>FUTURE WARRIOR TECHNOLOGY INTEGRATION</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
J50: <i>FUTURE WARRIOR TECHNOLOGY INTEGRATION</i>	35.374	29.899	29.855	0.000	29.855	30.769	33.101	34.909	38.093	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This project matures, demonstrates and integrates high-payoff technologies to provide the Soldier and Small Combat Units (SCU) with the most effective personal protective clothing, electronics subsystems, and mission specific equipment at the least weight, sustainment and cognitive burden. Efforts in this project focus on maturation and demonstration of technologies associated with personal armor, helmets, hearing protection and eyewear; lightweight, ruggedized, durable components for situational awareness and network connectivity; load-bearing/load carrying augmentation systems; and power/power management components/systems for the individual Soldier and SCU. These efforts will utilize field testing to obtain relevant user feedback for design and performance validation. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this project is led, performed and/or managed by the US Army Natick Soldier Research, Development and Engineering Center (NSRDEC), Natick, MA.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Soldier Ballistic and Blast Protection: This effort matures and demonstrates test devices, protocols and technologies to improve Warfighter survivability against blast and ballistic threats. In FY09, finalized test equipment and drafted protocol for primary blast lung injury (PBLI) protection system assessment, benchmarked protection of fielded and developmental material systems; continued to develop system level assessment protocols, test devices and models to address other ballistic and blast-related injury mechanisms (blunt facial and eye injury); began to translate knowledge from blast injury data, and blast event characterization efforts into materiel design solutions and began to evaluate effectiveness of protection systems. In FY10, mature materials for individual blast protection concept, and blast assessment protocol and test devices for transition to PM Soldier Protection and Individual Equipment, Army Test and Evaluation Center and industry; leverage ballistic and blast protective materials from PE 0602786A/project H98 and PE 0602105A/project H84 to demonstrate enhanced ballistic and blast protection system for thorax area. Mature and demonstrate breadboard enhanced helmet for	4.850	4.468	3.521	0.000	3.521

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>next generation armor system. In FY11, will develop and refine test devices and protocols for additional injury mechanisms of blast and ballistic events; will refine and evaluate ballistic and blast protection system prototypes and obtain user feedback from testing; develop/refine combat effectiveness metrics that link physical effects of load to cognitive performance. This task is done in collaboration with the DoD Medical Research Program for Prevention, Mitigation and Treatment of Blast Injuries and leverages and integrates technologies developed in PEs 0602786A/project H98 &amp; 0602787A/project 878.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
Program #2	<p>Integrated Soldier Protection: This effort matures and demonstrates innovative technologies using holistic systems engineering principles, human factors, anthropometry (human body measurement study) and biomechanical sciences to balance and mature Enhanced Soldier/Small Combat Unit and Soldier as a System capability. In FY09, conducted technical tests and field demonstrations of promising protection technology solutions to include ergonomically shaped armor plates and improved camouflage for Operation Enduring Freedom; continued to mature and develop technical and operationally-based system performance metrics to support rapid transition of integrated technology solutions and protective system assessment tools. In FY10, demonstrate Microclimate Cooling (MC) technologies from PE 0602786A/project H98; conduct joint technical</p>	5.284	3.391	4.183	0.000	4.183

**UNCLASSIFIED**

**UNCLASSIFIED**

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>demonstration with Joint Science and Technology Office Chemical and Biological Defense (JSTO CBD) for advanced CB protection integrated with future Soldier systems technologies to provide little or no thermal burden to Soldier; leverage emerging breadboard system from PE 0602786A/project H98 and incorporate advanced materials from PE 0602105A/project H84 to develop next generation Soldier-centric headgear concepts focused on enhanced protection against agile laser, ballistic, impact, and aural threats (battlefield noise), while enhancing integration of head-borne displays, sensors, and battle command applications. In FY11, will select, build prototypes and evaluate the most promising Soldier-centric headgear concepts to include integrated fast responding Visible to IR laser protection and enhanced ballistic materials; will leverage human performance data and ongoing Soldier load and armor assessment tool efforts to refine modular body armor system concepts for Soldier as a System variants. Build leader mission planning tool to assist leaders in the field to select appropriate modular body armor configurations for specific mission.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
Program #3	Soldier Mobility and Enhanced Load Carriage: This effort matures and demonstrates mechanical devices that offload a portion of the Soldier weight burden to assist in Warfighter strength and mobility. In FY09, developed and implemented human use protocols to assess effects of wearing Full Body Human Augmentation	3.689	3.689	3.129	0.000	3.129

**UNCLASSIFIED**

**UNCLASSIFIED**

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>(Exoskeleton) Systems; matured component technology to include hydraulic actuators, embedded electronics and extremity mechanical construction; increased understanding of human gate characteristics and integrated safety performance parameters; conducted limited technical tests and demonstrations with Combined Arms Support Command (CASCOM/FT. Lee); user feedback and tech maturity evaluation determined Full Body Human Augmentation (FBHA) System may have applicability for specialty applications like ammunitions loading and heavy lifting and existing prototypes will be further evaluated by Army PMs. In FY10, monitor FBHA and begin to optimize and mature low power components to provide a lighter, more agile and efficient operation for a lightweight Lower Body Human Augmentation (LBHA) System; conduct mobility aid technical tests and field demonstrations to obtain user performance feedback and conduct field investigations to optimize Soldier use of spatial information to enhance mobility (understand and remember user's movements during tasks for future exoskeleton replication purposes). In FY11, will incorporate limited Soldier equipment load carriage options for placement of Soldier loads (i.e., fuel, batteries) on the Lower Body Human Augmentation (LBHA) System; will conduct technical and user tests to obtain relevant user feedback for design improvement and to meet technical and operationally-based system performance metrics.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
Program #4		7.997	6.219	6.823	0.000	6.823

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603001A: <i>Warfighter Advanced Technology</i>	<b>PROJECT</b> J50: <i>FUTURE WARRIOR TECHNOLOGY INTEGRATION</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Small Combat Unit C4 Interfaces: This effort pursues more durable Soldier displays and subsystems that provide greater situational awareness with less cognitive stress. In FY09, continued to mature Soldier, squad, and platoon network technologies (i.e., emerging wireless body receiver, power hub manager, etc); conducted technical tests/field demonstrations of Soldier-borne networking combined to assess cognitive loading effects. In FY10, examine interfacing and interference characteristics of targeted wireless protocols with emerging communication devices in relevant field environments; design Soldier systems interface to enable robotic control and image dissemination across the squad. In FY11, will conduct laboratory analysis and field demonstrations of Soldier-borne wireless personal area network system and obtain National Security Agency (NSA) approvals on implementation; will demonstrate an on-Soldier system architecture that tightly couples three existing subsystems (battery, radio, headset) and will analyze system performance/efficiency.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #5</p> <p>Soldier Power and Energy: This effort matures and demonstrates technologies to achieve capability improvements in lightweight high-energy and density Soldier power and power management components and subsystems. In FY09, continued to mature methanol-based Soldier hybrid fuel cell power source, higher energy density conformal rechargeable battery (central integrated Soldier battery) and half-sized BA 5590 Li/</p>		4.807	3.233	3.687	0.000	3.687

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**UNCLASSIFIED**

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603001A: <i>Warfighter Advanced Technology</i>	<b>PROJECT</b> J50: <i>FUTURE WARRIOR TECHNOLOGY INTEGRATION</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>CFx batteries; evaluated rechargeable battery development based on packaging thin film rechargeable battery technology; demonstrated platoon-level generator recharging batteries; conducted technical testing of conformal batteries which led to transition of projected cycle life performance data, environmental characteristics and safety characteristics to Army PMs. In FY10, conduct user assessments of multiple hybrid power systems (reformed methanol, direct methanol) in simulated combat settings for 24 and 72 hour missions; demonstrate engine or fuel cell based portable power sources which enables self-contained power capability. In FY11, will conduct large-scale field test of fuel cells (reformed and direct methanol) integrated into Soldier system; will demonstrate improved hybrid power technology components that increase energy density which can be carried for 24 hour mission (Army objective); will conduct field test of engine or fuel cell based generator and charger system for tactical battery charging. Effort is coordinated with PE 0602705A/projects H11 and H94.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #6</p> <p>Small Unit Lethality Integration: This effort pursues distributed unmanned sensors, integrated gunfire detection system, optical weapon sight with net-centric tactical fire control software that utilizes human decision aides to improve the lethality and combat effectiveness of the Soldier and Small Combat Unit. In FY09, continued to mature government-owned open system architectures for current and future networks; demonstrated low</p>		3.255	3.328	3.590	0.000	3.590

**UNCLASSIFIED**

**UNCLASSIFIED**

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>latency across Soldier-to-Soldier and Soldier-to-Vehicle networks to enable quicker call for fire and lethal effects and battlefield sensor awareness; conducted laboratory experiments and field demonstrations of maturing network architectures to verify desired performance. In FY10, miniaturize Soldier-borne gunfire detection system; evaluate data filtering of information to improve network performance; fuse air and ground sensor assets with Soldier borne network to detect and identify targets and pass information to target identification network; and evaluate strategies to minimize time of digital call for fire and lethal effects. In FY11, will mature and demonstrate Soldier borne gunfire detection capabilities and technologies; optical weapon sight (smart sight) using ballistic tables to accurately laze target and perform cooperative engagement; will incorporate unmanned assets (Air Vehicles, Ground Vehicles and Ground Sensors) into target identification network and demonstrate target (Soldier and Vehicle) destruction through innovative message processing, synchronization and accumulating of internal platoon fire assets such as 40 mm grenades, 60 mm Mortars, 120 mm Mortars and Javelin Weapon System. Effort is coordinated with PE 0603004A/project 232.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
Program #7	Small Unit Systems Integration and Demonstration: This effort develops tools to assess and expedite integration of maturing Soldier borne equipment using constructive, virtual and live simulation tools. In FY09, developed	5.492	4.797	4.922	0.000	4.922

**UNCLASSIFIED**

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>and implemented transportable Assessment and Demonstration modules and conducted user assessments of equipment integration with unattended ground sensors (UGSs), unmanned ground vehicles (UGVs), gunfire detection and chemical-biological sensors in operationally relevant field environments at FT Dix and FT Benning. In FY10, continue to develop and improve simultaneous constructive, virtual and live simulation modules to assess integration capabilities of maturing technologies for Soldier borne hardware, software, network, lethality, survivability components and systems; continue to develop and evaluate modular open architecture for dismounted Soldiers to facilitate integration across potential network sources and assess maturity of Soldier-borne technologies and simulation tools in field relevant environment. In FY11, will complete development of dismounted Soldier assessment tool suite to expedite integration and assessment of lethality, power, network and mobility technologies available for dismounted Soldier; will develop limited integration of Soldier assessment tool suite with mounted and air platforms for embedded training; and will assess simulation toolset maturity at field relevant venues to recommend future technology transitions. Effort is coordinated with PE 0603004A/project 232.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
Program #8		0.000	0.774	0.000	0.000	0.000
Small Business Innovative Research/Small Business Technology Transfer Programs						

**UNCLASSIFIED**

**UNCLASSIFIED**

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603001A: <i>Warfighter Advanced Technology</i>	<b>PROJECT</b> J50: <i>FUTURE WARRIOR TECHNOLOGY INTEGRATION</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		35.374	29.899	29.855	0.000	29.855
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>D. Acquisition Strategy</b> N/A						
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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Exhibit R-2A, PB 2011 Army RDT&E Project Justification								DATE: February 2010			
APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE				PROJECT			
2040: Research, Development, Test & Evaluation, Army BA 3: Advanced Technology Development (ATD)				PE 0603001A: Warfighter Advanced Technology				J52: WARFIGHTER ADVANCED TECHNOLOGY INITIATIVES (CA)			
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
J52: WARFIGHTER ADVANCED TECHNOLOGY INITIATIVES (CA)	29.703	16.912	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>A. Mission Description and Budget Item Justification</b>											
Congressional Interest Item funding for Warfighter Advanced Technology development.											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
							FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011
Program #1							3.589	0.000	0.000	0.000	0.000
Ration Packaging Materials and Systems for Meals Ready-to-Eat. In FY09, this Congressional Interest Item developed tamper evident features, high barrier polymers and food preservation additives for combat ration packaging systems to improve food protection, food safety, shelf life and flavor/taste retention.											
<i>FY 2009 Accomplishments:</i>											
FY 2009											
<i>FY 2010 Plans:</i>											
FY 2010											
<i>Base FY 2011 Plans:</i>											
FY 2011 Base											
<i>OCO FY 2011 Plans:</i>											
FY 2011 OCO											
Program #2							1.595	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603001A: <i>Warfighter Advanced Technology</i>	<b>PROJECT</b> J52: <i>WARFIGHTER ADVANCED TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>High-Pressure/Microwave MRE Processing: In FY09, this Congressional Interest Item provided a capability to sustain Warfighters with near-fresh quality entrees without refrigeration.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #3</p> <p>Flame &amp; Thermal Protection for Individual Soldier: In FY09, this Congressional Interest Item investigated and evaluated flame resistant (FR) textile materials by microencapsulating FR materials as a surface treatment on textiles.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p>		3.189	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603001A: <i>Warfighter Advanced Technology</i>	<b>PROJECT</b> J52: <i>WARFIGHTER ADVANCED TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #4</b>  Technology and Human Systems Integration: In FY09, this Congressional Interest Item enhanced the execution of dual-use Research, Development, Test and Evaluation (RDT&E) projects and promoted technology transfer activities in the Homeland Security sector with particular emphasis on law enforcement applications.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		2.392	0.000	0.000	0.000	0.000
<b>Program #5</b>  Multi-layer Coextrusion for High Performance Packaging: In FY09, this Congressional Interest Item investigated sophisticated die technologies that processed high performance packaging structures for the Unitized Group Ration (UGR) polymeric tray.  <i>FY 2009 Accomplishments:</i> FY 2009		2.392	1.592	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603001A: <i>Warfighter Advanced Technology</i>	<b>PROJECT</b> J52: <i>WARFIGHTER ADVANCED TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #6</b>  Ballistic Precision Aerial Delivery System (BPADS): In FY09, this Congressional Interest Item increased the technology readiness level (TRL) of a 30K lb capacity High Altitude Low Opening (HALO) Unguided Aerial Delivery System through design, test, and analysis.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.997	0.000	0.000	0.000	0.000
<b>Program #7</b>		1.196	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603001A: <i>Warfighter Advanced Technology</i>	<b>PROJECT</b> J52: <i>WARFIGHTER ADVANCED TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Novel Flame Retardant Nylon Fabrics: In FY09, this Congressional Interest Item explored emerging technological approaches to impart Flame Retardant (FR) materials/compounds into nylon fiber and developed a durable and cost effective FR "no melt drip" nylon fiber or fabric for military applications.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #8</p> <p>Chemical and Biological Threat Protection Coating: This is a Congressional Interest Item.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p>		2.392	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603001A: <i>Warfighter Advanced Technology</i>	<b>PROJECT</b> J52: <i>WARFIGHTER ADVANCED TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #9</b>  Compact, Day and Night CMOS for Mini and Micro UAVs: In FY09, this Congressional Interest Item provided new Small Unmanned Aerial Systems Reconnaissance Surveillance and Target Acquisition capabilities to the Army in the area of payload integration.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.994	0.000	0.000	0.000	0.000
<b>Program #10</b>  Improved Lightweight Integrated Communication and Hearing Protection Device: In FY09, this Congressional Interest Item developed an improved multi-option communication system that offered active double hearing protection, increased sound localization, and increased situational awareness.  <i>FY 2009 Accomplishments:</i> FY 2009		0.797	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010				
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603001A: <i>Warfighter Advanced Technology</i>		<b>PROJECT</b> J52: <i>WARFIGHTER ADVANCED TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO								
Program #11  Aerial Firefighting - Precision Container Aerial Delivery System (PCADS): In FY09, this Congressional Interest Item provided the United States Air Force (USAF) with a precision airdrop delivery capability of water bombs for firefighting.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO				2.312	0.000	0.000	0.000	0.000
Program #12				1.595	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603001A: <i>Warfighter Advanced Technology</i>	<b>PROJECT</b> J52: <i>WARFIGHTER ADVANCED TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Compact MVCC Soldier Coding System: In FY09, this Congressional Interest Item increased manufacturing readiness of the vapor compression Personal Microclimate Cooling System by developing manufacturing procedures for vapor compression components and by developing manufacturing system assembly procedures.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #13</p> <p>Precision Guided Airdropped Equipment: In FY09, this Congressional Interest Item improved precision airdrop accuracy through advances in the state-of-the-art Joint Precision Airdrop Systems guidance and navigation for small airdrop resupply payloads.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p>		3.668	1.194	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603001A: <i>Warfighter Advanced Technology</i>	<b>PROJECT</b> J52: <i>WARFIGHTER ADVANCED TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #14  Laser Studied & Enhanced Reactive Materials :Self-Decontaminating Polymers for CBD: In FY09, this Congressional Interest Item developed a comprehensive understanding of the fundamental characteristics of reactive self-decontaminating formulations for chemical-biological (CB) protection under Vibrational Sum Frequency Generation Spectroscopy.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.595	0.000	0.000	0.000	0.000
Program #15  Advanced Packaging Materials for Combat Rations. This is a Congressional Interest Item.		0.000	0.796	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603001A: <i>Warfighter Advanced Technology</i>	<b>PROJECT</b> J52: <i>WARFIGHTER ADVANCED TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #16 Soldier Personal Cooling System. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	0.954	0.000	0.000	0.000
Program #17		0.000	1.193	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603001A: <i>Warfighter Advanced Technology</i>	<b>PROJECT</b> J52: <i>WARFIGHTER ADVANCED TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Reducing First Responder Casualties with Physiological Monitoring. This is a Congressional Interest Item.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #18</p> <p>Predictive Casting Process Modeling for Rapid Production of Critical Defense Components. This is a Congressional Interest Item.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>		0.000	1.592	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603001A: <i>Warfighter Advanced Technology</i>	<b>PROJECT</b> J52: <i>WARFIGHTER ADVANCED TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #19 Deployment of Affordable Guided Airdrop System. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.990	0.000	0.000	0.000
Program #20 Compostable and Recyclable Fiberboard Material for Secondary Packaging. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base		0.000	1.990	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603001A: <i>Warfighter Advanced Technology</i>	<b>PROJECT</b> J52: <i>WARFIGHTER ADVANCED TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #21 Remote Environmental Monitoring and Diagnostics in the Perishables Supply Chain. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	2.189	0.000	0.000	0.000
Program #22 High Pressure Pasteurization & Pressure Assisted Thermal Sterilization. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010		0.000	3.422	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010				
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603001A: <i>Warfighter Advanced Technology</i>		<b>PROJECT</b> J52: <i>WARFIGHTER ADVANCED TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base								
<i>OCO FY 2011 Plans:</i> FY 2011 OCO								
Accomplishments/Planned Programs Subtotals				29.703	16.912	0.000	0.000	0.000
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A								
<b>D. Acquisition Strategy</b> N/A								
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.								

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Exhibit R-2, PB 2011 Army RDT&E Budget Item Justification										DATE: February 2010	
APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE							
2040: Research, Development, Test & Evaluation, Army BA 3: Advanced Technology Development (ATD)				PE 0603002A: MEDICAL ADVANCED TECHNOLOGY							
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	329.258	339.752	71.510	0.000	71.510	63.808	66.765	69.888	74.743	0	1,087.234
800: <i>TELEMEDICINE TESTBED</i>	3.965	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
804: <i>PROSTATE CANCER RSCH</i>	2.391	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
810: <i>IND BASE ID VACC&amp;DRUG</i>	21.511	20.291	18.185	0.000	18.185	18.544	18.771	19.957	21.101	Continuing	Continuing
814: <i>NEUROFIBROMATOSIS</i>	9.967	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
819: <i>FLD MED PROT/HUM PERF</i>	1.217	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
840: <i>COMBAT INJURY MGMT</i>	29.608	43.766	44.004	0.000	44.004	34.599	35.207	36.160	36.920	Continuing	Continuing
938: <i>Tissue Engineering</i>	1.196	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
945: <i>BREAST CANCER STAMP PROCEEDS</i>	1.459	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
955: <i>ASSISTIVE TECHNOLOGY</i>	2.392	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
97A: <i>BIOSENSOR RESEARCH</i>	0.796	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
97B: <i>BLOOD SAFETY</i>	1.595	2.388	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
97D: <i>CENTER FOR AGING EYE</i>	1.596	2.388	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
97T: <i>NEUROTOXIN EXPOSURE TREATMENT</i>	24.918	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
FH4: <i>FORCE HEALTH PROTECTION - ADV TECH DEV</i>	2.006	1.953	1.974	0.000	1.974	2.006	2.039	2.075	2.107	Continuing	Continuing
MB1: <i>ADV DIAGNOSTICS &amp; THERAPEUTIC DIG TECH</i>	0.000	1.591	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
MB2: <i>BRAIN, BIOLOGY, AND MACHINE</i>	1.595	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

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R-1 Line Item #30

Page 1 of 162

963 of 1536

**UNCLASSIFIED**

<b>Exhibit R-2, PB 2011 Army RDT&amp;E Budget Item Justification</b>										<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>								
MB3: <i>CENTER FOR INTEGRATION OF MEDICINE &amp; INNOV TECH</i>	7.973	8.953	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
MB4: <i>CENTER FOR UNTETHERED HEALTHCARE</i>	0.997	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
MG5: <i>NATIONAL FUNCTIONAL GENOMICS CENTER (CA)</i>	5.980	5.969	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
MG7: <i>ON-LINE MEDICAL TRAINING (CA)</i>	2.791	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
MI4: <i>ALLIANCE FOR NANOHEALTH (CA)</i>	3.190	3.979	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
MJ2: <i>FIBRINOGEN BANDAGES FOR BATTLEFIELD WOUNDS (CA)</i>	2.990	2.388	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
MK1: <i>MEDICAL M&amp;S THROUGH SYNTHETIC DIGITAL GENES (CA)</i>	0.996	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
MK8: <i>PLASMA STERILIZER (CA)</i>	3.189	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
ML3: <i>SOLDIER-MOUNTED EYE-TRACKING &amp; CONTROL SYSTEM (CA)</i>	4.983	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
MM1: <i>WEIGHT MEASUREMENTS &amp; STANDARDS FOR MIL PERSONNEL</i>	1.995	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>	187.962	239.536	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
MM3: <i>WARFIGHTER MEDICAL PROTECTION &amp; PERFORMANCE STDS</i>	0.000	6.550	7.347	0.000	7.347	8.659	10.748	11.696	14.615		Continuing	Continuing

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<b>Exhibit R-2, PB 2011 Army RDT&amp;E Budget Item Justification</b>		<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	
<b><u>A. Mission Description and Budget Item Justification</u></b> This program element (PE) supports development of advanced medical technologies to mature medical technology (drugs, vaccines, medical devices, and diagnostics) and doctrine to effectively protect and improve the survivability of US Forces across the entire spectrum of military operations. Tri-Service coordination and cooperative efforts are focused in four principal medical areas: Combat Casualty Care, Military Operational Medicine, Militarily Relevant Infectious Diseases, and Clinical and Rehabilitative Medicine. During this phase of development, promising medical technologies are refined and validated through extensive testing, which is closely monitored by the US Food and Drug Administration (FDA) and Environmental Protection Agency (EPA), as part of their processes for licensing new medical products for use in. The FDA requires medical products to undergo extensive pre-clinical testing in animals and/or other models to obtain preliminary efficacy and toxicity information, before they can be tested in humans (clinical trials). Clinical trials are conducted in three phases, starting with Phase 1, to prove the safety of a drug, vaccine, or device for the targeted disease or medical condition in a small number of healthy volunteers. Each successive phase includes larger numbers of human subjects and requires FDA cognizance prior to proceeding. Work conducted in this PE primarily focuses on late stages of technology maturation activities required to conduct Phase 2 human expanded safety and efficacy in clinical trials. Some high risk technologies may require additional maturation with FDA guidance prior to initiating these clinical trials. Such things as proof of product stability and purity are necessary to meet FDA standards before entering later stages of testing and prior to transitioning into a formal acquisition program and conducting Phase 3 pivotal trials for licensure. Activities in the PE may include completion of pre-clinical animal studies and Phase 2 clinical studies involving human volunteers according to the FDA and EPA requirements. Blast research efforts in this PE are fully coordinated with the United States Army Natick Soldier Research, Development and Engineering Center. This coordination enables improved body armor design and rations for Soldiers. Additionally the activities funded in this PE are externally peer reviewed. Work funded in this project PE is fully coordinated with efforts undertaken in PE 0602787A. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this PE is performed by Walter Reed Army Institute of Research, Silver Spring, MD; US Army Medical Research Institute of Infectious Diseases, Fort Detrick, MD; US Army Research Institute of Environmental Medicine, Natick, MA; US Army Institute of Surgical Research, Fort Sam Houston, TX; US Army Aeromedical Research Laboratory, Fort Rucker, AL; the Naval Medical Research Center, Silver Spring, MD; US Army Center for Environmental Health Research; and US Army Medical Research Detachment, Brooks City Base, TX, the US Army Dental Trauma Research Detachment, Great Lakes, IL, and the Armed Forces Institute of Regenerative Medicine, Fort Detrick, MD.		

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**UNCLASSIFIED**

<b>Exhibit R-2, PB 2011 Army RDT&amp;E Budget Item Justification</b>	<b>DATE:</b> February 2010
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>
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**B. Program Change Summary (\$ in Millions)**

	<u><b>FY 2009</b></u>	<u><b>FY 2010</b></u>	<u><b>FY 2011 Base</b></u>	<u><b>FY 2011 OCO</b></u>	<u><b>FY 2011 Total</b></u>
Previous President's Budget	321.260	72.940	73.446	0.000	73.446
Current President's Budget	329.258	339.752	71.510	0.000	71.510
Total Adjustments	7.998	266.812	-1.936	0.000	-1.936
• Congressional General Reductions		-1.779			
• Congressional Directed Reductions					
• Congressional Rescissions		0.000			
• Congressional Adds		268.591			
• Congressional Directed Transfers					
• Reprogrammings	16.884	0.000			
• SBIR/STTR Transfer	-8.886	0.000			
• Adjustments to Budget Years	0.000	0.000	-1.936	0.000	-1.936

**Change Summary Explanation**

FY10 Congressionally directed increases.

**UNCLASSIFIED**

R-1 Line Item #30

Page 4 of 162

966 of 1536

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>				<b>PROJECT</b> 800: <i>TELEMEDICINE TESTBED</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
800: <i>TELEMEDICINE TESTBED</i>	3.965	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This project funds the advancement and validation of prototype advanced concepts and enabling technology pertaining to Force Health Protection. Major efforts include collaborative tools for mission planning and rehearsal that enable deployment of optimally tailored medical support for a deployed force; medical command and control; and forward echelon telemedicine presence. The current focus provides increased situational awareness of the operational and health risks of fatigue, exposure to environmental toxins (toxic industrial chemicals and materials), and enabling technologies for reducing these risks. Beginning FY10, project 800 will be consolidated into project MM3. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this project is performed by the Walter Reed Army Institute of Research (WRAIR), Silver Spring, MD.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Sleep Research/Environmental Monitoring: Efforts focus on the evaluation of fatigue countermeasures to validate methods used to mitigate the effects of fatigue and sleep loss that adversely affects the Soldier's ability to sustain both health and performance during prolonged military operations. In FY09, conducted studies to validate whether cognitive enhancers are effective fatigue countermeasures (mobile health monitoring system) in an operational environment. Demonstrated validity of near real-time wireless squad and personal area networks (Spartan Sensor Network) to improve situational awareness of Soldiers during training by modeling hydration and heat strain using physiological and weather data. Demonstrated value of network-enabled predictive biomedical modeling in training mission planning and real-time mission support. Beginning FY10, this effort transferred to project MM3 (Physiological Health and Environmental Protection).  <i>FY 2009 Accomplishments:</i> FY 2009	3.965	0.000	0.000	0.000	0.000

**UNCLASSIFIED**

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> 800: <i>TELEMEDICINE TESTBED</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #2  Small Business Innovative Research/Small Business Technology Transfer Programs  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	0.000	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals		3.965	0.000	0.000	0.000	0.000

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**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>		<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> 800: <i>TELEMEDICINE TESTBED</i>
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A		
<b>D. Acquisition Strategy</b> N/A		
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.		

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>				<b>PROJECT</b> 804: <i>PROSTATE CANCER RSCH</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
804: <i>PROSTATE CANCER RSCH</i>	2.391	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>A. Mission Description and Budget Item Justification</b> Congressional Interest Item for Prostate Cancer research.											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
							<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1 This congressionally directed project conducted research for the UMDNJ Cancer Initiative  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO							2.391	0.000	0.000	0.000	0.000
Program #2 SBIR/STTR							0.000	0.000	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>		<b>PROJECT</b> 804: <i>PROSTATE CANCER RSCH</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009								
<i>FY 2010 Plans:</i> FY 2010								
<i>Base FY 2011 Plans:</i> FY 2011 Base								
<i>OCO FY 2011 Plans:</i> FY 2011 OCO								
Accomplishments/Planned Programs Subtotals				2.391	0.000	0.000	0.000	0.000
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A								
<b>D. Acquisition Strategy</b> N/A								
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.								

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>				<b>PROJECT</b> 810: <i>IND BASE ID VACC&amp;DRUG</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
810: <i>IND BASE ID VACC&amp;DRUG</i>	21.511	20.291	18.185	0.000	18.185	18.544	18.771	19.957	21.101	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This project demonstrates and matures US Food and Drug Administration (FDA) regulated medical countermeasures such as drugs, vaccines, and diagnostic systems to naturally occurring infectious diseases that are threats to US military deployed forces. The focus of the program is on prevention, diagnosis, and treatment of diseases that can adversely impact military mobilization, deployment, and operational effectiveness. Prior to licensure of a new drug or vaccine to treat or prevent disease, the FDA requires testing in human subjects. Studies are conducted stepwise: first to prove the product is safe in humans, second to demonstrate the desired effectiveness and optimal dosage in a small study, and third to demonstrate effectiveness in large, diverse human populations. All test results are submitted to the FDA for evaluation to ultimately obtain approval (licensure) for medical use. This project supports studies for safety and effectiveness testing on small study groups after which they transition to the next phase of development for completion of studies in larger populations. The project also supports testing of personal protective measures that can reduce disease transmission from biting insects and other vectors to include products such as repellents and insecticides which are regulated by the U. S. Environmental Protection Agency (EPA). Research conducted in this project focuses on the following five areas: (1) Drugs to Prevent/Treat Parasitic (symbiotic relationship between two organisms) Diseases: Select promising malaria and leishmaniasis (a disease transmitted by sand flies) drug candidates for testing in human subjects, and prepare data packages required for FDA approval of testing in humans and conduct testing. Studies have shown that the malaria parasite can become resistant to existing drugs, which makes it necessary to continually research new and more effective treatments. (2) Vaccines for Preventing Malaria: Select candidate vaccines; prepare data packages required for FDA approval of testing in humans, and conduct testing of promising malaria vaccine candidates in human subjects. A malaria vaccine against the severe form of malaria (*Plasmodium falciparum*) and the less severe but relapsing form (*Plasmodium vivax*) is another means of protection against malaria. A malaria vaccine would minimize the progression and impact of drug resistance and poor Warfighter compliance with taking preventive anti-malarial drugs. (3) Bacterial Threats: Select promising candidate vaccines against each of the three main bacterial causes of diarrhea (a significant threat during initial deployments) and meningococcal vaccine candidates (a threat to trainee and deployed troops and military families) for testing in human subjects, prepare data packages required for FDA approval and conduct testing in human subjects. (4) Viral Threats: Select most promising vaccine candidates for testing in human subjects against dengue fever (a severe debilitating disease caused by a virus and transmitted by a mosquito) and hantavirus (severe viral infection that causes internal bleeding and is contracted from close contact with rodents). Conduct FDA-required nonclinical safety and protection testing (laboratory-based) in animals, prepare FDA-investigational new drug data packages and conduct clinical testing of candidate vaccines in humans. (5) Diagnostics and Disease Transmission Control: Conduct human subject testing of FDA-regulated field medical diagnostic devices and EPA-approved insect control measures. Research is conducted in compliance with FDA regulations for medical products for human use and EPA-regulations for insect control products that impact humans or the environment (e.g., repellents and insecticides). Promising medical countermeasures identified in this project are further matured under PE 0603807A, project 808. Work is managed by the US Army Medical Research and Materiel Command and coordinated with Naval Medical Research Center. The Army is responsible for programming and funding all DoD naturally occurring infectious disease research requirements, thereby precluding duplication of effort within the Military Departments. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this project is performed by the Walter Reed Army Institute of Research, Silver Spring, MD,

**UNCLASSIFIED**

**UNCLASSIFIED**

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> 810: <i>IND BASE ID VACC&amp;DRUG</i>				
and its overseas laboratories; the US Army Medical Research Institute of Infectious Diseases, Fort Detrick, MD; and the Naval Medical Research Center, Silver Spring, MD, and its overseas laboratories.						
<b><u>B. Accomplishments/Planned Program (\$ in Millions)</u></b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1	<p>Drugs to Prevent/Treat Parasitic Diseases: In FY09, down selected between two candidate drugs for leishmaniasis treatment (Amphotericin B and Nitric Oxide). Conducted proof-of-concept study to demonstrate whether current antimalarial drug (Malarone) dosing schedule can be extended to reduce drug cost while maintaining effective protection from infection. Tested in humans (20 volunteers) a Chloroquine-tinidazole combination drug at overseas locations to assess effectiveness against the liver (relapsing) form of vivax malaria. In FY10, if results support, expand Malarone testing in an increased number of humans, and continue studies with a Chloroquine-tinidazole combination drug. In FY11, based on selection of promising candidates in previous years, will expand testing in humans of treatment options for malaria and Leishmania. If testing is successful, will work with commercial manufacturer to change the dosing and subsequent labeling of Malarone for other malaria treatment indications.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>	3.328	3.896	3.089	0.000	3.089
Program #2		4.428	3.845	3.824	0.000	3.824

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> 810: <i>IND BASE ID VACC&amp;DRUG</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Vaccines for Prevention of Malaria: In FY09, proceeded with first-in-human testing of protein-based candidate vivax malaria vaccine upon approval by FDA of study application. Refined the formulation of the falciparum malaria vaccine. Conducted initial testing in humans to demonstrate effectiveness of candidate vaccines. Vaccines found safe and effective transitioned into advanced development. In FY10, partner with industry to conduct initial safety and small-scale effectiveness testing in humans of a new falciparum malaria vaccine candidate; forward promising candidate vaccines for further testing in larger populations where malaria occurs naturally, such as Africa; will initiate vivax malaria candidate vaccine testing in humans pending FDA approval. In FY11, will conduct studies to determine optimal dosing schedule of new falciparum malaria vaccine candidate, and will plan for safety and effectiveness tests in larger populations in endemic areas; will down-select best and most effective vaccine candidates, for further development; will assess efficacy of P. vivax malaria candidate vaccines in humans.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #3</p> <p>Bacterial Threats: In FY09, conducted larger scale testing in humans for effectiveness of Shigella component (Invaplex) diarrheal vaccine candidate (200 volunteers) to determine effectiveness and optimal dosing. Conducted human volunteer testing (20-40 volunteers) of a genetically modified single component meningitis</p>		7.320	6.400	5.122	0.000	5.122

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> 810: <i>IND BASE ID VACC&amp;DRUG</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>vaccine. In FY10, conduct larger scale testing of Shigella component (Invaplex) candidate vaccine; begin safety and effectiveness trial of live attenuated Shigella vaccine; will begin E. coli vaccine candidate safety and effectiveness testing in humans; in conjunction with partners, will prepare the meningococcal Group B multicomponent vaccine for testing in humans. In FY11, will continue safety and effectiveness trials of Invaplex and live attenuated Shigella vaccine; will continue safety and effectiveness trial to establish most promising E. coli vaccine; will undertake a safety study in humans of the meningococcal Group B multicomponent vaccine.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #4</p> <p>Viral Threats Research: In FY09, conducted human volunteer testing of hemorrhagic Hanta virus. Tested several dengue candidate vaccines in humans (70 volunteers) to select most promising technologies. In FY10, conduct larger scale testing in humans of the hantavirus vaccine; down-select to most safe and effective dengue vaccine candidate based on larger scale studies (120 volunteers). In FY11, will further develop the hantavirus vaccine with support of a commercial partner; will conduct testing in humans for safety and effectiveness of the final dengue vaccine candidate.</p>		4.035	3.505	3.086	0.000	3.086

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010				
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>		<b>PROJECT</b> 810: <i>IND BASE ID VACC&amp;DRUG</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>								
<p>Program #5</p> <p>Diagnostics and Disease Transmission Control: In FY09, worked with commercial partner on an improved bed net. Complete testing and transition of selected components of sand fly control tools, such as screening tests to PMUs. Refined and tested insect repellent to replace Diethylmetatoluamide or DEET (current ingredient in military insect repellent) in collaboration with commercial partners. Conducted testing of hospital-based leishmaniasis diagnostic device and field-deployable point-of-care diagnostic device for leishmaniasis, dengue and rickettsia diseases. In FY10, test a new repellent and begin evaluation of field deployable tests to detect infectious organisms within insects that cause sand fly fever, Q-fever, and dengue fever. For diagnostics, validate results of testing for leishmaniasis, dengue and Rickettsial disease devices. Modify the Leishmania infection hospital-based diagnostic test technology to be compatible with Joint Biological Agent Identification Diagnostic System (JBAIDS) platform. In FY11, if prior year testing is successful, will transition new repellent to advanced development. In conjunction with commercial partner, will field evaluate a device to detect the dengue virus in mosquitoes; will assist commercial partners in fielding of FDA-approved point-of-care tests for dengue, leishmaniasis.</p>				2.400	2.200	3.064	0.000	3.064

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #6 Small Business Innovative Research/Small Business Technology Transfer Programs		0.000	0.445	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Accomplishments/Planned Programs Subtotals</b>		21.511	20.291	18.185	0.000	18.185

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<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A		
<b>D. Acquisition Strategy</b> N/A		
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.		

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<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
814: <i>NEUROFIBROMATOSIS</i>	9.967	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>A. Mission Description and Budget Item Justification</b> Congressional Interest Item funding for Neurofibromatosis research.											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
							<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1 This congressionally directed project conducted research on Neurofibromatosis (NF). <i>FY 2009 Accomplishments:</i> FY 2009 <i>FY 2010 Plans:</i> FY 2010 <i>Base FY 2011 Plans:</i> FY 2011 Base <i>OCO FY 2011 Plans:</i> FY 2011 OCO							9.967	0.000	0.000	0.000	0.000
Program #2 SBIR/STTR							0.000	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009								
<i>FY 2010 Plans:</i> FY 2010								
<i>Base FY 2011 Plans:</i> FY 2011 Base								
<i>OCO FY 2011 Plans:</i> FY 2011 OCO								
Accomplishments/Planned Programs Subtotals				9.967	0.000	0.000	0.000	0.000
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A								
<b>D. Acquisition Strategy</b> N/A								
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.								

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<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
819: <i>FLD MED PROT/HUM PERF</i>	1.217	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

The objective of this project is to support the Medical and Survivability technology areas of the Future Force with laboratory validation studies and field demonstrations of biomedical products designed to protect, sustain, and enhance Soldier performance in the face of a myriad of environmental, physiological stressors, and materiel hazards encountered in training and operational environments. This effort focuses on identifying stressors and validating methods for assessing risk to the Soldier due to both physical and operational stressors. Effort matures and demonstrates methodologies and tools associated with biomechanical-based health risks, injury assessment/prediction, Soldier survivability, and performance during continuous operations. In FY10, project 819 will be consolidated into project MM3. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this project is performed by the US Army Research Institute of Environmental Medicine (USARIEM), Natick, MA.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Physical Performance Enhancement: In FY09, validated an integrated longitudinal model for predicting individual Soldier and unit musculoskeletal injury and adverse physical performance outcomes. Beginning in FY10, this effort transferred to the Injury Prevention and Reduction research area of project MM3.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base	1.217	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #2 Small Business Innovative Research/Small Business Technology Transfer Programs		0.000	0.000	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		1.217	0.000	0.000	0.000	0.000
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>D. Acquisition Strategy</b> N/A						
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
840: <i>COMBAT INJURY MGMT</i>	29.608	43.766	44.004	0.000	44.004	34.599	35.207	36.160	36.920	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This project matures, demonstrates, and validates promising medical technologies and methods to include control of severe bleeding, treatment for traumatic brain injury (TBI), revival and stabilization of trauma patients, and prognostics and diagnostics for life support systems. Post-evacuation medical research focuses on continued care and rehabilitative medicine for extremity (arms and legs), facial/maxillary (jaw bone), and ocular (eye) trauma and leveraging recent innovations in regenerative medicine and tissue engineering techniques. Research conducted in this project focuses on the following seven areas:(1) Hemorrhage (bleeding) Control, Blood, and Resuscitative Fluids: Includes work required to validate safety and effectiveness of drugs and medical procedures to maintain metabolism, minimize inflammation (swelling), including blocking Complement activation (a series of disease fighting proteins and reactions) from damaging healthy cells of the body, and prevent or minimize secondary organ failure (including brain and spinal cord injury) after major trauma. Beginning in FY10, funding shifts to the Damage Control Resuscitation research area below.(2) Damage Control Resuscitation: Includes work required to validate safety and effectiveness of drugs and medical procedures to maintain metabolism, minimize harmful inflammation, including blocking Complement activation (a series of disease fighting proteins and reactions) from damaging healthy cells of the body and prevent or minimize secondary organ failure (including brain and spinal cord injury) after major trauma; this research area starts in FY10.(3) Combat Trauma Therapies: Includes work required to validate safety and effectiveness of drugs, biologics (products derived from living organisms), and medical procedures intended to minimize immediate and long-term effects from battlefield injuries. (4) Far-Forward Medical Systems: Includes diagnostic and therapeutic medical devices, algorithms, software, and data-processing systems for resuscitation, stabilization, life support, and dental care. Beginning in FY10, dental care moves to Combat Trauma Therapies and the remaining research in this area will be captured under Combat Critical Care Engineering.(5) Combat Casualty Bioinformatics and Simulation: Includes testing and validation of a data management system to capture and analyze data, such as heart and respiration rates. Bioinformatics research will merge into the Combat Critical Care Engineering research area in FY10.(6) Combat Critical Care Engineering: Includes diagnostic and therapeutic medical devices, algorithms, software, and data-processing systems for resuscitation, stabilization, and life support; this research area starts in FY10.(7) Clinical and Rehabilitative Medicine: Includes clinical studies of treatment and rehabilitation of ocular and visual system traumatic injury, and restoration of function and appearance by regenerating skin, muscle, and bone tissue in battle-injured casualties. Areas of interest for regenerative medicine include healing without scarring, repair of compartment syndrome (nerve or tendon constriction in an enclosed space), replacement skin, and facial reconstruction. This research area starts in FY10. All research is conducted in compliance with US Food and Drug Administration (FDA) requirements for licensure of medical products for human use. Promising efforts identified through applied research conducted under PE 0602787A, project 874, are further matured under this project. Promising results identified under this project 840 are further matured under PE 0603807A, project 836.The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this project is performed by the US Army Institute of Surgical Research, Fort Sam Houston, TX; the Walter Reed Army Institute of Research, Silver Spring, MD; and the Armed Forces Institute of Regenerative Medicine, Fort Detrick, MD.

**B. Accomplishments/Planned Program (\$ in Millions)**

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R-1 Line Item #30

Page 21 of 162

983 of 1536

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> 840: <i>COMBAT INJURY MGMT</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Program #1</p> <p>Hemorrhage Control, Blood, and Resuscitative Fluids: In FY09, continued to evaluate combinations of products and treatment strategies to best control all forms of bleeding; evaluated safety and effectiveness of freeze dried plasma in an animal model; analyze Platelet Derived Hemostatic Agents (PDHA) data from safety and effectiveness test in human subjects. Beginning in FY10 the work will be funded under Damage Control Resuscitation.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>		9.600	0.000	0.000	0.000	0.000
<p>Program #2</p> <p>Damage Control Resuscitation: In FY09, funding was within the Hemorrhage Control, Blood, and Resuscitation Fluids program area. In FY10, begin safety and effectiveness testing in humans of freeze-dried plasma and platelet products to control severe bleeding; conduct additional studies in larger animals to identify optimal timing, dose and mechanisms of action of plasma, clotting factors and complement inhibitor (CIs) in combination. In FY11, will begin human testing of blood substitutes and noninvasive interventions for internal bleeding; will test guidelines for combined use of plasma, clotting factors and CIs using a representative, large animal model to potentially change clinical resuscitation guidelines.</p>		0.000	14.688	14.776	0.000	14.776

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #3</p> <p>Combat Trauma Therapies: In FY09, upon approval by FDA, began an initial FDA safety study in 200 humans of neuroprotectants (brain trauma research is coordinated with related efforts in PE 0602787A, project 878); begin extensive, multicenter, clinical validation of the most promising tissue regeneration treatment regimens through AFIRM; and conducted evaluation of new and existing antibacterial compounds for use in controlling infection. In FY10, complete initial FDA safety studies in humans of neuroprotectants and a diagnostic device for brain trauma; refocus dental disease research to facial restorative surgery; begin research in eye trauma to evaluate current repair treatment for improvement and evaluate new alternatives as they are identified; and expand existing in-house capability for human safety and effectiveness testing on newly identified treatments and therapies for battlefield trauma for human use of medical products. In FY11, will begin studies of an anti-seizure cocktail of multiple drugs in combination and studies of silent brain seizures after traumatic brain injury (TBI); will develop a mandibular (jaw) defect model; will continue evaluation of pain management regimens to improve long term outcomes; will use a small animal model to downselect therapeutics for blast induced TBI; and will continue in-house human clinical trials of promising treatments and therapies for battlefield trauma.</p>		10.318	15.991	16.750	0.000	16.750

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #4</p> <p>Far-Forward Medical Systems: In FY09, established relationships with industry developing oxygen and ventilation systems for future validation; initiated a human subject safety study of fluid resuscitation algorithms; began building interfaces for use with either the Army's integrated litter or the Navy's lightweight trauma module for casualty transport; and completed prototype and data analysis of a field medic diagnostic device to enhance casualty treatment on the battlefield. Beginning in FY10, dental care moves to Combat Trauma Therapies and the remaining research in this area is captured under Combat Critical Care Engineering.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p>		8.849	0.000	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> 840: <i>COMBAT INJURY MGMT</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<p>Program #5</p> <p>Combat Casualty Bioinformatics and Simulation: In FY09, completed prototype development and test validity of an algorithm that incorporates low- and high-frequency signals for an automated decision assist tool used by medical personnel to identify a need for a specific life saving intervention. Bioinformatics research merged into the Combat Critical Care Engineering research area in FY10.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>		0.841	0.000	0.000	0.000	0.000
<p>Program #6</p> <p>Combat Critical Care Engineering: In FY10, complete FDA safety study of fluid resuscitation algorithms; will submit FDA data package for the fully integrated automated fluid resuscitation system; collaborate with manufacturers to integrate oxygen and ventilation systems; transition stroke volume algorithm to advanced development for integration with new monitors for triage decision support; and conduct studies for development of a model (algorithm) for early indication of circulatory collapse from severe blood loss. In FY11, will complete evidence-based decision support development for early indicators of reduction in blood volume, the need for</p>		0.000	3.500	3.287	0.000	3.287

**UNCLASSIFIED**

R-1 Line Item #30

Page 25 of 162

987 of 1536

**UNCLASSIFIED**

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> 840: <i>COMBAT INJURY MGMT</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>intervention, and closed-loop care during casualty transport; and will continue to support simulation development to reduce reliance on live tissues in training.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #7</p> <p>Clinical and Rehabilitative Medicine: In FY10, conduct regenerative medicine studies using human subjects to demonstrate stable engraftment and restoration of sensory-motor function of transplanted limbs and facial skin, fat transfer therapy to manage burn scarring, implantation of engineered cartilage ear transplants, and use of a strain-reducing dressing to reduce wound scarring. In FY11, will conduct studies using relevant, large animals to evaluate the most promising treatments for repairing traumatic eye injuries; and AFIRM will conclude FY10 clinical trials and begin studies of skin cells or tissue from patient engineered and transplanted back into the patient as a replacement for burned tissue.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p>		0.000	8.265	9.191	0.000	9.191

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> 840: <i>COMBAT INJURY MGMT</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #8  Small Business Innovative Research/Small Business Technology Transfer Programs  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.322	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals		29.608	43.766	44.004	0.000	44.004

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>		<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> 840: <i>COMBAT INJURY MGMT</i>
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A		
<b>D. Acquisition Strategy</b> N/A		
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.		

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>				<b>PROJECT</b> 938: <i>Tissue Engineering</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
938: <i>Tissue Engineering</i>	1.196	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>A. Mission Description and Budget Item Justification</b>											
Congressional Interest Item funding for Tissue Engineering research.											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
							<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1 Angiogenesis and Tissue Engineering. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO							1.196	0.000	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals							1.196	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>		<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> 938: <i>Tissue Engineering</i>
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A		
<b>D. Acquisition Strategy</b> N/A		
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.		

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>				<b>PROJECT</b> 945: <i>BREAST CANCER STAMP PROCEEDS</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
945: <i>BREAST CANCER STAMP PROCEEDS</i>	1.459	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>A. Mission Description and Budget Item Justification</b>											
This project receives funds as proceeds from the sale of Breast Cancer Stamps.											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
							<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1 Breast Cancer Stamp Proceeds.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO							1.459	0.000	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals							1.459	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>		<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> 945: <i>BREAST CANCER STAMP PROCEEDS</i>
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A		
<b>D. Acquisition Strategy</b> N/A		
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.		

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>				<b>PROJECT</b> 955: <i>ASSISTIVE TECHNOLOGY</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
955: <i>ASSISTIVE TECHNOLOGY</i>	2.392	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>A. Mission Description and Budget Item Justification</b> Congressional Interest Item funding for Assistive Technology.											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
							<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  This congressionally directed project supported the Assistive Technology Research Center at the National Rehabilitative Hospital.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO							2.392	0.000	0.000	0.000	0.000
Program #2 SBIR/STTR							0.000	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010				
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>		<b>PROJECT</b> 955: <i>ASSISTIVE TECHNOLOGY</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009								
<i>FY 2010 Plans:</i> FY 2010								
<i>Base FY 2011 Plans:</i> FY 2011 Base								
<i>OCO FY 2011 Plans:</i> FY 2011 OCO								
Accomplishments/Planned Programs Subtotals				2.392	0.000	0.000	0.000	0.000
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A								
<b>D. Acquisition Strategy</b> N/A								
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.								

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>				<b>PROJECT</b> 97A: <i>BIOSENSOR RESEARCH</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
97A: <i>BIOSENSOR RESEARCH</i>	0.796	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>A. Mission Description and Budget Item Justification</b> Congressional Interest Item funding for Biosensor research.											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
							<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1 This congressionally directed project conducted research into Technologies for Metabolic Monitoring (TMM) <i>FY 2009 Accomplishments:</i> FY 2009 <i>FY 2010 Plans:</i> FY 2010 <i>Base FY 2011 Plans:</i> FY 2011 Base <i>OCO FY 2011 Plans:</i> FY 2011 OCO							0.796	0.000	0.000	0.000	0.000
Program #2 SBIR/STTR							0.000	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010				
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>		<b>PROJECT</b> 97A: <i>BIOSENSOR RESEARCH</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009								
<i>FY 2010 Plans:</i> FY 2010								
<i>Base FY 2011 Plans:</i> FY 2011 Base								
<i>OCO FY 2011 Plans:</i> FY 2011 OCO								
Accomplishments/Planned Programs Subtotals				0.796	0.000	0.000	0.000	0.000
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A								
<b>D. Acquisition Strategy</b> N/A								
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.								

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**Exhibit R-2A, PB 2011 Army RDT&E Project Justification** **DATE:** February 2010

<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> 97B: <i>BLOOD SAFETY</i>
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COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
97B: <i>BLOOD SAFETY</i>	1.595	2.388	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Congressional Interest Item funding for Blood Safety advanced technology development.

**B. Accomplishments/Planned Program (\$ in Millions)**

	FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011
Program #1 Blood Safety and Decontamination Technology. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO	1.595	2.388	0.000	0.000	0.000
<b>Accomplishments/Planned Programs Subtotals</b>	1.595	2.388	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>		<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> 97B: <i>BLOOD SAFETY</i>
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A		
<b>D. Acquisition Strategy</b> N/A		
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.		

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>				<b>PROJECT</b> 97D: <i>CENTER FOR AGING EYE</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
97D: <i>CENTER FOR AGING EYE</i>	1.596	2.388	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>A. Mission Description and Budget Item Justification</b>											
Congressional Interest Item funding for Low Vision research.											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
							<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1 This congressionally directed project conducted Military Low Vision Research.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO							1.596	2.388	0.000	0.000	0.000
Program #2 SBIR/STTR							0.000	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010				
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>		<b>PROJECT</b> 97D: <i>CENTER FOR AGING EYE</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009								
<i>FY 2010 Plans:</i> FY 2010								
<i>Base FY 2011 Plans:</i> FY 2011 Base								
<i>OCO FY 2011 Plans:</i> FY 2011 OCO								
Accomplishments/Planned Programs Subtotals				1.596	2.388	0.000	0.000	0.000
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A								
<b>D. Acquisition Strategy</b> N/A								
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.								

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>				<b>PROJECT</b> 97T: <i>NEUROTOXIN EXPOSURE TREATMENT</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
97T: <i>NEUROTOXIN EXPOSURE TREATMENT</i>	24.918	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>A. Mission Description and Budget Item Justification</b>											
Congressional Interest Item funding for Neurotoxin Exposure Treatment.											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
							<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  This congressionally directed project conducted research for the Neurotoxin Exposure Treatment Parkinsons Research Program.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO							24.918	0.000	0.000	0.000	0.000
Program #2  SBIR/STTR							0.000	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> 97T: <i>NEUROTOXIN EXPOSURE TREATMENT</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		24.918	0.000	0.000	0.000	0.000
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>D. Acquisition Strategy</b> N/A						
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>				<b>PROJECT</b> FH4: <i>FORCE HEALTH PROTECTION - ADV TECH DEV</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
FH4: <i>FORCE HEALTH PROTECTION - ADV TECH DEV</i>	2.006	1.953	1.974	0.000	1.974	2.006	2.039	2.075	2.107	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This project matures, validates, and supports enhanced Force Health Protection of Soldiers against threats in military operations and training. Health-monitoring tools are matured to rapidly identify deployment stressors that affect the health of Joint Forces. These databases and systems enhance the Department of Defense's (DoD's) ability to monitor and protect against adverse changes in health, especially mental health effects caused by changes in brain function. Force Health Protection work is conducted in close coordination with the Department of Veterans Affairs. The program is maturing the development of global health monitoring (e.g., development of neuropsychological test methodologies), validating clinical signs and symptoms correlating to medical records, diagnosed diseases, and mortality rates. The key databases supporting this program are the Millennium Cohort Study and the Total Army Injury and Health Outcomes Database. These databases allow for the examination of interactions of psychological stress and other deployment and occupational stressors that affect Warfighter health behaviors. This project contains no duplication with any effort within the Military Departments and includes direct participation by other Services. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this project is performed by the US Army Center for Environmental Health Research, Fort Detrick, MD, the US Army Research Institute of Environmental Medicine, Natick, MA, and the Naval Health Research Center, San Diego, CA.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Health Research: Includes validation of interventions developed from the Millennium Cohort study (a prospective health project in military servicemembers designed to evaluate the long-term health effects of military service, including deployments), validation of biomarkers of exposure and methods to detect environmental contamination and toxic exposure, and validation of thoracic injury prediction models of blast exposure. In FY09, conducted a systematic validation of prospective data to correlate relationships in chronic health effects and multi-symptomatic illnesses, drawing from disability database analysis to isolate causes, and implemented and tracked results for the most promising interventions to fight chronic disabilities. In FY10, validate thoracic blunt trauma and performance decrement models by comparing with data obtained from large animal exercise studies; conduct data	2.006	1.898	1.974	0.000	1.974

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> FH4: <i>FORCE HEALTH PROTECTION - ADV TECH DEV</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>analysis to correlate relationships in Post-Traumatic Stress Disorder (PTSD), depression, and anxiety symptoms among Millennium Cohort participants in conjunction with increased mental and physical health problems; validate prototype Environmental Sentinel Biomonitor (ESB) system for use with field drinking water production systems and transition to advanced development. In FY11, will transition thoracic blast injury models to Army Research Laboratory and to the US Army Center for Health Promotion and Preventive Medicine (USACHPPM); will transition to the USACHPPM (Health Hazard Assessment Program) and the Army Research Laboratory / Survivability, Lethality Assessment Division (Soldier Survivability Assessment Program) an integrated software version for combined blunt trauma and toxic gas inhalation; will conduct a systematic validation of prospective data to correlate relationships in PTSD and depression.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #2 Small Business Innovative Research/Small Business Technology Transfer Programs</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p>		0.000	0.055	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> FH4: <i>FORCE HEALTH PROTECTION - ADV TECH DEV</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		2.006	1.953	1.974	0.000	1.974
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>D. Acquisition Strategy</b> N/A						
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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Exhibit R-2A, PB 2011 Army RDT&E Project Justification									DATE: February 2010		
APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE				PROJECT			
2040: Research, Development, Test & Evaluation, Army BA 3: Advanced Technology Development (ATD)				PE 0603002A: MEDICAL ADVANCED TECHNOLOGY				MB1: ADV DIAGNOSTICS & THERAPEUTIC DIG TECH			
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
MB1: ADV DIAGNOSTICS & THERAPEUTIC DIG TECH	0.000	1.591	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>A. Mission Description and Budget Item Justification</b>											
Congressional Interest Item funding for Advanced Diagnostic and Therapeutic Digital Technologies development.											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
						FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011	
Program #1 Advanced Diagnostic and Therapeutic Digital Technologies. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						0.000	1.591	0.000	0.000	0.000	
Accomplishments/Planned Programs Subtotals						0.000	1.591	0.000	0.000	0.000	

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>		<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MB1: <i>ADV DIAGNOSTICS &amp; THERAPEUTIC DIG TECH</i>
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A		
<b>D. Acquisition Strategy</b> N/A		
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.		

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**Exhibit R-2A, PB 2011 Army RDT&E Project Justification** **DATE:** February 2010

<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MB2: <i>BRAIN, BIOLOGY, AND MACHINE</i>
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COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
MB2: <i>BRAIN, BIOLOGY, AND MACHINE</i>	1.595	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Congressional Interest Item funding for brain, biology and machine advanced technology development.

**B. Accomplishments/Planned Program (\$ in Millions)**

	FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011
Program #1  This congressionally directed project conducted Brain, Biology and Machine Applied Research.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO	1.595	0.000	0.000	0.000	0.000
Program #2  SBIR/STTR	0.000	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MB2: <i>BRAIN, BIOLOGY, AND MACHINE</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		1.595	0.000	0.000	0.000	0.000
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>D. Acquisition Strategy</b> N/A						
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>			<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>				<b>PROJECT</b> MB3: <i>CENTER FOR INTEGRATION OF MEDICINE &amp; INNOV TECH</i>				
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MB3: <i>CENTER FOR INTEGRATION OF MEDICINE &amp; INNOV TECH</i>	7.973	8.953	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>A. Mission Description and Budget Item Justification</b>											
Congressional Interest Item funding for the Center for the Integration of Medicine and Innovative Technology.											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
							<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  This congressionally directed project conducted research at the Center for the Integration of Medicine and Innovative Technology (CIMIT).  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO							7.973	8.953	0.000	0.000	0.000
Program #2 SBIR/STTR							0.000	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MB3: <i>CENTER FOR INTEGRATION OF MEDICINE &amp; INNOV TECH</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		7.973	8.953	0.000	0.000	0.000
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>D. Acquisition Strategy</b> N/A						
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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Exhibit R-2A, PB 2011 Army RDT&E Project Justification									DATE: February 2010		
APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE				PROJECT			
2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>				MB4: <i>CENTER FOR UNTETHERED HEALTHCARE</i>			
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
MB4: <i>CENTER FOR UNTETHERED HEALTHCARE</i>	0.997	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>A. Mission Description and Budget Item Justification</b>											
Congressional Interest Item funding for the Center for Untethered Health Care.											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
							FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011
Program #1 This congressionally directed project conducted research at the Center for Untethered Health Care  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO							0.997	0.000	0.000	0.000	0.000
Program #2 SBIR/STTR							0.000	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MB4: <i>CENTER FOR UNTETHERED HEALTHCARE</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		0.997	0.000	0.000	0.000	0.000
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>D. Acquisition Strategy</b> N/A						
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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Exhibit R-2A, PB 2011 Army RDT&E Project Justification									DATE: February 2010		
APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE				PROJECT			
2040: Research, Development, Test & Evaluation, Army BA 3: Advanced Technology Development (ATD)				PE 0603002A: MEDICAL ADVANCED TECHNOLOGY				MG5: NATIONAL FUNCTIONAL GENOMICS CENTER (CA)			
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
MG5: NATIONAL FUNCTIONAL GENOMICS CENTER (CA)	5.980	5.969	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>A. Mission Description and Budget Item Justification</b>											
Congressional Interest Item funding for Functional Genomics.											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
						FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011	
Program #1						5.980	5.969	0.000	0.000	0.000	
National Functional Genomics Center. This is a Congressional Interest Item.											
<i>FY 2009 Accomplishments:</i>											
FY 2009											
<i>FY 2010 Plans:</i>											
FY 2010											
<i>Base FY 2011 Plans:</i>											
FY 2011 Base											
<i>OCO FY 2011 Plans:</i>											
FY 2011 OCO											
Accomplishments/Planned Programs Subtotals						5.980	5.969	0.000	0.000	0.000	

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>		<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MG5: <i>NATIONAL FUNCTIONAL GENOMICS CENTER (CA)</i>
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A		
<b>D. Acquisition Strategy</b> N/A		
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.		

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>			<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>				<b>PROJECT</b> MG7: <i>ON-LINE MEDICAL TRAINING (CA)</i>				
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MG7: <i>ON-LINE MEDICAL TRAINING (CA)</i>	2.791	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>A. Mission Description and Budget Item Justification</b> Congressional Interest Item funding for Online Medical Training.											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
							<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1 Online Medical Training for Military Personnel. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO							2.791	0.000	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals							2.791	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>		<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MG7: <i>ON-LINE MEDICAL TRAINING (CA)</i>
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A		
<b>D. Acquisition Strategy</b> N/A		
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.		

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>			<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>				<b>PROJECT</b> MI4: <i>ALLIANCE FOR NANOHEALTH (CA)</i>				
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MI4: <i>ALLIANCE FOR NANOHEALTH (CA)</i>	3.190	3.979	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>A. Mission Description and Budget Item Justification</b>											
Congressional Interest Item funding for the Alliance for NanoHealth.											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
							<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1 Alliance for NanoHealth. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO							3.190	3.979	0.000	0.000	0.000
<b>Accomplishments/Planned Programs Subtotals</b>							3.190	3.979	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>		<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MI4: <i>ALLIANCE FOR NANOHEALTH (CA)</i>
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A		
<b>D. Acquisition Strategy</b> N/A		
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.		

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Exhibit R-2A, PB 2011 Army RDT&E Project Justification								DATE: February 2010			
APPROPRIATION/BUDGET ACTIVITY			R-1 ITEM NOMENCLATURE				PROJECT				
2040: Research, Development, Test & Evaluation, Army BA 3: Advanced Technology Development (ATD)			PE 0603002A: MEDICAL ADVANCED TECHNOLOGY				MJ2: FIBRINOGEN BANDAGES FOR BATTLEFIELD WOUNDS (CA)				
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
MJ2: FIBRINOGEN BANDAGES FOR BATTLEFIELD WOUNDS (CA)	2.990	2.388	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>A. Mission Description and Budget Item Justification</b>											
Congressional Interest Item funding for Fibrin Adhesive Stat (FAST) Dressing technology development.											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
						FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011	
Program #1						2.990	2.388	0.000	0.000	0.000	
Fibrin Adhesive Stat (FAST) Dressing. This is a Congressional Interest Item.											
FY 2009 Accomplishments:											
FY 2009											
FY 2010 Plans:											
FY 2010											
Base FY 2011 Plans:											
FY 2011 Base											
OCO FY 2011 Plans:											
FY 2011 OCO											
Accomplishments/Planned Programs Subtotals						2.990	2.388	0.000	0.000	0.000	

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>		<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MJ2: <i>FIBRINOGEN BANDAGES FOR BATTLEFIELD WOUNDS (CA)</i>
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A		
<b>D. Acquisition Strategy</b> N/A		
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.		

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>									<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>				<b>PROJECT</b> MK1: <i>MEDICAL M&amp;S THROUGH SYNTHETIC DIGITAL GENES (CA)</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MK1: <i>MEDICAL M&amp;S THROUGH SYNTHETIC DIGITAL GENES (CA)</i>	0.996	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>A. Mission Description and Budget Item Justification</b>											
Congressional Interest Item funding for Medical Modeling and Simulation advanced technology development.											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
						<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>	
Program #1 Medical Modeling and Simulation Through Synthetic Digital Genes. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						0.996	0.000	0.000	0.000	0.000	
Accomplishments/Planned Programs Subtotals						0.996	0.000	0.000	0.000	0.000	

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>		<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MK1: <i>MEDICAL M&amp;S THROUGH SYNTHETIC DIGITAL GENES (CA)</i>
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A		
<b>D. Acquisition Strategy</b> N/A		
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.		

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>				<b>PROJECT</b> MK8: <i>PLASMA STERILIZER (CA)</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MK8: <i>PLASMA STERILIZER (CA)</i>	3.189	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>A. Mission Description and Budget Item Justification</b>											
Congressional Interest Item funding for Plasma Sterilizer advanced technology development.											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
							<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1 Plasma Sterilizer. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO							3.189	0.000	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals							3.189	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>		<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MK8: <i>PLASMA STERILIZER (CA)</i>
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A		
<b>D. Acquisition Strategy</b> N/A		
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.		

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Exhibit R-2A, PB 2011 Army RDT&E Project Justification								DATE: February 2010			
APPROPRIATION/BUDGET ACTIVITY			R-1 ITEM NOMENCLATURE					PROJECT			
2040: Research, Development, Test & Evaluation, Army BA 3: Advanced Technology Development (ATD)			PE 0603002A: MEDICAL ADVANCED TECHNOLOGY					ML3: SOLDIER-MOUNTED EYE-TRACKING & CONTROL SYSTEM (CA)			
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
ML3: SOLDIER-MOUNTED EYE-TRACKING & CONTROL SYSTEM (CA)	4.983	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>A. Mission Description and Budget Item Justification</b>											
Congressional Interest Item funding for Biosensor Communicator and Controller System advanced technology development.											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
							FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011
Program #1 Biosensor Communicator and Controller System. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO							4.983	0.000	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals							4.983	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>		<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> ML3: <i>SOLDIER-MOUNTED EYE-TRACKING &amp; CONTROL SYSTEM (CA)</i>
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A		
<b>D. Acquisition Strategy</b> N/A		
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.		

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Exhibit R-2A, PB 2011 Army RDT&E Project Justification									DATE: February 2010		
APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE				PROJECT			
2040: Research, Development, Test & Evaluation, Army BA 3: Advanced Technology Development (ATD)				PE 0603002A: MEDICAL ADVANCED TECHNOLOGY				MM1: WEIGHT MEASUREMENTS & STANDARDS FOR MIL PERSONNEL			
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
MM1: WEIGHT MEASUREMENTS & STANDARDS FOR MIL PERSONNEL	1.995	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>A. Mission Description and Budget Item Justification</b>											
Congressional Interest Item funding for Weight Measurements and Standards for Military Personnel.											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
						FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011	
Program #1 Weight Measurements and Standards for Military Personnel. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						1.995	0.000	0.000	0.000	0.000	
Accomplishments/Planned Programs Subtotals						1.995	0.000	0.000	0.000	0.000	

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>		<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM1: <i>WEIGHT MEASUREMENTS &amp; STANDARDS FOR MIL PERSONNEL</i>
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A		
<b>D. Acquisition Strategy</b> N/A		
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.		

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Exhibit R-2A, PB 2011 Army RDT&E Project Justification									DATE: February 2010		
APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE				PROJECT			
2040: Research, Development, Test & Evaluation, Army BA 3: Advanced Technology Development (ATD)				PE 0603002A: MEDICAL ADVANCED TECHNOLOGY				MM2: MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)			
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
MM2: MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)	187.962	239.536	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>A. Mission Description and Budget Item Justification</b>											
Congressional Interest Item funding for Medical Advanced Technology Initiatives.											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
						FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011	
Program #1 Battlefield Exercise and Combat Related Spinal Cord Injury Research. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						0.797	0.000	0.000	0.000	0.000	
Program #2 Cellular Therapy for Battlefield Medical Care. This is a Congressional Interest Item.						1.595	2.785	0.000	0.000	0.000	

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #3 Center for Genetic Origins of Cancer. This is a Congressional Interest Item.		2.392	1.990	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #4		1.595	2.387	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Combat Wound Initiative at Walter Reed Army Medical Center. This is a Congressional Interest Item.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #5</p> <p>Composite Tissue Allotransplantation Research and Clinical Program. This is a Congressional Interest Item.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>		1.595	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #6 Feeding Tube for Trauma and Burn Patients. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.595	0.000	0.000	0.000	0.000
Program #7 Host Pathogen Interaction Study. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		3.189	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #8  Human Genomics, Molecular Epidemiology and Clinical Diagnostics for Infectious Diseases. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.156	1.194	0.000	0.000	0.000
Program #9  Medical Surveillance Initiative-Clinical Looking Glass. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base		0.797	1.194	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #10 National Oncogenomics and Molecular Imaging Center. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		3.189	4.735	0.000	0.000	0.000
Program #11 National Warfighter Health Sustainment Study. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010		0.797	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #12 Neuroimaging & Neuropsychiatric Trauma in US Warfighters. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		4.984	6.217	0.000	0.000	0.000
Program #13 Telepharmacy Robotic Medicine Device Unit. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009		1.395	0.796	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #14 Institute for the Advancement of Bloodless Medicine. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.595	1.485	0.000	0.000	0.000
Program #15 Battlefield Tracheal Intubation for Wounded Soldiers. This is a Congressional Interest Item.		4.186	0.000	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b>	<b>R-1 ITEM NOMENCLATURE</b>	<b>PROJECT</b>				
2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #16 Integrated Patient Quality Program. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.595	0.000	0.000	0.000	0.000
Program #17		2.990	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Limb Tissue Regeneration after Battlefield Injuries Using Bone Marrow Stem Cells. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #18 National Biodefense Training. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		4.984	4.974	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #19 Rugged Electronic Textile Vital Signs Monitoring. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		2.990	2.387	0.000	0.000	0.000
Program #20 Control of Inflammation and Tissue Repair (CITR). This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		3.189	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #21 Trauma Care, Research and Training. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		2.392	2.387	0.000	0.000	0.000
Program #22 Maine Institute for Human Genetics. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.595	1.592	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #23 Ultra High-Speed MEMS Electromagnetic Cell Sorter. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		2.392	0.000	0.000	0.000	0.000
Program #24 Warfighter Cancer Care Engineering. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		2.392	0.000	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #25 Institute for Regenerative Medicine. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		2.990	3.183	0.000	0.000	0.000
Program #26 Wireless Electronic Patient Records, WPIC-Personal Information Center. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		3.189	0.000	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #27 Integrated Functional Materials Initiative. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.797	0.000	0.000	0.000	0.000
Program #28 National Center of Ophthalmology Training and Education al Wills Eye Health System. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base		0.997	2.387	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #29 Rural Health - CERMUSA. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		2.392	1.592	0.000	0.000	0.000
Program #30 Spinal Muscular Atrophy (SMA) Research Program. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010		3.189	2.984	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #31 Ultra-High Resolution Display for Army Medicine. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		3.987	0.000	0.000	0.000	0.000
Program #32 Advanced Lower Limb Prosthesis for Battlefield Amputees. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009		1.595	3.183	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #33 Advanced Restoration Therapies in Spinal Cord Injuries. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.994	1.592	0.000	0.000	0.000
Program #34 Advanced Surface Technologies for Prosthetic Development. This is a Congressional Interest Item.		1.595	0.000	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #35 Prader-Willi Syndrome (PWS) Research. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.595	1.592	0.000	0.000	0.000
Program #36		1.994	2.785	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Remote Bio-Medical Detector. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #37 Gulf War Illness Peer Reviewed Research. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		7.973	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #38 Advanced Regenerative Medicine Therapies for Combat Injuries. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		2.990	3.183	0.000	0.000	0.000
Program #39 Portable Autonomous Fluid-less Near-infrared Non-Invasive Alcohol Testing Devices. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base		0.498	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #40 Controlled Release of Anti-Inflammatory & Tissue Repair Agents f/Prosthetic Devices & Burn Treatment. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		5.981	0.000	0.000	0.000	0.000
Program #41 Corneal Wound Repair. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010		5.482	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #42 Center of Cardiac Surgery Robotic Computerized Telem Manipulation. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.595	0.000	0.000	0.000	0.000
Program #43 Chronic Tinnitus Treatment Program. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009		0.997	0.796	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #44  Infectious and Inflammatory Disease Center at the Burham Institute for Medical Research. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		2.392	0.000	0.000	0.000	0.000
Program #45  Institute of Surgical and Interventional Simulation (ISIS). This is a Congressional Interest Item.		4.385	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #46 Bioelectrics Research for Casualty Care and Management. This is a Congressional Interest Item.		1.595	1.194	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #47		0.797	0.796	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Advanced Medical Multi-Missions and CASEVAC Roles. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #48  Automated and Portable Field System for the Rapid Detection and Diagnosis of Diseases. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.595	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #49 Brain Interventional-Surgical Hybrid Initiative. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.595	2.387	0.000	0.000	0.000
Program #50 101st Airborne Injury Prevention & Performance Enhancement Research Initiative. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base		1.994	2.984	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #51 Blood, Medical & Food Safety Via Eco-Friendly Wireless Sensing. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.997	1.592	0.000	0.000	0.000
Program #52 International Heart Institute/U.S. Army Vascular Graft Research Project. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010		0.997	1.592	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #53 Military Burn Trauma Research Program. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		3.987	4.477	0.000	0.000	0.000
Program #54 Military Nutrition Research: Personnel Readiness and Warfighter Performance. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009		1.595	0.796	0.000	0.000	0.000

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R-1 Line Item #30

Page 98 of 162

1060 of 1536

**UNCLASSIFIED**

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #55  Modular Stethoscope For Harsh Environments. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.196	0.000	0.000	0.000	0.000
Program #56  Novel Approaches to Reduce the Severity of Battlefield Combined Tissue Injury. This is a Congressional Interest Item.		1.595	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #57 Safe Airway Access in Combat. This is a Congressional Interest Item.		1.994	0.000	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #58		1.595	0.000	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Smart Prosthetic Hand Technology. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #59 Solutions for Infection Control in Military Hospitals. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.994	0.000	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #60 Staph Vaccine. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		3.987	6.367	0.000	0.000	0.000
Program #61 Biodefense Tech Transfer Initiative. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.495	0.000	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #62 Extremity War Injury Research Foundation. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.797	0.000	0.000	0.000	0.000
Program #63 Limb Regeneration Through Biometrics Technology. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.797	0.000	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #64 Linear Accelerator Cancer Research. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.797	0.796	0.000	0.000	0.000
Program #65 Mary Bird Perkins Cancer Center. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		2.392	0.000	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #66 Mass Scale Biosensor Threat Diagnostic for In-Theater Defense Utilization (FIU). This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.595	0.000	0.000	0.000	0.000
Program #67 Midwest Traumatic Injury Rehabilitation Center. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base		1.455	1.162	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #68 MUSC Cancer Genomics Research Collaborative. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.797	0.000	0.000	0.000	0.000
Program #69 Oncology Group Pediatric Cancer Research (CH). This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010		1.595	1.592	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #70 Prostate and Ovarian Cancer Biomarkers. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.196	0.000	0.000	0.000	0.000
Program #71 Proteomics Project (CH-LA). This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009		1.196	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #72  Rehabilitation and Assistive Technologies to Enhance the Life of Individuals with Disabilities. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.797	0.000	0.000	0.000	0.000
Program #73  Strattice Dermal Matrix Research. This is a Congressional Interest Item.		2.392	1.990	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #74 Trauma Hemostat. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.797	0.000	0.000	0.000	0.000
Program #75		3.110	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Returning Soldier Adjustment Assessment Remote Monitoring System. This is a Congressional Interest Item.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #76</p> <p>Green Environmentally Sustainable Laboratories and Clean Rooms (USAMRMC). This is a Congressional Interest Item.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>		0.797	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #77 Battlefield Nursing Program. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.595	1.592	0.000	0.000	0.000
Program #78 Intensive Care Unit to Intensive Care Hospital. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		2.392	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #79 Total Quality System for FDA Regulated Activities Database. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.435	0.000	0.000	0.000	0.000
Program #80 Accelerating Treatment for Trauma Wounds. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.197	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #81 Military Adult Stem Cell Collection and Storage Project. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.797	0.000	0.000	0.000	0.000
Program #82 Medical Errors Reduction Initiative. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.398	1.990	0.000	0.000	0.000

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2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #83 Joint Collaborative Medical Information System (JCMIS). This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		3.189	0.000	0.000	0.000	0.000
Program #84 Southeast Nebraska Cancer Center-National Functional Genomics Center. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.197	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b>	<b>R-1 ITEM NOMENCLATURE</b>	<b>PROJECT</b>				
2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #85 Personal Status Monitor (Nightengale). This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.994	0.796	0.000	0.000	0.000
Program #86 Smart Prosthetics Research. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.595	0.000	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #87 Anti-Terror Medical Technology Program. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		2.791	0.000	0.000	0.000	0.000
Program #88 Advanced Cancer Genome Institute. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.989	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #89 Advanced Military Wound Healing Research and Treatment. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	0.796	0.000	0.000	0.000
Program #90 ALS Therapy Development for Gulf War Research. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.592	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #91 Anti-Microbial Bone Graft Product. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.592	0.000	0.000	0.000
Program #92 Antioxidant Micronutrient Therapeutic Countermeasures. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	0.796	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #93  Automated Portable Field System f/Rapid Detection & Diagnosis of Endemic Diseases & Other Pathogens. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.592	0.000	0.000	0.000
Program #94  Battlefield Related Injury Translational Research Strategies. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base		0.000	1.791	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #95 Bio-Printing of Skin for Battlefield Burn Repairs. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.990	0.000	0.000	0.000
Program #96 Bio-Surveillance in a Highly Mobile Population. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010		0.000	1.592	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #97 Blood and Bone Marrow Collection Fellowship. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.990	0.000	0.000	0.000
Program #98 Brain Safety Net. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009		0.000	2.387	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #99 Breast Cancer Medical Information Network Decision Support. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	0.796	0.000	0.000	0.000
Program #100 Center for Cancer Immunology Research. This is a Congressional Interest Item.		0.000	1.592	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #101 Center for Ophthalmic Innovation. This is a Congressional Interest Item.		0.000	2.387	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #102		0.000	1.194	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Center for Virtual Reality Medical Simulation Training. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #103 Center of Excellence in Infectious Diseases and Human Microbiome. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	2.387	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #104 Clinical Development of a Norovirus Gastroenteritis Vaccine. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	3.581	0.000	0.000	0.000
Program #105 Clinical Technology Integration for Military Health. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.591	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #106 Collagen-Based Wound Dressing. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	0.796	0.000	0.000	0.000
Program #107 Cooperative International Neuromuscular Research. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	3.263	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #108 Countermeasures to Hemorrhaging (Liquid Bandage and Tissue Rengeneration). This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	5.730	0.000	0.000	0.000
Program #109 Customized Nursing Programs for Fort Benning. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base		0.000	1.592	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #110 Enhancing Wound Healing, Tissue Regeneration, and Biomarker Discovery. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.990	0.000	0.000	0.000
Program #111 Exceptional Family Transition (EFTT) for Soldiers, Sailors, Marines, and Airmen. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010		0.000	0.637	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #112 Hadron Particle Therapy. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.592	0.000	0.000	0.000
Program #113 Health Disparaties in Troop Readiness. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009		0.000	7.958	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #114  Highly Functional Neurally Controlled Skeletally Attached and Intelligent Prosthetic Devices. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	3.024	0.000	0.000	0.000
Program #115  Identification of Pain Mechanisms and Therapeutic Targets. This is a Congressional Interest Item.		0.000	0.796	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #116 Imaging and Cognitive Evaluation of Soldiers. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	0.637	0.000	0.000	0.000
Program #117		0.000	1.592	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Infection Prevention Program for Battlefield Wounds. This is a Congressional Interest Item.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #118</p> <p>Infectious and Airborne Pathogen Reduction. This is a Congressional Interest Item.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>		0.000	2.228	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #119 In-field Body Temperature Conditioner. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	2.386	0.000	0.000	0.000
Program #120 Institute for Simulation and Interprofessional Studies. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	4.615	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #121 Integrated Patient Electronic Record System. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.592	0.000	0.000	0.000
Program #122 Intelligent Orthopedic Fracture Implant Program. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	0.796	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #123 Malaria Vaccine Development. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	3.978	0.000	0.000	0.000
Program #124 Marty Driesler Lung Cancer Project. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.592	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #125 Mass Casualty First Responders Disaster Surge Technology Program. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	2.387	0.000	0.000	0.000
Program #126 Medical Biosurveillance and Efficiency Program. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.592	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #127 Microencapsulation and Vaccine Delivery Research. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	0.796	0.000	0.000	0.000
Program #128 Military Drug Management System. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	2.387	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #129 Military Medical Decontamination System. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	4.477	0.000	0.000	0.000
Program #130 Military Mental Health Initiative. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	0.597	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #131 Military Pediatric Training and Support. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	3.979	0.000	0.000	0.000
Program #132 Mission Hospital Computerized Physician Order Entry. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	0.796	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #133 Mobile Aerosol Monitoring for the Department of Defense. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.194	0.000	0.000	0.000
Program #134 Mobile Integrated Diagnostic and Data Analysis System (MIDDAS). This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.592	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #135 Multi-Dose Closed Loop pH Monitoring System for Platelets. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.591	0.000	0.000	0.000
Program #136 Multiplexed Human Fungal Infection Diagnostic. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.592	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #137 Musculoskeletal Interdisciplinary Research Initiative. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.592	0.000	0.000	0.000
Program #138 NAU-TGen North Dangerous Pathogens DNA Forensics Center Upgrades. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.592	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #139 Near Infrared Spectroscopy Military Personnel Assessment. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	0.796	0.000	0.000	0.000
Program #140 Neural Control of External Devices. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.990	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #141  Nicholson center for Surgical Advancement Medical Robotics and Simulation. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	4.178	0.000	0.000	0.000
Program #142  Northern Illinois Proton Treatment and Research Center. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base		0.000	2.784	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #143 Nurse Education Center of Excellence for Remote and Medically Underserved Populations (CERMUSA). This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.592	0.000	0.000	0.000
Program #144 Nursing Teaching and Leadership Program. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010		0.000	0.796	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #145 Operation Re-Entry NC. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	2.387	0.000	0.000	0.000
Program #146 Parsons Institute for Information Mapping. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009		0.000	1.194	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #147 Plant-Based Vaccine Research. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.990	0.000	0.000	0.000
Program #148 Plug-In Architecture for DoD Medical Imaging. This is a Congressional Interest Item.		0.000	1.194	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #149 Power Efficient Microdisplay Development for US Army Night Vision. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	2.387	0.000	0.000	0.000
Program #150		0.000	1.592	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Pride Center for America's Wounded Veterans. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #151 Rapid Burn Wound Therapies. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.989	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #152 Regenerative Medicine to Address Acute Hearing Loss. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	2.386	0.000	0.000	0.000
Program #153 Sensor Tape Physiological Monitoring. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.990	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b>	<b>R-1 ITEM NOMENCLATURE</b>	<b>PROJECT</b>				
2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #154 Silicon Nanomaterial for Battlefield Medical Devices. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	2.785	0.000	0.000	0.000
Program #155 Smart Wound Dressing for MRSA-Infected Battle Wounds. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	0.796	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #156 Stress Disorders Research Initiative at Fort Hood. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	2.387	0.000	0.000	0.000
Program #157 Techniques to Manage Noncompressible Hemorrhage Following Combat Injury. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base		0.000	1.990	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #158 Testing of Microneedle Device for Multiple Applications. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	0.955	0.000	0.000	0.000
Program #159 Translational Research for Muscular Dystrophy. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010		0.000	1.592	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #160 Transportable Renal Replacement Therapy for Battlefield Applications. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	0.796	0.000	0.000	0.000
Program #161 Trauma Response Simulation Training. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009		0.000	1.194	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #162 Treatment of Battlefield Spinal Cord and Burn Injuries. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	0.358	0.000	0.000	0.000
Program #163 Vanadium Safety Readiness. This is a Congressional Interest Item.		0.000	3.342	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #164 Health Information Technology Demonstration Project at Madigan and Puget Sound VA Medical Center. This is a Congressional Interest Item.		0.997	0.000	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #165		2.392	0.000	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Norfolk State University Center for Systems and Modeling & Simulation. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #166 Health Informatics Initiative. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		2.492	0.000	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>		<b>PROJECT</b> MM2: <i>MEDICAL ADVANCE TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Accomplishments/Planned Programs Subtotals				187.962	239.536	0.000	0.000	0.000
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A								
<b>D. Acquisition Strategy</b> N/A								
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.								

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>				<b>PROJECT</b> MM3: <i>WARFIGHTER MEDICAL PROTECTION &amp; PERFORMANCE STDS</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
MM3: <i>WARFIGHTER MEDICAL PROTECTION &amp; PERFORMANCE STDS</i>	0.000	6.550	7.347	0.000	7.347	8.659	10.748	11.696	14.615	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This project supports the Medical and Survivability technology areas of the future force with laboratory validation studies and field demonstrations of biomedical products designed to protect, sustain, and enhance Soldier performance in the face of a myriad of environmental, physiological stressors, and materiel hazards encountered in training and operational environments. This effort focuses on demonstrating and transitioning technologies and validated tools associated with biomechanical-based health risks, injury assessment and prediction, Soldier survivability, and performance during continuous operations. The three main thrust areas are (1) Physiological Health and Environmental Protection, (2) Injury Prevention and Reduction, and (3) Psychological Health and Resilience. This project contains no duplication with any effort within the Military Departments, and includes direct participation by other Services. Beginning in FY10, projects 800 and 819 will be consolidated into project MM3. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this project is performed by the US Army Research Institute of Environmental Medicine (USARIEM), Natick, MA, and the U.S. Army Aeromedical Research Laboratory (USAARL), Fort Rucker, AL.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Physiological Health and Environmental Protection (transferred from project 800 (Sleep Research/Environmental Monitoring)): Validation of physiological awareness and prediction tools for Soldier performance in extreme environments. In FY10, transition heat strain decision aid to US Army Ranger School; refine hydration sensor technologies and conduct early prototype evaluations. In FY11, will validate the next generation of individual physiological sensors; will perform advanced testing of promising hydration sensor technologies.  <i>FY 2009 Accomplishments:</i> FY 2009	0.000	2.145	2.608	0.000	2.608

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM3: <i>WARFIGHTER MEDICAL PROTECTION &amp; PERFORMANCE STDS</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #2</b>  Injury Prevention and Reduction (transferred from project 819 (Physical Performance Enhancement)): Validation of injury prediction tools for brain, spine, and thoracic injury from blast, blunt, and ballistic impact. In FY10, field test loading assessment system for the prediction of spinal injury; validate thoracic blunt trauma and performance decrement models by comparing with data obtained from large animal exercise studies; validate a battery of Soldier performance tests based on common Soldiering tasks. In FY11, will validate safe, rapid assessment criteria for spinal injury risk prediction; will complete validation of facial fracture dose-response models and injury risk functions using an instrumented headform; will transition integrated software version for combined blunt trauma and toxic gas inhalation; will refine analysis tools which can use non or minimally invasive techniques to detect bone injury.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base		0.000	3.356	3.345	0.000	3.345

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM3: <i>WARFIGHTER MEDICAL PROTECTION &amp; PERFORMANCE STDS</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #3</b>  Psychological Health and Resilience: Validation of neuro-cognitive assessment and brain injury detection methods. Validate tools and pre-clinical methods to treat Post-Traumatic Stress Disorder in a military population. In FY10, conduct field study to determine the extent to which baseline psychological and neurological functioning impacts resilience and sensitivity to concussion. In FY11, will validate utility of neurocognitive measures for tracking and monitoring recovery rate after concussion; will validate rodent Post-Traumatic Stress Disorder model using current treatment methods.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	0.933	1.394	0.000	1.394
<b>Program #4</b>  Small Business Innovative Research  <i>FY 2009 Accomplishments:</i> FY 2009		0.000	0.116	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603002A: <i>MEDICAL ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> MM3: <i>WARFIGHTER MEDICAL PROTECTION &amp; PERFORMANCE STDS</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		0.000	6.550	7.347	0.000	7.347
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>D. Acquisition Strategy</b> N/A						
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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**Exhibit R-2, PB 2011 Army RDT&E Budget Item Justification** **DATE:** February 2010

<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603003A: <i>AVIATION ADVANCED TECHNOLOGY</i>
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COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	102.207	112.388	57.454	0.000	57.454	59.983	67.439	79.575	90.804	0	627.304
313: <i>ADV ROTARYWING VEH TECH</i>	41.701	39.252	42.149	0.000	42.149	42.729	47.556	55.825	62.624	Continuing	Continuing
435: <i>AIRCRAFT WEAPONS</i>	2.620	2.690	2.608	0.000	2.608	0.000	0.000	0.000	0.000	Continuing	Continuing
436: <i>ROTARYWING MEP INTEG</i>	0.000	0.000	1.754	0.000	1.754	7.619	10.070	13.752	18.013	Continuing	Continuing
447: <i>ACFT DEMO ENGINES</i>	11.281	17.842	10.943	0.000	10.943	9.635	9.813	9.998	10.167	Continuing	Continuing
BA7: <i>AVIATION ADVANCED TECHNOLOGY INITIATIVES (CA)</i>	46.605	47.630	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
BA8: <i>VECTORED THRUST DUCTED PROPELLER (CA)</i>	0.000	4.974	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This program element (PE) matures and demonstrates manned and unmanned rotary wing vehicle (RWV) technologies to enable Army transformation. Within this PE, aviation technologies are matured and integrated into realistic and robust demonstrations. The PE supports the maturation and demonstration of enabling component and subsystems for rotorcraft in the following areas: rotors, drive trains, structures and survivability (project 313), weapons integration (project 435), mission equipment packages to enable control of unmanned systems (project 436) and affordable and efficient engines (project 447). Projects BA7 and BA8 fund congressional special interest items. Work in this PE is related to and fully coordinated with PE 0602211A (Aviation Technology), PE 0603313A (Missile and Rocket Advanced Technology) and PE 0603270A (Electronic Warfare Technology). Efforts under this PE transition to programs supported by PE 0603801A (Aviation - Advanced Development), PE 0604801A (Aviation - Engineering Development), and PE 0604270A (Electronic Warfare Development). The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this PE is performed by the Aviation and Missile Research, Development, and Engineering Center (AMRDEC) with facilities located at Redstone Arsenal, AL; Fort Eustis, VA; and Moffett Field, CA.

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<b>Exhibit R-2, PB 2011 Army RDT&amp;E Budget Item Justification</b>	<b>DATE:</b> February 2010
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603003A: <i>AVIATION ADVANCED TECHNOLOGY</i>
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**B. Program Change Summary (\$ in Millions)**

	<u><b>FY 2009</b></u>	<u><b>FY 2010</b></u>	<u><b>FY 2011 Base</b></u>	<u><b>FY 2011 OCO</b></u>	<u><b>FY 2011 Total</b></u>
Previous President's Budget	106.285	60.097	59.703	0.000	59.703
Current President's Budget	102.207	112.388	57.454	0.000	57.454
Total Adjustments	-4.078	52.291	-2.249	0.000	-2.249
• Congressional General Reductions		-0.589			
• Congressional Directed Reductions					
• Congressional Rescissions		0.000			
• Congressional Adds		52.880			
• Congressional Directed Transfers					
• Reprogrammings	-1.214	0.000			
• SBIR/STTR Transfer	-2.864	0.000			
• Adjustments to Budget Years	0.000	0.000	-2.249	0.000	-2.249

**Change Summary Explanation**

FY10 Congressionally directed increases.

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603003A: <i>AVIATION ADVANCED TECHNOLOGY</i>				<b>PROJECT</b> 313: <i>ADV ROTARYWING VEH TECH</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
313: <i>ADV ROTARYWING VEH TECH</i>	41.701	39.252	42.149	0.000	42.149	42.729	47.556	55.825	62.624	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This project matures and demonstrates systems/subsystems for manned/unmanned rotorcraft that provide, improved survivability, greater performance or lessen the operational costs and required maintenance. Systems demonstrated include rotors, drivetrains, robust airframe structures and integrated threat protection systems. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this project is performed by the Aviation Applied Technology Directorate of the Aviation and Missile Research, Development, and Engineering Center (AMRDEC), Fort Eustis, VA., and the System Simulation Development Directorate, AMRDEC, Redstone Arsenal, AL.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Rotorcraft Survivability: These efforts increase rotorcraft survivability by reducing platform signatures as well as providing the means to more efficiently jam enemy detection and tracking systems. This effort also enhances situational awareness allowing manned/unmanned aircraft to avoid enemy air threats. In FY09, developed a modular pod-based system for housing a laser jammer turret and hostile fire indication (HFI) sensors to collectively provide a universal B-kit for rotary wing platforms. In FY10, complete development of a lightweight, multi-function laser to counter MANPADS, small arms, RPG, and laser designated threats through multi-band, infra-red and eye-safe visual energy. In FY11, will integrate a lightweight, multi-function laser on an Apache platform and demonstrate improved countermeasures effectiveness through flight testing on a threat range. Will demonstrate an aircraft survivability software adapter to allow "plug & play" capability for legacy and future aircraft survivability equipment (ASE) components and software products through hardware-in-the-loop lab testing. Work on this effort is also being accomplished under PE 0602270A, project 442 and PE 0603270A, project K16.	6.491	9.435	12.306	0.000	12.306

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>								
<p>Program #2</p> <p>Rotorcraft Drive Systems: This effort demonstrates advanced rotorcraft drive technologies that increase the horsepower-to-weight ratio, reduce drive system noise, reduce production, operating and support costs, and provide automatic component impending failure detection. In FY09, completed fabrication of helical face gear components. Conducted demonstration testing of the helical face gear design. Began demonstration tests of the composite shaft/coupling, composite main rotor drive shaft and tail rotor enhanced power density gears. Validated diagnostic algorithms as part of the demonstration tests. In FY10, conduct over-torque fatigue testing of the tail rotor enhanced power density gears. Complete endurance and over-torque testing of the helical face gears. Complete demonstration testing of the composite housings and composite shaft/coupling. In FY11, will mature material technologies through bench testing to validate materials for lightweight housings, new bearings and ultra-highly loaded gears. Will initiate preliminary and detailed design of the demonstrator drive system and will evaluate these technologies relative to conventional single-speed transmissions and proposed multi-speed drive configurations.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p>				4.752	3.483	3.278	0.000	3.278

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010				
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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>								
<p>Program #3</p> <p>High Altitude Long Endurance (HALE) Platforms: This effort represents the Army's contribution to an Air Force managed Joint Capabilities Technology Demonstration (JCTD) to demonstrate an unmanned, high altitude, long endurance surveillance system. In FY09, refined flight characteristics and demonstrated air vehicle endurance, foot-print, and turn time (time to prepare vehicle for next mission). Demonstrated payload performance and data assimilation and storage. Validated military utility of air vehicle in concert with ground control station and military operators. Work on this effort is performed in coordination with PE's 1160401BB, 1160428BB, 0604857F, 0603160BR, and 0207434F during execution of the Global Observer JCTD.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p>				7.500	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<p>Program #4</p> <p>Rotor Design and Capabilities: This effort determines the performance benefits of advanced rotors through the evaluation of alternative designs aimed to satisfy future force capability needs for increased system durability, speed, range and payload. In FY09, demonstrated high lift technologies that provide rotor systems with improved aero-performance, reduced vibrations and noise. Utilized impact models and component tests to select rotor durability solutions for demonstration and fielding. Designed and demonstrated a rotor system for reliable transfer of data and power across the rotating and non-rotating interface for applications such as de-icing, on-blade controls and health and usage monitoring systems. Characterized Optimum Speed Rotor (OSR) system performance through rigorous flight testing. In FY10, begin to characterize acoustic properties of Optimum Speed Rotor through flight testing and demonstrate full flight envelope. Conduct component testing for rotor durability technologies. Conduct whirl stand and wind tunnel testing on full-scale rotor blades to demonstrate high performance rotor technologies that improve aeromechanical performance, reduce acoustic detection and reduce vibration. In FY11, will demonstrate enhanced integrated rotor durability to assess benefit to aircraft maintenance. Will demonstrate permanent erosion protection, reliable icing protection and battle damage assessment and repair technologies on full-scale rotor blades while also demonstrating improved hover performance.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p>		15.986	14.098	12.017	0.000	12.017

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<p>Program #5</p> <p>Capability-Based Operations and Sustainment Technologies (COST): Mature and demonstrate technologies that improve the operational availability of rotorcraft while reducing operating and support (maintenance) costs. In FY09, matured and refined engine prognostic/diagnostic algorithms by testing a turboshaft engine in a controlled, instrumented test cell. Performed full-scale testing (on a rotor test stand) of rotor head, flight controls and bearings to verify/validate the newly developed algorithms. Performed regression testing of software (evaluating the algorithms' functionality and interoperability with other software and sensor inputs using simulated flight test data) in preparation for system integration and flight testing. Demonstrated prognostication of remaining service life of damage tolerant airframe components. In FY10, integrate engine, flight control, electrical and rotor technologies to demonstrate the feasibility of implementing the technologies as a single solution. Apply system level data fusion techniques to increase accuracy and reduce false alarms. Conduct a system integration demonstration in an avionics systems integration laboratory. In FY11, will mature technologies to predict failures and remaining useful life of engine accessories such as fuel controls, pumps and generators. Will begin demonstration of on-board automatic adjustments for in-flight rotor smoothing/balance capability.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p>		6.972	6.695	5.852	0.000	5.852

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603003A: <i>AVIATION ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> 313: <i>ADV ROTARYWING VEH TECH</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<p>Program #6</p> <p>Adaptive Vehicle Management System (AVMS): The AVMS integrates advanced flight controls with real-time aircraft state information to enable safe and low-effort maneuvering and real-time adaptation to aircraft state changes (degradations, damage, mission, etc.). The AVMS demonstrates technology that enables Level 1 (most acceptable) handling qualities in the entire flight envelope, reduce flight control line replaceable unit counts by over 20% and reduce flight control system weight. In FY10, compile and identify technologies, including emerging applied research, and analyze the technology status and risk assessment of each for inclusion in the AVMS flight demonstration. Generate a preliminary design of a baseline AVMS system for flight demonstration. In FY11, will complete preliminary design of required AVMS hardware and software. Will prioritize technologies to be flight demonstrated; will conduct a risk/reward assessment of each technology. Will generate several candidate systems to analyze in simulation to support a planned flight demonstration.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>		0.000	1.183	1.402	0.000	1.402
Program #7		0.000	1.893	3.392	0.000	3.392

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603003A: <i>AVIATION ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> 313: <i>ADV ROTARYWING VEH TECH</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Integrated Aircraft and Crew Protection: This effort demonstrates combined rotorcraft platform durability and survivability improvements through a fully optimized and integrated structure, vehicle management system (VMS), and rotors/subsystems technology integration program. In FY10, conduct a series of platform system trade studies to identify the sensitivities of technology contributions to battlefield and operational survivability from structures, rotors, subsystems, and vehicle management systems areas. In FY11, will finalize the platform system trade studies. Will conduct hardware refinement and validation to mature system level solutions, of structures, rotors, subsystems and VMS technologies.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #8</p> <p>Real-time Airspace Collision-Avoidance and Teaming (REACT): This program evaluates, integrates, and demonstrates through flight testing, real-time airspace de-confliction and collision avoidance technologies. In FY10, mature the Army tactical airspace model for systems engineering analysis of potential airspace de-confliction and collision avoidance methods, and demonstrate and evaluate improved airborne and ground control station based real-time situational awareness displays. In FY11, will evaluate and demonstrate airspace/battlespace integration technologies, including real-time situational awareness display concepts and collision avoidance technology concepts, and evaluate effectiveness.</p>		0.000	1.433	3.902	0.000	3.902

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**UNCLASSIFIED**

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #9 Small Business Innovative Research/Small Business Technology Transfer Programs		0.000	1.032	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		41.701	39.252	42.149	0.000	42.149

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>		<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603003A: <i>AVIATION ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> 313: <i>ADV ROTARYWING VEH TECH</i>
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A		
<b>D. Acquisition Strategy</b> N/A		
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.		

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603003A: <i>AVIATION ADVANCED TECHNOLOGY</i>				<b>PROJECT</b> 435: <i>AIRCRAFT WEAPONS</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
435: <i>AIRCRAFT WEAPONS</i>	2.620	2.690	2.608	0.000	2.608	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>A. Mission Description and Budget Item Justification</b>											
<p>This project matures, demonstrates and integrates manned and unmanned sensor and weaponization technologies such as advanced missiles, guns, fire controls, advanced target acquisition and pilotage sensors into Army aviation platforms. Efforts are directed toward reducing the integrated weight of weapons, increasing engagement ranges, providing selectable effects on a variety of threats, and enabling cost-effective integration across multiple aviation platforms. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this project is performed by the Aviation and Missile Research, Development, and Engineering Center (AMRDEC), Redstone Arsenal, AL and Fort Eustis, VA.</p>											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
							<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Aviation Multi-Platform Munition (AMPM): Aircraft weapons efforts were consolidated in this project to focus technologies toward integrating a new lightweight weapon for use with both manned and unmanned rotorcraft systems. In FY09, developed and fabricated a Universal Test Pod (UTP) which integrated weapons using the Universal Armaments Interface (UAI) standard and enabled flight test and integration analysis of industry weapon systems. Conducted flight testing of the most promising industry candidate weapon systems in conjunction with scheduled Kiowa Warrior weapons pylon testing. In FY10, develop and publish interface control documentation of weapons for multi-platform integration. Begin development of a weapon system engineering concept and develop key technologies. In FY11, will complete the system concept and system engineering plan for integration of smart weapons, to include initial definition of a universal weapon integration architecture. Will demonstrate smart weapon (Shadow Hawk) integration implementing the UAI standard.							2.620	2.630	2.608	0.000	2.608
<i>FY 2009 Accomplishments:</i> FY 2009											

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #2  Small Business Innovative Research/Small Business Technology Transfer Programs  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	0.060	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals		2.620	2.690	2.608	0.000	2.608

**UNCLASSIFIED**

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>		<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603003A: <i>AVIATION ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> 435: <i>AIRCRAFT WEAPONS</i>
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A		
<b>D. Acquisition Strategy</b> N/A		
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.		

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603003A: <i>AVIATION ADVANCED TECHNOLOGY</i>				<b>PROJECT</b> 436: <i>ROTARYWING MEP INTEG</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
436: <i>ROTARYWING MEP INTEG</i>	0.000	0.000	1.754	0.000	1.754	7.619	10.070	13.752	18.013	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

The objective of this project is to mature and validate man-machine integration and mission equipment technologies, such as artificial intelligence, intelligent agents, cognitive decision aiding (CDA) sensors, avionics, communications, pilot vehicle interfaces, and autonomous assistants. This project improves the overall mission execution by demonstrating manned and unmanned system teaming, enhanced helicopter pilotage capability, improved crew workload distribution, and new capabilities for both manned and unmanned aircraft. This project supports Army transformation by providing mature technology to greatly expand the capabilities of unmanned aircraft, in current operating roles and future unmanned wingman roles. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, the Army Science and Technology Master Plan. Work in this project is performed by the Aviation Applied Technology Directorate of the Aviation and Missile Research, Development and Engineering Center (AMRDEC), Fort Eustis, VA.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Intelligent Autonomy for Unmanned Systems: Mature and apply tactical behaviors and safe-flight technologies to enable unmanned aircraft to maintain safe, responsive, flexible and tactical formation flight with manned helicopters for unmanned wingman applications in re-supply, reconnaissance, surveillance and attack missions. In FY11, will evaluate and down-select flight-following algorithms. Will assess architectures for integrating flight-following algorithms and tactical behaviors with flight controls.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010	0.000	0.000	1.754	0.000	1.754

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010				
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603003A: <i>AVIATION ADVANCED TECHNOLOGY</i>		<b>PROJECT</b> 436: <i>ROTARYWING MEP INTEG</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base								
<i>OCO FY 2011 Plans:</i> FY 2011 OCO								
Accomplishments/Planned Programs Subtotals				0.000	0.000	1.754	0.000	1.754
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A								
<b>D. Acquisition Strategy</b> N/A								
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.								

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**Exhibit R-2A, PB 2011 Army RDT&E Project Justification** **DATE:** February 2010

<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603003A: <i>AVIATION ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> 447: <i>ACFT DEMO ENGINES</i>
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COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
447: <i>ACFT DEMO ENGINES</i>	11.281	17.842	10.943	0.000	10.943	9.635	9.813	9.998	10.167	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This project matures and demonstrates power system technologies through design, fabrication, and testing of advanced engine components in order to improve the performance of turbine engines. This project supports Army transformation by demonstrating mature technologies for lighter turbine engines that provide increased power, increased fuel efficiency, improved sustainability and reduced maintenance. These advanced engine designs will significantly improve the overall aircraft performance characteristics and reduce the logistical footprint of rotary wing aircraft. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this project is performed by the Aviation Applied Technology Directorate of the Aviation and Missile Research, Development, and Engineering Center (AMRDEC), at Fort Eustis, VA.

**B. Accomplishments/Planned Program (\$ in Millions)**

	FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011
Program #1  Advanced Affordable Turbine Engine (AATE) Tech: Demonstrate a 3000 horsepower gas turbine engine for improved operational capability for Blackhawk, Apache, and other future rotorcraft. AATE includes two competitive engine demonstrator efforts (1 - General Electric and 2 - Advanced Turbine Engine Company (ATEC) (Honeywell and Pratt & Whitney Joint Venture)). The AATE effort included FY09 funding from project 313 to support competitive demonstrations. Work in this project is coordinated with efforts in PE 602211A. In FY09, completed initial rig-tests for several engine components (e.g., compressor, turbine, combustor and mechanical systems) of the competing designs. Verified each tested component's aerodynamic performance and mechanical integrity against design goals, prior to an integrated, full-engine test.  <i>FY 2009 Accomplishments:</i> FY 2009	11.281	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010				
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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>								
<p>Program #2</p> <p>Advanced Affordable Turbine Engine (AATE) Tech (cont'd FY10 and FY11): In FY10, integrate core engine components into gas generator configurations and complete initial testing, demonstrating mechanical integrity of the integrated core engine designs. Integrate power turbines and conduct first full engine tests, establishing initial engine performance capability. Determine design modifications required, if any, to fully achieve performance goals. Design and fabricate component modifications to meet performance goals. In FY11, will complete optimized component rig tests and analyze results in support of engine testing. Will integrate optimized components into goal engine demonstrator hardware. Will complete full engine testing to include final engine performance and weight assessment. Will complete assessment of engine production and maintenance costs for demonstration purposes. Will complete additional engine testing to gain insight into engine durability characteristics.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p>				0.000	17.368	10.943	0.000	10.943

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603003A: <i>AVIATION ADVANCED TECHNOLOGY</i>		<b>PROJECT</b> 447: <i>ACFT DEMO ENGINES</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO								
Program #3 Small Business Innovative Research/Small Business Technology Transfer Programs  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO				0.000	0.474	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals				11.281	17.842	10.943	0.000	10.943
<b>C. Other Program Funding Summary (\$ in Millions)</b>								
N/A								
<b>D. Acquisition Strategy</b>								
N/A								

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>		<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603003A: <i>AVIATION ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> 447: <i>ACFT DEMO ENGINES</i>

**E. Performance Metrics**

Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.

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Exhibit R-2A, PB 2011 Army RDT&E Project Justification									DATE: February 2010		
APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE				PROJECT			
2040: Research, Development, Test & Evaluation, Army BA 3: Advanced Technology Development (ATD)				PE 0603003A: AVIATION ADVANCED TECHNOLOGY				BA7: AVIATION ADVANCED TECHNOLOGY INITIATIVES (CA)			
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
BA7: AVIATION ADVANCED TECHNOLOGY INITIATIVES (CA)	46.605	47.630	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>A. Mission Description and Budget Item Justification</b>											
Congressional Interest Item funding for Aviation advanced technology development.											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
						FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011	
Program #1						1.197	3.184	0.000	0.000	0.000	
UAV-Resupply (BURRO) : In FY09, this Congressional Interest Item supported the development of an unmanned aerial logistics resupply delivery system designed to overcome effects of threat, weather, elevation and chem-bio-radiation.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO											
Program #2						3.589	0.000	0.000	0.000	0.000	

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603003A: <i>AVIATION ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> BA7: <i>AVIATION ADVANCED TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Technologies for Military Equipment Replenishment: In FY09, this Congressional Interest Item developed and applied advanced processing technologies to facilitate the production of hard-to-acquire parts and developed flexible manufacturing processes that enable efficient small lot production.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #3  Cutting Tools for Aerospace Materials: In FY09, this Congressional Interest Item developed tools capable of cutting and removing material from the toughest advanced aerospace materials without damaging any adjoining matrix or softer ply material; investigated better materials for tooling boards; and investigated better water soluble tooling materials.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010		0.797	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #4</b>  Fuel Cells for Mobile Robotic Systems Project: In FY09, this Congressional Interest Item developed small, lightweight fuel cell technology for application to unmanned systems, with potential application to manned platforms, in addition to establishing a research and educational capability at Chicago State University.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.797	0.000	0.000	0.000	0.000
<b>Program #5</b>  Universal Control Full Authority Digital Engine Control (FADEC): In FY09, this Congressional Interest Item developed a universal control architecture that incorporates model-based schemes to improve operational performance and reduce ownership cost for turboshaft engine control systems.		3.189	7.162	0.000	0.000	0.000

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R-1 Line Item #31

Page 23 of 43

1147 of 1536

**UNCLASSIFIED**

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603003A: <i>AVIATION ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> BA7: <i>AVIATION ADVANCED TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #6 Drive System Composite Structural Component Risk - Reduction Program: In FY09, this Congressional Interest Item matured design and manufacturing technologies for composite transmission and gearbox housings.		2.392	2.387	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #7		0.797	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Quick-MEDS Automated Release Pod: In FY09, this Congressional Interest Item designed a re-usable delivery system for a wide range of supplies: medical, food, water, comms, etc. (Combat Search and Rescue, Re-supply, etc).</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #8</p> <p>Autonomous Cargo Acquisition for Rotorcraft Unmanned Aerial Vehicles: In FY09, this Congressional Interest Item investigated rotorcraft unmanned aerial systems (UAS) to provide logistics supply and precise load emplacement and extraction.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p>		2.392	1.273	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #9  Inter Turbine Burner for Turbo Shaft Engines: In FY09, this Congressional Interest Item supported development of an innovative engine cycle concept that includes reheat to improve the performance of turboshaft engines.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		3.189	2.387	0.000	0.000	0.000
Program #10  Power Dense Transmissions: In FY09, this Congressional Interest Item supported development of advanced gear material systems for helicopter power transmissions  <i>FY 2009 Accomplishments:</i> FY 2009		1.276	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #11</b>  Enhanced Rapid Tactical Integration and Fielding of Systems: In FY09, this Congressional Interest Item supported development of systems that provide network-centric capabilities to the future force.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.595	3.104	0.000	0.000	0.000
<b>Program #12</b>  Parts-on-Demand for CONUS Operations: In FY09, this Congressional Interest Item developed a "stationary" mobile parts hospital-like capability to support continental United States (CONUS) operations, by utilizing rapid		4.983	4.477	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>processing technologies requiring quick turnaround; and established an infrastructure and skill sets in carpentry, laser fabrication, welding, machining and sheet metal fabrication capabilities to support the Warfighter.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #13</p> <p>Next Generation Ice Protection Technologies for UAVs: In FY09, this Congressional Interest Item developed a low-weight, low cost and low power in-flight icing protection alternative that is applicable to UAVs. This effort allowed extended operations in Federal Aviation Regulation (FAR) Part 25 Appendix C icing conditions and safe exit from encounters with icing conditions.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p>		1.595	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #14  Heavy Fuel Burning Engines for UAVs: In FY09, this Congressional Interest Item supported an effort to develop reliable, economical, fuel-efficient, high performance, turbine engine family in 10-150 horsepower range applicable to tactical Unmanned Aerial Vehicles (UAVS) and other Aviation applications.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.994	0.000	0.000	0.000	0.000
Program #15  Reconfiguration Tooling System: In FY09, this Congressional Interest Item supported development of a new reconfigurable tooling system (RTS) for single-sided lay-up and repair of composite material parts, for vacuum thermoforming of thermoplastic material parts, and for open or closed molding of liquid polymers. This		1.595	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>lightweight and transportable system uses a new class of materials that can be reversibly transformed from a liquid-like state to a solid state at room temperature with no change in volume.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #16</p> <p>Mission Execution Technology Impementation: In FY09, this Congressional Interest Item supported the advanced aviation technology initiative to improve safety and performance while reducing pilot, crew and maintainer workloads associated with Aviation mission planning and execution.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p>		3.189	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #17  Defense Helicopter Power Dense Transmission: In FY09, this Congressional Interest Item evaluated advanced gear steels with potential for increased strength and durability for helicopter gears.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.276	0.000	0.000	0.000	0.000
Program #18  Non-Hazardous Infrared Anti-Reflective Coatings for Army Aircraft Sensors: In FY09, this Congressional Interest Item replaced Thorium based Anti-Reflective coatings with non-hazardous carbon based coatings which meet or exceed current operational requirements.  <i>FY 2009 Accomplishments:</i> FY 2009		1.197	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #19</b>  Helicopter Vulnerability Reduction : In FY09, this Congressional Interest Item developed improved design and analysis method including modeling and simulation tools to predict ballistic response and residual load capabilities of large helicopter structures and dynamic components.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		2.392	0.000	0.000	0.000	0.000
<b>Program #20</b>		0.797	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603003A: <i>AVIATION ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> BA7: <i>AVIATION ADVANCED TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Brownout Sensor Visualization and Hazard Avoidance System : In FY09, this Congressional Interest Item supported Brownout Sensor Visualization and Hazard Avoidance System development to provide a three dimensional (3D) helicopter cockpit display based synthetic terrain generated using stereo range cameras and a millimeter wave radar sensor, resulting in improved depth perception for helicopter pilots during brownout or degraded visual environment conditions.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #21</p> <p>Improved Black Hawk De-Icing: In FY09, this Congressional Interest Item developed improved slip ring performance and reliability for purposes of blade de-icing through the use and retrofit of metal fiber brushes in existing UH-60 slip rings.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p>		0.797	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603003A: <i>AVIATION ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> BA7: <i>AVIATION ADVANCED TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #22  Army Aviation Weapon Technology: In FY09, this Congressional Interest Item applied a Model Development Architecture (MDA) approach to manned Army aviation and the development of the Improved Data Modem (IDM) Open Systems Architecture (OSA).  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.797	0.000	0.000	0.000	0.000
Program #23  UAS Sense and Avoid Concept Evaluation for Airspace Integration: In FY09, this Congressional Interest Item supported the Army UAS Sense and Avoid Technology (AUSAT) Toolkit, a one-year development team effort for a software product employing sensor models and simulations runs that will, when delivered as an initial Beta		2.392	2.865	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603003A: <i>AVIATION ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> BA7: <i>AVIATION ADVANCED TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>release, provide commanders and UAS Stakeholders an automated mechanism to evaluate GBSAA concepts for UAS integration in the National Airspace System (NAS).</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #24</p> <p>Fighting Combat-related Fatigue Syndrome. This is a Congressional Interest Item.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>		0.000	0.796	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603003A: <i>AVIATION ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> BA7: <i>AVIATION ADVANCED TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #25  Next Generation Green, Economical and Automated Production of Composite Structures for Aerospace. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	0.995	0.000	0.000	0.000
Program #26  UH-60 Transmission/Gearbox Galvanic Corrosion Reduction. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base		0.000	1.492	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603003A: <i>AVIATION ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> BA7: <i>AVIATION ADVANCED TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #27 Robust Composite Structural Core for Army Helicopters. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.592	0.000	0.000	0.000
Program #28 Crewmember Alert Display Development Program. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010		0.000	1.592	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603003A: <i>AVIATION ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> BA7: <i>AVIATION ADVANCED TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #29 Wireless HUMS for Condition Based Maintenance of Army Helicopters. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.592	0.000	0.000	0.000
Program #30 Heavy Fuel Engine Family for Unmanned Systems. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009		0.000	3.183	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603003A: <i>AVIATION ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> BA7: <i>AVIATION ADVANCED TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #31 Transitioning Stretch Broken Carbon Fiber to Production Programs. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	3.183	0.000	0.000	0.000
Program #32 Advanced Affordable Turbine Engine Program. This is a Congressional Interest Item.		0.000	3.979	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603003A: <i>AVIATION ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> BA7: <i>AVIATION ADVANCED TECHNOLOGY INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #33 New Hi Temp Dom PES Foam Fab/Cert DoD Aerospace Applications. This is a Congressional Interest Item.		2.391	2.387	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		46.605	47.630	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>		<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603003A: <i>AVIATION ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> BA7: <i>AVIATION ADVANCED TECHNOLOGY INITIATIVES (CA)</i>
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A		
<b>D. Acquisition Strategy</b> N/A		
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.		

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Exhibit R-2A, PB 2011 Army RDT&E Project Justification									DATE: February 2010		
APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE				PROJECT			
2040: Research, Development, Test & Evaluation, Army BA 3: Advanced Technology Development (ATD)				PE 0603003A: AVIATION ADVANCED TECHNOLOGY				BA8: VECTORED THRUST DUCTED PROPELLER (CA)			
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
BA8: VECTORED THRUST DUCTED PROPELLER (CA)	0.000	4.974	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>A. Mission Description and Budget Item Justification</b>											
Congressional Interest Item funding for Vectored Thrust Ducted Propeller Compound Helicopter.											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
						FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011	
Program #1						0.000	4.974	0.000	0.000	0.000	
Vectored Thrust Ducted Propeller Compound Helicopter											
<i>FY 2009 Accomplishments:</i>											
FY 2009											
<i>FY 2010 Plans:</i>											
FY 2010											
<i>Base FY 2011 Plans:</i>											
FY 2011 Base											
<i>OCO FY 2011 Plans:</i>											
FY 2011 OCO											
Accomplishments/Planned Programs Subtotals						0.000	4.974	0.000	0.000	0.000	

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>		<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603003A: <i>AVIATION ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> BA8: <i>VECTORED THRUST DUCTED PROPELLER (CA)</i>
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A		
<b>D. Acquisition Strategy</b> N/A		
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.		

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<b>Exhibit R-2, PB 2011 Army RDT&amp;E Budget Item Justification</b>										<b>DATE:</b> February 2010	
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603004A: <i>Weapons and Munitions Advanced Technology</i>							
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	112.544	89.861	64.438	0.000	64.438	67.325	72.403	85.384	110.595	0	666.988
232: <i>ADVANCED LETHALITY &amp; SURVIVABILITY DEMO</i>	37.182	30.198	43.573	0.000	43.573	42.058	44.943	52.266	67.933	Continuing	Continuing
43A: <i>ADV WEAPONRY TECH DEMO</i>	43.226	29.266	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
L94: <i>ELECTRIC GUN SYS DEMO</i>	11.273	6.199	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
L96: <i>HIGH ENERGY LASER TECHNOLOGY DEMO</i>	19.869	23.191	19.868	0.000	19.868	20.808	24.992	29.406	37.713	Continuing	Continuing
L97: <i>SMOKE AND OBSCURANTS ADVANCED TECHNOLOGY</i>	0.994	1.007	0.997	0.000	0.997	4.459	2.468	3.712	4.949	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

The objective of this program element (PE) is to mature and demonstrate advanced lethal and non-lethal weapons and munitions technologies to increase battlefield lethality. This PE supports the maturation and demonstration of enabling components and subsystems that provide: scalable lethal and non-lethal effects (project 232); key subsystems that enable an electromagnetic (EM) gun weapon system demonstrator (project L94); a tactical high energy laser weapon system demonstrator (project L96); and smoke and obscurant technologies to enhance platform and personnel survivability (project L97). Project 43A funds congressional special interest items. Work in this PE is related to, and fully coordinated with, PE 0602624A (Weapons and Munitions Technology), PE 0602618A (Ballistics Technology), PE 0603005A (Combat Vehicle and Automotive Advanced Technology), PE 0602307A (Advanced Weapons Technology), PE 0602120A (Sensors and Electronic Survivability), and PE 0602622A (Chemical, Smoke, and Equipment Defeating Technology). The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this PE is performed by the Armament Research, Development, and Engineering Center (ARDEC), Picatinny Arsenal, NJ, in cooperation with the Army Research Laboratory (ARL), Aberdeen Proving Ground, MD; the Tank Automotive Research, Development, and Engineering Center (TARDEC), Warren, MI; the Aviation and Missile Research, Development, Engineering Center (AMRDEC), Huntsville, AL; Edgewood Chemical Biological Center (ECBC), Edgewood, MD; and the U.S. Army Space and Missile Defense Center (SMDC), Huntsville, AL.

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<b>Exhibit R-2, PB 2011 Army RDT&amp;E Budget Item Justification</b>	<b>DATE:</b> February 2010
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603004A: <i>Weapons and Munitions Advanced Technology</i>
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**B. Program Change Summary (\$ in Millions)**

	<u><b>FY 2009</b></u>	<u><b>FY 2010</b></u>	<u><b>FY 2011 Base</b></u>	<u><b>FY 2011 OCO</b></u>	<u><b>FY 2011 Total</b></u>
Previous President's Budget	109.074	66.410	68.726	0.000	68.726
Current President's Budget	112.544	89.861	64.438	0.000	64.438
Total Adjustments	3.470	23.451	-4.288	0.000	-4.288
• Congressional General Reductions		-5.969			
• Congressional Directed Reductions					
• Congressional Rescissions		0.000			
• Congressional Adds		29.420			
• Congressional Directed Transfers					
• Reprogrammings	6.181	0.000			
• SBIR/STTR Transfer	-2.711	0.000			
• Adjustments to Budget Years	0.000	0.000	-4.288	0.000	-4.288

**Change Summary Explanation**

FY10 Congressionally directed increases.

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603004A: <i>Weapons and Munitions Advanced Technology</i>				<b>PROJECT</b> 232: <i>ADVANCED LETHALITY &amp; SURVIVABILITY DEMO</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
232: <i>ADVANCED LETHALITY &amp; SURVIVABILITY DEMO</i>	37.182	30.198	43.573	0.000	43.573	42.058	44.943	52.266	67.933	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This project matures and demonstrates lethal and non-lethal enabling technologies for weapons and munitions such as advanced energetic materials, insensitive munitions, novel fuze designs, scalable warhead designs, pulsed laser sources, and high power microwave (HPM) systems. This project focuses on technologies that enable precision delivery of effects and increased affordability. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this project is performed by the Armament Research, Development, and Engineering Center (ARDEC), Picatinny Arsenal, NJ, in cooperation with the Army Research Laboratory (ARL), Aberdeen Proving Ground, MD; the Tank Automotive Research, Development, and Engineering Center (TARDEC), Warren, MI; and the Aviation and Missile Research, Development, and Engineering Center (AMRDEC), Huntsville, AL.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Weaponization of Pulsed Laser Technologies: This effort matures and miniaturizes key directed energy (DE) technologies and subsystems to support DE weaponization with the potential to field leap-ahead capabilities in effectiveness and suitability. Laser Induced Plasma Channel (LIPC) uses low energy femtosecond laser pulses with the unique capability to facilitate transmitting high voltage and/or radio frequency energy downrange to a target with tailored effects. In FY09, modeled interaction between an ultra-short laser and variable high voltage sources as well as solid state high power microwave (HPM) sources for integration into a laser channeled weapon; began design to integrate compact solid state HPM and high voltage sources to obtain a DE weapon system demonstrator. Since system analysis demonstrated that solid state amplifier technology did not meet size and volume requirements for a weapon application using the HPM technology, efforts on the design of the laser guided weapon demonstrator were returned to PE 0602624A/Project H19 starting in FY10.	5.172	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603004A: <i>Weapons and Munitions Advanced Technology</i>	<b>PROJECT</b> 232: <i>ADVANCED LETHALITY &amp; SURVIVABILITY DEMO</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #2</p> <p>Ground Based Networked Munitions Technologies: This effort provides follow-on technology advancement to ground based munitions systems currently being developed with improved capabilities, including a non-lethal response. In FY09, conducted initial design for a delivery system capable of deploying existing and future ground based munition systems to a precise location once released from the primary delivery mechanism such as Multiple Launch Rocket System (MLRS), Unmanned Aerial Systems (UAS), Fixed and Rotary wing platforms; developed a concept that integrates technologies that allow precision emplacement of Intelligent Munitions Systems (IMS) from a standoff distance that is as effective as hand emplaced IMS (PE 0654808/Project D016); and conducted a trade study to evaluate different approaches for low collateral self destruct. In FY10, mature non-lethal layered response concept, focusing on a delivery methodology for commercial off-the-shelf (COTS) munitions; demonstrate initial prototype capability for low collateral self destruct in a laboratory environment; and demonstrate a passive communications repeater approach in the laboratory while maturing a 40mm flare-based deployment concept. In FY11, will demonstrate a non-lethal layered response concept, focusing on ability to deploy munitions that can be fired in succession to intended ranges; will continue to mature low-collateral self destruct concept by demonstrating a system with a representative explosively formed penetrator warhead. Efforts described here are coordinated and complimentary to related efforts in PE 0602624A/Project H19.</p>		3.113	2.953	3.101	0.000	3.101

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R-1 Line Item #32

Page 4 of 41

1171 of 1536

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603004A: <i>Weapons and Munitions Advanced Technology</i>	<b>PROJECT</b> 232: <i>ADVANCED LETHALITY &amp; SURVIVABILITY DEMO</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #3</b>  Scalable Effect Weapons and Munitions System: This effort matures scalable warhead technology and materials and demonstrates them in weapon and munition concepts that can be gun or missile launched to deliver a broad spectrum of effects, ranging from non-lethal to lethal, against threat personnel and other targets. In FY09, defined and evaluated system selectability requirements to enable controlled lethality against targets and reduce collateral damage; evaluated warhead tailoring methodologies to control munition energy output and verify modeled scalability effects in reduced munition sizes for man-portable systems; and fabricated and tested hardware for evaluation of multipurpose capabilities. In FY10, model detailed designs and simulate performance of components and system assemblies; integrate technologies developed under PE 060624A/Project H28 into a demonstrator to test advanced technology functions for medium and large caliber scalable and adaptive lethality munitions; conduct static demonstrations of medium and large caliber munitions in a laboratory environment to verify component level performance against selectable and scalable lethality requirements using a combination of empirical data and modeling and simulation (M&S) analyses. In FY11, will fabricate and integrate hardware and conduct fully integrated gun-launched firing demonstrations against varied targets and scenarios in a relevant environment to demonstrate scalable and adaptive effects with medium caliber cartridges, artillery shells, and unitary warheads for rocket applications; and will verify system scalable lethality performance using technical		7.535	12.460	11.363	0.000	11.363

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>data and M&amp;S analysis. Efforts described here are coordinated and complimentary to related efforts in PE 0602624A/Project H18 and H28 and PE 0602303A/Project 214.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #4</p> <p>Fuze and Power for Advanced Munitions: This effort demonstrates technologies that reduce munition sizes while adding tailorable effects and improving advanced on-board munition power systems. In FY09, conducted instrumented ballistic and guided flight tests; demonstrated pre-programmed maneuver and guide-to-hit capabilities in ten mature prototypes of precision guided 105mm projectile; and optimized the tactical design of sensors and fuze technologies. Efforts described here are coordinated and complimentary to related efforts in PE 0602624A/project H18.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p>		3.543	0.000	0.000	0.000	0.000

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R-1 Line Item #32

Page 6 of 41

1173 of 1536

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603004A: <i>Weapons and Munitions Advanced Technology</i>	<b>PROJECT</b> 232: <i>ADVANCED LETHALITY &amp; SURVIVABILITY DEMO</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #5  Soldier and Small Unit Lethality Integration: This effort leverages the soldier radio waveform (SRW) to enable network lethality at the small combat unit (SCU) level. In FY09, demonstrated mission tasking, acoustic-based target geo-location (gun-fire detection), de-confliction, and automated target hand-off from a small unmanned ground vehicle (UGV)/soldier platform to a small unit effects network; and matured and validated algorithms that support target geo-location, de-confliction, hand-off, and weapon-target pairing for future soldier systems. In FY10, integrate mission tasking, target geo-location and hand-off from a small unmanned aerial vehicle (UAV) platform to a small unit effects network; and participate and demonstrate small unit effects network at command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) On-The-Move (OTM) test bed. In FY11, will refine and evaluate coordinated target hand-off, attack capability, and de-confliction with a small UGV/small UAV; and will demonstrate network fire capabilities and control decision. Efforts described here are coordinated and complimentary to related efforts in PE 0603001A/Project J50.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base		2.987	2.972	2.959	0.000	2.959

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #6</b>  Dual Use Composites (DUC): This effort demonstrates the application of carbon/thermoplastic materials in a UAV shaped munition. In FY09, integrated fuze into an artillery projectile; demonstrated projectile lethality in a lab environment; integrated fuze with the DUC projectile for the design and development of the first tube/rail launch miniature lethal UAV; evaluated structural integrity of a DUC projectile integrated into an UAV; and demonstrated prototype of the miniature lethal UAV in a relevant environment (performed reconnaissance of objective, loiter and engagement of target).  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.600	0.000	0.000	0.000	0.000
<b>Program #7</b>  Tunable Pyrotechnics: This effort demonstrates reactive energetic technologies that enable the Warfighter to have pyrotechnic munitions for countermeasure missions. In FY09, used the successful candidate formulations and conducted energetic characterization, sensitivity studies, and initial prototype application for countermeasures and battlefield effects simulators; developed and tested low visibility infrared (IR) decoy flare compositions to		2.571	2.979	2.928	0.000	2.928

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>protect aircraft from infrared guided missiles without revealing aircraft position during night operations; and conducted signature and performance measurements on new nano pyrophoric and pyrotechnic formulations. In FY10, test enhanced primer and tracer compositions; mature countermeasure formulation; integrate formulation into prototype decoys to demonstrate effectiveness against specific threat systems; demonstrate battlefield effects by testing prototype battlefield effects simulators; and demonstrate feasibility of tunable compositions in battlefield effects. In FY11, will conduct a comprehensive evaluation on the performance of the compositions in a countermeasure mission using computer models of the decoy, will evaluate effectiveness against simulation threat systems and captive IR seeker threat systems; and will mature formulation characterization of IR and visible illumination compositions.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #8</p> <p>Extended Area Protection and Survivability (EAPS): This effort demonstrates the use of command-guided medium caliber projectiles for the interception and destruction of incoming rockets, artillery, and mortar rounds. In FY09, demonstrated EAPS components separately: course correction, warhead, and auto-gun subsystems; evaluated command operated course correction and warhead detonation through radio frequency (RF) linked communication over the ammunition tracking system (ATS) radar as radio frequency (RF) linked communication;</p>		2.779	3.915	4.358	0.000	4.358

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>and fired ballistic simulators with auto gun. In FY10, fabricate an integrated system including a course correction round and respective warhead subsystems; investigate command of a projectile maneuver and a warhead detonation simultaneously through an RF link from the ATS radar ground station; and model and simulate the fire of a group of rounds, track them through the radar, and implement a course correction in flight to increase the intercept probability. In FY11, will demonstrate with a fully loaded round with the capability to track, perform command maneuver and detonate warheads through an RF link. Efforts described here are coordinated and complimentary to related efforts in PE 0602624A/project H28 and PE 0603313A/Project 263.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #9</p> <p>Military Operations in Urban Terrain (MOUT)/Urban Lethal Technologies: This effort demonstrates the next generation of explosive wall breaching and shoulder launched weapon warhead technologies. In FY09, evaluated advanced fuzing options of multimodal warheads and matured the bash-through warhead on shoulder launched munitions; for the light weight wall breaching system, refined liner and initiation concepts for system integration and demonstrated a one-shot, on-target tandem wall breaching system against appropriate targets; demonstrated multi-purpose capability (multiple targets) from a single shoulder launched munition; and demonstrated a single shot demolition device for the purpose of creating Soldier-sized entry holes in double rebar reinforced concrete</p>		3.494	4.357	6.606	0.000	6.606

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>walls in a single step. In FY10, optimize precursor and bash-through warhead for reduced weight; demonstrate warhead performance against target set for shoulder launched munitions; and demonstrate remote emplacement of a single step breaching system. In FY11, will mature fuzing technologies and build a prototype for shoulder launched weapons; will mature standoff breaching warhead design and will a build prototype; will test the enhanced shoulder launched weapon and breaching warhead in a Military relevant environment.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #10</p> <p>Kinetic Energy Active Protection System (KEAPS): This effort matures and demonstrates warhead and fuze safe and arming (S&amp;A) technology to support KEAPS, which enhances the survivability of lightly armored vehicles. In FY09, matured warhead and S&amp;A device; and demonstrated and validated their performance against the primary class of threats and validated their performance against remaining classes of threats. Efforts described here are coordinated and complimentary to related efforts in PE 0602624/Project H28 and are developed and collaborated with efforts in PE 0603005A/Project 221 and PE 0603313A/Project 550.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p>		4.393	0.000	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603004A: <i>Weapons and Munitions Advanced Technology</i>	<b>PROJECT</b> 232: <i>ADVANCED LETHALITY &amp; SURVIVABILITY DEMO</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #11</p> <p>Reliability for the Future Force: This effort matures advanced physics-based stochastic methods to enhance the reliability of critical micro electromechanical systems (MEMS) and devices. In FY09, defined critical failure mechanisms through probabilistic physics-based modeling; created explicit and implicit physics-based failure modes; identified the uncertainties for each variable and developed probability models; performed sensitivity analysis and optimized design and process; and developed probabilistic models for MEMS failure physics and reliability models for each failure mode building from sub-component and material levels up through component subassembly to integrated S&amp;A levels.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p>		0.995	0.000	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603004A: <i>Weapons and Munitions Advanced Technology</i>	<b>PROJECT</b> 232: <i>ADVANCED LETHALITY &amp; SURVIVABILITY DEMO</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<p>Program #12</p> <p>Advanced Lethality Demonstration: This effort matures and demonstrates and assesses novel penetrator designs and alternative lethal mechanisms to maintain or exceed tank main gun performance against multiple target types into the future. A goal of this effort is to mature and demonstrate new tank main gun rounds made with conventional materials with equal or better performance to our currently fielded depleted uranium based rounds. In FY11, will initiate performance assessment of three novel penetrator configurations at both ordnance and hypervelocity. Will conduct system trade studies; will fabricate and bench test full scale surrogates to evaluate tactical deployment concepts; and will revise baseline tank main gun kinetic energy cartridge system designs to incorporate these novel penetrator configurations. Efforts described here are coordinated and complementary to the FY10 Advanced Lethality Demonstration in PE0603004A/Project L94.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>		0.000	0.000	3.685	0.000	3.685
Program #13		0.000	0.000	3.487	0.000	3.487

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603004A: <i>Weapons and Munitions Advanced Technology</i>	<b>PROJECT</b> 232: <i>ADVANCED LETHALITY &amp; SURVIVABILITY DEMO</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Dual-Use Improved Conventional Munitions (DPICM) Replacement Acceleration: This effort matures and demonstrates ultra high reliability fuzing, advanced kill mechanisms, and alternative dispense technologies to provide increased battlefield lethality with reduced unexploded ordnance (UXO) compliant with current DoD cluster munitions policy. In FY11, will mature and demonstrate enabling components and subsystems that provide: ultra high reliability through exploitation of novel power sources and redundant fuze architecture; enhanced lethal effects against armored targets via optimization of high velocity penetrators and explosives; increased area coverage through demonstration of innovative munitions dispense systems; and UXO compliance via improved self-destruct/self-neutralization features. Efforts described here are coordinated and complimentary to related efforts in PE 0602624/Project H18 and the FY10 Advanced Lethality Demonstration in PE 0603004A/Project L94.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #14</p> <p>Medium Caliber Weapon Systems: This effort matures and demonstrates advanced medium caliber rounds, weapon and ammunition systems optimized for remote applications which address multiple warfighter capability gaps including super high elevation engagement, high performance stabilization, remote ammunition loading, weapon safety and reliability, improved lethality, accuracy, and the ability to fire a suite of ammunition from</p>		0.000	0.000	5.086	0.000	5.086

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603004A: <i>Weapons and Munitions Advanced Technology</i>	<b>PROJECT</b> 232: <i>ADVANCED LETHALITY &amp; SURVIVABILITY DEMO</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>non-lethal to highly lethal to provide escalation of force capability in one system. In FY11, will mature and demonstrate designs and components for alternative lethality mechanisms; will develop demonstration system mature controls and software; will initiate system engineering analyses and testing; will explore remote armament designs and build demonstrators. Efforts described here are coordinated and complimentary to the FY10 Advanced Lethality Demonstration in PE 0603004A/Project L94.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #15 Small Business Innovative Research/Small Business Technology Transfer Programs</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p>		0.000	0.562	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		37.182	30.198	43.573	0.000	43.573
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>D. Acquisition Strategy</b> N/A						
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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<b>APPROPRIATION/BUDGET ACTIVITY</b>			<b>R-1 ITEM NOMENCLATURE</b>					<b>PROJECT</b>			
2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>			PE 0603004A: <i>Weapons and Munitions Advanced Technology</i>					43A: <i>ADV WEAPONRY TECH DEMO</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
43A: <i>ADV WEAPONRY TECH DEMO</i>	43.226	29.266	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>A. Mission Description and Budget Item Justification</b>											
Congressional Interest Item funding for Advanced Weaponry Technology development.											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
							<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1							1.595	0.000	0.000	0.000	0.000
RAMAN Chemical Identification System: In FY09, this Congressional Interest Item supported development of a handheld device (under 8 oz.) that could identify unknown explosives, chemical warfare agents, toxic industrial chemicals, narcotics, and other hazardous materials.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO											
Program #2							2.392	1.591	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603004A: <i>Weapons and Munitions Advanced Technology</i>	<b>PROJECT</b> 43A: <i>ADV WEAPONRY TECH DEMO</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Rapid Insertion of Developmental Technology: In FY09, this Congressional Interest Item supported fielding of developmental technologies through spiral development into existing and future systems.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #3</p> <p>Lightweight Cannon Recoil Reduction: In FY09, this Congressional Interest Item supported the design, modeling, simulation and engineering of new innovative low recoil and lightweight cannon components that lower the weight of current and emerging weapon systems.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p>		1.913	0.000	0.000	0.000	0.000

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R-1 Line Item #32

Page 18 of 41

1185 of 1536

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603004A: <i>Weapons and Munitions Advanced Technology</i>	<b>PROJECT</b> 43A: <i>ADV WEAPONRY TECH DEMO</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #4</b>  Lightweight Munitions and Surveillance System (LMSS) for Unmanned Air & Ground Vehicles: In FY09, this Congressional Interest Item supported development of an unmanned vehicle turret with a common mechanical interface capable of mounting various machine guns as well as rocket launchers, and various sensors.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		2.791	3.819	0.000	0.000	0.000
<b>Program #5</b>  Micro Electrical Mechanical Systems (MEMS) Application for Armor and Munitions: In FY09, this Congressional Interest Item addressed the need of incorporating nanotechnologies and MEMS into smart munitions.  <i>FY 2009 Accomplishments:</i> FY 2009		1.595	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #6</b>  Nanotechnology Fuze-on-a-Chip: In FY09, this Congressional Interest Item applied micromachining methods to munition fuzes, in order to integrate all fuze components into a single chip.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		2.791	1.591	0.000	0.000	0.000
<b>Program #7</b>		1.595	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Development of Truck-Deployed Explosive Containment Vessel: In FY09, this Congressional Interest Item supported a truck deployed explosive containment vessel; design, test, and verify fabrication procedures and evaluate experimental data.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #8</p> <p>Advanced Prototyping with Non-Traditional Suppliers: In FY09, this Congressional Interest Item developed a strategy to design rapid prototypes that combined and leveraged Army requirements, resources, and assets with non traditional suppliers' technologies/resources.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p>		3.189	0.000	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603004A: <i>Weapons and Munitions Advanced Technology</i>	<b>PROJECT</b> 43A: <i>ADV WEAPONRY TECH DEMO</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #9</b>  Nanotechnology Manufacturing Center: In FY09, this Congressional Interest Item enhanced the capabilities of the National Nanotechnology Manufacturing Center and effectively engaged partners under the Nanotechnology Consortium to rapidly develop nanotechnology, and create production capabilities to meet military demand.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.993	0.000	0.000	0.000	0.000
<b>Program #10</b>  Precision Molding Manufacturing Technology for Infrared Aspheric Optics: In FY09, this Congressional Interest Item matured a process to reduce the cost to produce lightweight, high performance, aspheric glass optics through glass molding rather than the current process of grinding and polishing.		2.312	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #11  Lens-Less Micro Seeker System for Small Steerable Projectiles: In FY09, this Congressional Interest Item supported the continued development of lens-less micro-scale seeker architectures for conformal-mounting on gun-launched small steerable projectiles.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.595	1.990	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603004A: <i>Weapons and Munitions Advanced Technology</i>	<b>PROJECT</b> 43A: <i>ADV WEAPONRY TECH DEMO</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #12  Advanced Lightweight Gunner Protection Kit: In FY09, this Congressional Interest Item add developed new ballistic armor that integrates high-strength glass and plastic materials.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.196	0.796	0.000	0.000	0.000
Program #13  Enhanced Jamming Resistant Technology for INS/GPS Precision Guided Munitions: In FY09, this Congressional Interest Item demonstrated a high jamming resistant INS/GPS approach used for gun-fired munitions in jamming environments which was achieved by focusing on improving the inertial segment of the technology.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010		1.595	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010				
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603004A: <i>Weapons and Munitions Advanced Technology</i>		<b>PROJECT</b> 43A: <i>ADV WEAPONRY TECH DEMO</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO								
Program #14  Advanced Medium Caliber Tungsten Penetrators: In FY09, this Congressional Interest Item investigated the use of advanced tungsten alloys that achieve near equivalent performance of current depleted uranium (DU) penetrators.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO				1.595	0.000	0.000	0.000	0.000
Program #15  Titanium Powder Advanced Forged Parts Program: In FY09, this Congressional Interest Item developed the technologies to reduce the cost and increase the supply of specialty titanium parts made from entirely US supplied titanium powder.				1.595	3.024	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603004A: <i>Weapons and Munitions Advanced Technology</i>	<b>PROJECT</b> 43A: <i>ADV WEAPONRY TECH DEMO</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #16</b>  Advanced Fuzing Technologies: In FY09, this Congressional Interest Item supported development of advanced fuze designs needed to support next generation Army tank ammunition (105mm and 120mm) programs.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		3.588	0.000	0.000	0.000	0.000
<b>Program #17</b>		3.987	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Novel Guidance Kit - Phase 2 (NGK2) for M864 Projectile: In FY09, this Congressional Interest Item advanced the novel guidance kit concept for 105mm projectile compatibility with a better than 30-m circular error probability and verified the structural integrity and gun hardened the electronics.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #18</p> <p>Micro Inertial Navigation Unit Technology. This is a Congressional Interest Item.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p>		0.000	1.194	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603004A: <i>Weapons and Munitions Advanced Technology</i>	<b>PROJECT</b> 43A: <i>ADV WEAPONRY TECH DEMO</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #19 Soldier Protection through Unmanned Ground Vehicles. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.194	0.000	0.000	0.000
Program #20 Advanced Robot and Sensor Technology for Surveillance and Energy Efficiency Applications. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010		0.000	1.194	0.000	0.000	0.000

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R-1 Line Item #32

Page 28 of 41

1195 of 1536

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603004A: <i>Weapons and Munitions Advanced Technology</i>	<b>PROJECT</b> 43A: <i>ADV WEAPONRY TECH DEMO</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #21 Next Generation Machining Technology and Equipment. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.592	0.000	0.000	0.000
Program #22 Lightweight Reliable Materials for Military Systems. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009		0.000	2.785	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603004A: <i>Weapons and Munitions Advanced Technology</i>	<b>PROJECT</b> 43A: <i>ADV WEAPONRY TECH DEMO</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #23 Biosensor, Communicator and Controller System. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	3.482	0.000	0.000	0.000
Program #24 Technology Development at the Quad Cities Manufactory Laboratory. This is a Congressional Interest Item.		0.000	5.014	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #25 National Nuclear Security Administration (NNSA) Metals Declassification for Reuse by DoD Armaments. This is a Congressional Interest Item.		2.720	0.000	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #26		3.189	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Rapid Prototyping for Special Projects. This is a Congressional Interest Item.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
Accomplishments/Planned Programs Subtotals		43.226	29.266	0.000	0.000	0.000
<b>C. Other Program Funding Summary (\$ in Millions)</b>						
N/A						
<b>D. Acquisition Strategy</b>						
N/A						
<b>E. Performance Metrics</b>						
Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
L94: <i>ELECTRIC GUN SYS DEMO</i>	11.273	6.199	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This project matures and demonstrates electromagnetic (EM) armament subsystems and the enabling technologies for tactically relevant EM gun systems. This work complements and is fully coordinated with efforts in PE 0602618A/Project H75 and PE 0601104A/Project H56. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this project is performed by the Armament Research, Development, and Engineering Center (ARDEC), Picatinny, NJ, in cooperation with the Army Research Laboratory (ARL), Adelphi, MD, and The Institute for Advanced Technology (IAT), Austin, TX (a University Affiliated Research Center).

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  EM Gun System Demonstration: The primary objective of this effort is to reduce technical risk associated with EM Gun technology by demonstrating meaningful technical progress at the subsystem level. In FY09, conducted composite material analyses and structural validation tests of the rotor banding process and reassessed Pulse Power Supply (PPS) performance; commenced manufacture and verification testing of the major rotating machine components; assembled a switch converter stack that demonstrated requisite functional criteria; and test fired an integrated launch package with a high explosive, fuzed warhead from a laboratory EM gun. Due to the identification of significant technical challenges during FY09, the Army decided to end its Advanced Technology Development investment in EM Gun technology and will collect and archive materials and reports for future use as required. In FY10, execute scope reduction and contract completion activities to terminate the program to develop a vehicle-mounted EM gun; provide Army stewardship of the pulsed power technology for future work; conduct the inventory and disposition of hardware, document and preserve the intellectual property, and disassemble, package, and ship EM gun launcher and mount from Yuma Proving Ground to ARDEC.	11.273	0.216	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>								
<p>Program #2</p> <p>Advanced Lethality Demonstration: This effort matures and demonstrates novel penetrator designs and alternative lethal mechanisms to maintain or exceed gun performance against multiple target types into the future. In FY10, evaluate alternative penetrator designs at conventional to hypervelocity for tank main guns; evaluate components for alternative lethal mechanisms against advanced armor and area targets; and mature and evaluate conventional and advanced weapon propulsion alternatives for their potential to attain increased velocities and performance. Beginning in FY11, this effort will be documented in PE0603004/Project 232.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p>				0.000	5.865	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603004A: <i>Weapons and Munitions Advanced Technology</i>	<b>PROJECT</b> L94: <i>ELECTRIC GUN SYS DEMO</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #3 Small Business Innovative Research/Small Business Technology Transfer Programs		0.000	0.118	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		11.273	6.199	0.000	0.000	0.000
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>D. Acquisition Strategy</b> N/A						
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603004A: <i>Weapons and Munitions Advanced Technology</i>				<b>PROJECT</b> L96: <i>HIGH ENERGY LASER TECHNOLOGY DEMO</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
L96: <i>HIGH ENERGY LASER TECHNOLOGY DEMO</i>	19.869	23.191	19.868	0.000	19.868	20.808	24.992	29.406	37.713	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This project matures and demonstrates advanced technologies for future force High Energy Laser (HEL) weapons technology. The major effort under this project is the development of a mobile 100 kilowatt (kW) class Solid State High Energy Laser Technology Demonstrator (HEL TD) that is traceable to the form, fit, and function requirements of the future force. At weapon system power levels of around 100 kW, Solid State Laser (SSL) technology has the potential to engage and defeat rockets, artillery and mortars, surface mines, anti-tank guided missiles (ATGMs), sensors, and optics. HELs are expected to complement conventional offensive and defensive weapons at a lower cost-per-shot than current systems and without the need to strategically, operationally, or tactically stockpile ordnance. The HEL TD effort utilizes a modular building block approach with open systems architecture to ensure growth and interoperability. This modular approach ensures opportunity for technology insertions for maturation of laser, beam control, sensor/radar, integration of power and thermal management subsystems, as well as Battle Management Command, Control, and Computers (BMC3). Work in this project is related to, and fully coordinated with, efforts in PE 0602307A (Advanced Weapons Technology), PE 0602890F (High Energy Laser Research), PE 0603924F (HEL Advanced Technology Program), PE 0603005A (Combat Vehicle and Automotive Advanced Technology), PE 0603924D8Z (High Energy Laser Advanced Technology Program), PE 0602120A (Sensors and Electronic Survivability), and PE 0605605A (DOD High Energy Laser Systems Test Facility). The cited work is consistent with the Department of Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work is performed by the US Army Space and Missile Defense Command Technical Center, Huntsville, AL.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  High Energy Laser Technology Demonstrator (HEL TD): This effort matures and integrates SSL components and subsystems on a mobile platform to demonstrate a mobile 100 kW class solid state HEL TD. In FY09, continued HEL TD system engineering efforts; completed the Beam Control System (BCS) design; and began the fabrication and assembly of the BCS components, to include optics, beam director, alignment and tracking assemblies, gimbals, platform and Warfighter machine interfaces, and electronics racks; due to manufacturing and coating challenges, delayed fabrication of the primary mirror. In FY10, continue the fabrication and assembly of the BCS components; begin coating process for primary mirror; conduct software verification and validation	19.869	22.556	19.868	0.000	19.868

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603004A: <i>Weapons and Munitions Advanced Technology</i>	<b>PROJECT</b> L96: <i>HIGH ENERGY LASER TECHNOLOGY DEMO</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>and conduct BCS alignment test as preparation for low power range laser testing; and continue the system-level preliminary design of the integrated HEL mobile demonstrator. In FY11, will complete the fabrication, assembly, and functional testing of the BCS; will complete coating process for primary mirror; will explore integration issues of subsystems onto a tactical vehicle platform; will conduct low power HEL testing to demonstrate target acquisition, tracking, and aim point selection; will evaluate performance from low power testing and will make necessary changes; will purchase test targets; and will design and fabricate hardware and will develop software interfaces to integrate the BCS and the 100 kW SSL located at the High Energy Laser Systems Test Facility.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #2 Small Business Innovative Research/Small Business Technology Transfer Programs</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p>		0.000	0.635	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603004A: <i>Weapons and Munitions Advanced Technology</i>	<b>PROJECT</b> L96: <i>HIGH ENERGY LASER TECHNOLOGY DEMO</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		19.869	23.191	19.868	0.000	19.868
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>D. Acquisition Strategy</b> N/A						
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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**Exhibit R-2A, PB 2011 Army RDT&E Project Justification** **DATE:** February 2010

<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>			<b>R-1 ITEM NOMENCLATURE</b> PE 0603004A: <i>Weapons and Munitions Advanced Technology</i>				<b>PROJECT</b> L97: <i>SMOKE AND OBSCURANTS ADVANCED TECHNOLOGY</i>				
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
L97: <i>SMOKE AND OBSCURANTS ADVANCED TECHNOLOGY</i>	0.994	1.007	0.997	0.000	0.997	4.459	2.468	3.712	4.949	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

The project matures and demonstrates obscurant technologies with potential to enhance personnel/platform survivability by degrading threat force surveillance sensors and defeating the enemy's target acquisition devices, missile guidance, and directed energy weapons. Dissemination systems for new and improved obscurants are developed with the goal of providing efficient and safe screening of deployed forces. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this project is performed and managed by the Army Research, Development, and Engineering Command (RDECOM), Edgewood Chemical Biological Center (ECBC), Edgewood, MD.

**B. Accomplishments/Planned Program (\$ in Millions)**

	FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011
Program #1  Obscurant Enabling Technologies: This effort demonstrates the dissemination of advanced infra-red (IR) obscurants. In FY09, evaluated dissemination methods and conducted modeling and analysis of advanced IR obscurants for artillery and mortar applications. In FY10, design bi-spectral obscurant prototypes for initial dissemination evaluations. In FY11, will mature, fabricate, and test grenade concept for bi-spectral obscuration and effective dissemination patterns.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010	0.994	0.979	0.997	0.000	0.997

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010				
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603004A: <i>Weapons and Munitions Advanced Technology</i>		<b>PROJECT</b> L97: <i>SMOKE AND OBSCURANTS ADVANCED TECHNOLOGY</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO								
Program #2 Small Business Innovative Research/Small Business Technology Transfer Programs  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO				0.000	0.028	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals				0.994	1.007	0.997	0.000	0.997
<b>C. Other Program Funding Summary (\$ in Millions)</b>								
N/A								
<b>D. Acquisition Strategy</b>								
N/A								

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>		<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603004A: <i>Weapons and Munitions Advanced Technology</i>	<b>PROJECT</b> L97: <i>SMOKE AND OBSCURANTS ADVANCED TECHNOLOGY</i>

**E. Performance Metrics**

Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.

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**Exhibit R-2, PB 2011 Army RDT&E Budget Item Justification** **DATE:** February 2010

<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive Advanced Technology</i>
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COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	270.195	240.190	89.499	0.000	89.499	105.848	112.784	125.391	144.645	0	1,178.051
221: <i>COMBAT VEH SURVIVABLTY</i>	36.723	22.320	24.897	0.000	24.897	38.950	47.895	51.283	58.843	Continuing	Continuing
441: <i>COMBAT VEHICLE MOBILTY</i>	38.969	46.797	42.154	0.000	42.154	44.258	42.848	47.070	53.278	Continuing	Continuing
497: <i>COMBAT VEHICLE ELECTRO</i>	7.249	7.474	7.507	0.000	7.507	7.659	7.789	8.923	10.039	Continuing	Continuing
515: <i>ROBOTIC GROUND SYSTEMS</i>	9.864	10.099	10.637	0.000	10.637	10.703	10.802	14.957	19.086	Continuing	Continuing
533: <i>Ground Vehicle Demonstrations</i>	124.301	132.685	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
53D: <i>NAC Demonstration Initiatives (CA)</i>	41.067	18.384	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
53G: <i>FUTURE COMBAT SYSTEMS (FCS)</i>	11.368	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
C66: <i>DC66</i>	0.654	2.431	4.304	0.000	4.304	4.278	3.450	3.158	3.399	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

The objective of this program element (PE) is to mature and demonstrate vehicle automotive technologies that enable Army transformation to a lighter, more mobile and more survivable Future Force. This PE supports maturation and demonstration of enabling component and subsystems for ground combat/tactical vehicles in the areas of survivability (project 221), mobility (project 441), combat vehicle electronics (project 497), and robotic ground systems (project 515). Project 53G matures and demonstrates technology in support of the future ground vehicle programs. Projects 533 and 53D fund congressional special interest items. Project C66 supports classified activities. Properly accessed individuals can obtain further information from the ASA(ALT) Special Programs Office. Work in this PE is related to, and fully coordinated with, PE 0602601A (Combat Vehicle and Automotive Technology), 0602618A (Ballistics Technology), 0602120A (Sensors and Electronic Survivability, Robotics Technology), 0602105A (Materials), and 0602705A (Battery/Ind Power Technology). Work in this PE is coordinated with the US Marine Corps, the Naval Surface Warfare Center, the Naval Research Laboratory, Air Force Armaments Command, and other ground vehicle developers within the Departments of Energy, Commerce, and Transportation as well as DARPA. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this PE is performed by the Tank Automotive Research, Development, and Engineering Center (TARDEC), Warren, Michigan.

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<b>Exhibit R-2, PB 2011 Army RDT&amp;E Budget Item Justification</b>	<b>DATE:</b> February 2010
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive Advanced Technology</i>
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**B. Program Change Summary (\$ in Millions)**

	<u><b>FY 2009</b></u>	<u><b>FY 2010</b></u>	<u><b>FY 2011 Base</b></u>	<u><b>FY 2011 OCO</b></u>	<u><b>FY 2011 Total</b></u>
Previous President's Budget	263.879	89.586	92.778	0.000	92.778
Current President's Budget	270.195	240.190	89.499	0.000	89.499
Total Adjustments	6.316	150.604	-3.279	0.000	-3.279
• Congressional General Reductions		-1.256			
• Congressional Directed Reductions					
• Congressional Rescissions		0.000			
• Congressional Adds		151.860			
• Congressional Directed Transfers					
• Reprogrammings	13.250	0.000			
• SBIR/STTR Transfer	-6.934	0.000			
• Adjustments to Budget Years	0.000	0.000	-3.279	0.000	-3.279

**Change Summary Explanation**

FY10 Congressionally directed increases.

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive Advanced Technology</i>				<b>PROJECT</b> 221: <i>COMBAT VEH SURVIVABLTY</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
221: <i>COMBAT VEH SURVIVABLTY</i>	36.723	22.320	24.897	0.000	24.897	38.950	47.895	51.283	58.843	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This project matures and demonstrates survivability technologies such as advanced armors, active protection systems (APS), and safety devices. Armors are currently being developed to meet ground vehicle program thresholds and move towards ground combat/tactical vehicle objectives. Additionally, this project focuses on integrating and demonstrating active protection technologies and vision protection to defeat optical attacks. This project looks at the integration of survivability technologies that enable entire protection suites to provide greater survivability than armor alone. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this project is performed by the Tank Automotive Research, Development, and Engineering Center (TARDEC), Warren, Michigan; Army Research Laboratory (ARL), Aberdeen Proving Ground, Maryland; Armaments Research, Development, and Engineering Center (ARDEC), Picatinny, New Jersey; and the Aviation and Missile Research, Development, and Engineering Center (AMRDEC), Huntsville.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Active Protection Systems (APS) against Kinetic Energy (KE) threats: This effort conducts essential trade studies, technical evaluations, and demonstrations of APS components/subsystems designed for protection against KE penetrators. In FY09, updated component and system design specifications and finalized all system interfaces; completed integration support of ARDEC's warhead and fuse package and AMRDEC's interceptor; and tested warheads in support of KE APS final demonstration. In FY10, support final KE APS demonstration with interceptor/system testing, demonstration, and analysis; complete component and system design specifications and finalize all system interfaces. Related work is also being conducted under Program Elements (PE) 0602624A, 0603004A, and 0603313A.  <i>FY 2009 Accomplishments:</i> FY 2009	9.652	3.695	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010				
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive Advanced Technology</i>		<b>PROJECT</b> 221: <i>COMBAT VEH SURVIVABLTY</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>								
<p>Program #2</p> <p>Tactical Wheeled Vehicle (TWV) Survivability: This effort focuses on maturing and demonstrating viable integrated survivability suites that can be tailored to meet current and future threats for light, medium, and heavy tactical wheeled vehicles. In FY09, conducted extensive demonstrations on an expanded set of integrated survivability suites on demonstration vehicle(s) to verify and validate the level of protection achieved, system durability and the impact of the added weight, volume, and power on vehicle performance; completed analysis tool to simulate the effects of mine blast impacts on vehicle and crew; and fabricated and integrated advanced armors. In FY10, begin tactical platform active protection prototype system integration; conduct live fire blast and ballistic testing; mobility/durability tests on demonstration vehicles will also be conducted; assess emerging technologies against current and emerging threats to optimize suites of integrated survivability technologies including high performance ballistic materials, active protection systems, and common display; integrate suite options and deliver test report, lessons learned, and recommendations to ground combat and tactical vehicle developers. In FY11, will utilize requirements analysis, technology assessments, concept integration studies based upon emerging technology, and lessons learned to apply a systems engineering evaluation approach which will provide a holistic, platform-level process for the maturation of the integrated survivability suites; will mature advanced armor to include: opaque, transparent, and underbody kits; will integrate advanced tactical vehicle active protection; and will establish a concept for an optimized survivability suite based upon a down selection process. Related work is also being performed under Program Elements (PE) 0602601A, 0602618A, and 0602105A</p>				10.744	10.525	11.035	0.000	11.035

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive Advanced Technology</i>	<b>PROJECT</b> 221: <i>COMBAT VEH SURVIVABLTY</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #3</b>  Vision Protection: This effort matures and demonstrates treatments to optical systems that provide protection from frequency-agile laser weapons. In FY09, completed and validated the performance of agile laser protection in future force combat vehicle-type navigation camera and optical fire control breadboards. In FY10, integrate agile laser protection into a prototype medium range Electro-Optical/Infrared (EO/IR) sensor; integrate agile laser protection into a combat vehicle driver's camera. In FY11, will evaluate and refine an architecture that will enable a large focal plane optical switch to be implemented; will conduct lab testing of laser protected fire control and driver's cameras; and will design and implement a liquid optical limiter handling system. Related work is also being performed in Program Elements (PE) 0602120A, 0602705A, 0602786A and 0602712A.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010		3.737	2.450	5.339	0.000	5.339

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive</i> <i>Advanced Technology</i>	<b>PROJECT</b> 221: <i>COMBAT VEH SURVIVABLTY</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #4</b>  Armor/Mine Protection: This effort integrates and tests advanced ballistic protection including smart and ceramic armors, advanced composite and laminate structures, and advanced transparent armor formulations. In FY09, accelerated maturation and demonstration of combat and tactical wheeled vehicle armor recipes and improved mine kit designs against objective threats while reducing armor weights; and furthered the development of platform-level mine-blast response modeling and simulation tools to include crew/occupant response to support system level analysis.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		12.590	0.000	0.000	0.000	0.000
<b>Program #5</b>		0.000	1.973	2.498	0.000	2.498

**UNCLASSIFIED**

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive Advanced Technology</i>	<b>PROJECT</b> 221: <i>COMBAT VEH SURVIVABLTY</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>High Performance Lightweight Track (Blast Mitigation): This effort improves lightweight track durability and survivability. In FY10, use modeling and simulation to perform blast event analysis on two high performance lightweight track prototypes; and exploit analysis results to optimize track design for mine blast/IED survivability. In FY11, will integrate track solutions, fabricate prototypes and demonstrate blast protection. This effort is done in coordination with related efforts in PE 0603005A projects 441 and 497.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #6</p> <p>Armor Integration: This effort integrates and demonstrates passive, reactive, and electromagnetic technologies for use in active protection armor applications to defeat objective and emerging kinetic energy and chemical energy threats. In FY10, mature and validate passive and reactive armor solutions from PE 0602601A/Project C05 and PE 0602618A that defeat objective and emerging threats. In FY11, will evaluate and downselect validated armor solutions with respect to weight and performance against objective and emerging threats; will determine system requirements for near/midterm deployment of active defeat technologies to defeat rocket propelled grenades, mortars, and anti-tank guided missiles; and will compare active armor solutions to existing active protection system solutions with respect to size, weight, power, cost, and effectiveness.</p>		0.000	1.281	1.534	0.000	1.534

**UNCLASSIFIED**

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive</i> <i>Advanced Technology</i>	<b>PROJECT</b> 221: <i>COMBAT VEH SURVIVABLTY</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #7</p> <p>Vehicle Integration Laboratory: This effort provides for continuous improvements to ground vehicles to include technology trades, integration, concepts and configuration management designs. In FY10, develop Modeling and Simulation (M&amp;S) framework to assess system integration impacts for emerging technologies (i.e. , advanced engines, suspensions, survivability technologies) for ground combat and tactical vehicle platforms; begin lifetime environmental and stability studies of laser protection systems for tactical and ground combat vehicles. In FY11, will integrate prototype tactical wheeled vehicle active protection systems onto a surrogate platform and conduct performance testing; will evaluate integration techniques and concepts for advanced armor kits that defeat objective and emerging threats for ground and tactical vehicle fleets; and will conduct system-level testing of combined fire protection technologies on representative ground vehicle platforms.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p>		0.000	2.166	4.491	0.000	4.491

**UNCLASSIFIED**

R-1 Line Item #33

Page 8 of 90

1216 of 1536



**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010				
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive Advanced Technology</i>		<b>PROJECT</b> 221: <i>COMBAT VEH SURVIVABLTY</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO								
Program #8 Small Business Innovative Research/Small Business Technology Transfer Programs.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO				0.000	0.230	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals				36.723	22.320	24.897	0.000	24.897
<b>C. Other Program Funding Summary (\$ in Millions)</b>								
N/A								
<b>D. Acquisition Strategy</b>								
N/A								

**UNCLASSIFIED**

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>		<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive Advanced Technology</i>	<b>PROJECT</b> 221: <i>COMBAT VEH SURVIVABLTY</i>

**E. Performance Metrics**

Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.

**UNCLASSIFIED**

R-1 Line Item #33

Page 10 of 90

1218 of 1536

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive Advanced Technology</i>				<b>PROJECT</b> 441: <i>COMBAT VEHICLE MOBILITY</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
441: <i>COMBAT VEHICLE MOBILITY</i>	38.969	46.797	42.154	0.000	42.154	44.258	42.848	47.070	53.278	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This project matures and demonstrates advanced mobility and electric technologies for propulsion, power, and electrical components and subsystems. Mobility technologies are being developed to meet program thresholds and move towards ground combat/tactical vehicle objectives. Additionally this program looks at the integration of mobility technologies to enable lightweight, agile, deployable, fuel efficient, and survivable ground vehicles. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this project is performed by Tank Automotive Research, Development, and Engineering Center (TARDEC), Warren, MI, in conjunction with Army Research Laboratory (ARL), Adelphi, MD.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Hybrid Electric Vehicle (HEV) Propulsion and Power & Energy (P&E) System Integration Lab (SIL): This effort matures and demonstrates power and energy component technologies and assesses HEV performance benefits and burdens. In FY09, upgraded electronic architecture and thermal management system on the prototype combat vehicle chassis for continued evaluation in a space constrained vehicle environment; and utilized user-developed scenarios to establish baseline performance of prototype combat vehicle chassis and integrated hybrid electric propulsion system. In FY10, support testing of HEV components and hybrid electric system for combat platforms; perform thermal management tests of components that increase heat transfer capabilities of onboard power electronics, and perform evaluation of high temperature power electronics. In FY11, will mature and demonstrate HEV components and system integration capabilities in simulated field conditions to solve user identified-technical issues and evaluate high temperature/high power electronic devices.  <i>FY 2009 Accomplishments:</i> FY 2009	7.046	4.296	1.974	0.000	1.974

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**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010				
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive Advanced Technology</i>		<b>PROJECT</b> 441: <i>COMBAT VEHICLE MOBILITY</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>								
<p>Program #2</p> <p>Ground Systems Power Evaluation: This effort matures and demonstrates power and energy components for propulsion, control systems, communications, life support, electric weapons, and protection systems. In FY10, demonstrate high temperature power electronics, advanced motors and generator systems; mature advanced diesel engines for JP-8 compatibility and increased thermal efficiency; and mature and demonstrate components, including traction motor inverters, energy converters and motor generator concepts in integrated hybrid electric (HE) systems for wheeled vehicles. In FY11, will continue optimization of higher temperature power electronics for use in wheeled vehicle platforms; and will continue the optimization of HE systems for wheeled vehicle system upgrades, as well as advanced motors and generators that offer onboard and export power generation.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p>				0.000	2.761	2.402	0.000	2.402

**UNCLASSIFIED**

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive</i> <i>Advanced Technology</i>	<b>PROJECT</b> 441: <i>COMBAT VEHICLE MOBILITY</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<p>Program #3</p> <p>Hybrid Electric Vehicle (HEV) Demonstration and Assessment: This effort refines and demonstrates the maturity of HEVs for military applications, and develops Modeling and Simulation (M&amp;S) tools to predict fuel economy and performance characteristics. In FY09, continued analysis of HEVs to focus on M&amp;S excursions with actual demonstrations to validate models and expand lessons learned to quantify fuel economy and performance of Hybrid Demonstrator Vehicles.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>		4.165	0.000	0.000	0.000	0.000
<p>Program #4</p> <p>Pulse Power: This effort matures and demonstrates compact components and subsystems that enable significantly improved survivability and lethality applications. In FY09, developed active cooling for the High Energy Laser (HEL) pulse power supply allowing greater operational time and increase power/weight efficiency by 40 percent; and developed high voltage-reversal capacitors with extended durability and increased capacity. In FY10, demonstrate Second Generation SiC switch reliability technology at threshold metrics defined by Future Force</p>		3.932	4.929	10.889	0.000	10.889

**UNCLASSIFIED**

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive</i> <i>Advanced Technology</i>	<b>PROJECT</b> 441: <i>COMBAT VEHICLE MOBILITY</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>concepts; refine the Programmable Pulse Power Supply for field testing at threshold metrics; and refine designs for active cooling Programmable Pulse Power Supply for HEL. In FY11, will demonstrate Advanced Pulse forming card for the Programmable Pulse Power Supply at objective metrics defined by Ground Combat Vehicle; and will demonstrate SiC switch at objective metrics defined by Ground Combat Vehicle.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #5</p> <p>Advanced Lightweight Track: This effort improves and optimizes lightweight track technology through utilization of high performance elastomers and component design with the goal of improving track durability and survivability. In FY09, fabricated Hybrid Lightweight Track and conducted vehicle test for durability, mobility, and survivability capabilities to demonstrate a sufficient technology maturity for transition to Future Force manned ground vehicles. In FY10, mature, fabricate and conduct preliminary vehicle testing of advanced lightweight track systems. Design improvements will include track durability, survivability, flame resistance while decreasing system weight. In FY11, will refine, fabricate, and conduct vehicle performance and durability testing of the advanced lightweight track systems. This effort is done in coordination with related efforts in PE 0603005A, projects 221 and 497.</p>		1.528	1.833	4.331	0.000	4.331

**UNCLASSIFIED**

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive</i> <i>Advanced Technology</i>	<b>PROJECT</b> 441: <i>COMBAT VEHICLE MOBILITY</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #6  Fuel Cell Power: This effort develops a fuel cell technology as an auxiliary power unit for providing electrical power to ground combat vehicles. In FY10, identify ground vehicle system power requirements and space available for fuel cell applications; create system layout map and perform modeling and simulation; and mature and demonstrate fuel cell system components. This effort is done in coordination with efforts in PE 0602601A , Project H91.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base		0.000	4.439	0.000	0.000	0.000

**UNCLASSIFIED**

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive Advanced Technology</i>	<b>PROJECT</b> 441: <i>COMBAT VEHICLE MOBILITY</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<p>Program #7</p> <p>JP-8 Fuel Cell Reformer System: This effort identifies and demonstrates fuel cell technology, that when integrated with a JP-8 reformer, creates an Auxiliary Power Unit (APU). In FY10, improve the JP-8 reformer system model to optimize the layout design and mature system process models; identify all JP-8 reformer components and technologies that will be used; and begin reformer component characterization to ensure operational parameters will be met. In FY11, will begin integration demonstration of essential reformer components; will characterize performance of components when integrated in complete reformer system; and will begin physical assembly of a JP-8 reformation system. This effort is done in coordination with efforts in PE 0602601A, Project H91.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>		0.000	4.139	3.920	0.000	3.920
<p>Program #8</p> <p>Fuel Efficiency ground vehicle Demonstrator (FED): This effort focuses on demonstrating the viability of achieving significant decreases in fuel consumption without sacrificing tactical vehicle performance or capability.</p>		9.191	4.748	4.839	0.000	4.839

**UNCLASSIFIED**

R-1 Line Item #33

Page 16 of 90

1224 of 1536



**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive Advanced Technology</i>	<b>PROJECT</b> 441: <i>COMBAT VEHICLE MOBILITY</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>In FY09, performed extensive modeling and simulation to identify opportunities to implement technologies. Began detailed design of demonstrator(s) using the identified technologies. In FY10, complete design of demonstrator(s); and begin fabrication/integration of the demonstrator(s); conduct subsystem testing, if necessary. In FY11, will complete fabrication of demonstrator(s) and begin test process to validate the findings of the modeling and simulation; will validate successfully tested technologies for transition to Program Manger (PM).</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #9</p> <p>Propulsion-Prime Power: This effort provides propulsion and power technologies for tactical wheeled vehicles. In FY09, matured and demonstrated hybrid electric components for tactical wheeled vehicle applications; modified, optimized, and evaluated commercially available engines to enable JP-8 fuel usage; demonstrated, and refined Magneto-Rheological (MR) Suspension on Stryker Mobile Gun System (MGS); and performed suspension proof-of-principle test on Stryker. In FY10, complete performance and durability testing of modified commercial diesel engines; integrate and evaluate compact advanced high power density, high operating temperature, components on vehicle platforms; ruggedize MR suspension hardware and software for endurance testing on Stryker; and perform endurance testing. In FY11, will complete testing of the MR suspension on a Stryker vehicle; will perform advanced development and integration of sensors and control algorithms for closed-</p>		7.223	7.845	7.660	0.000	7.660

**UNCLASSIFIED**

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive</i> <i>Advanced Technology</i>	<b>PROJECT</b> 441: <i>COMBAT VEHICLE MOBILITY</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>loop control of diesel engines; will perform vehicle noise analysis; will improve control strategy for powertrain; will evaluate and select power generation components.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #10</p> <p>Power and Thermal Management: This effort demonstrates power and thermal management components and control strategies to meet objective tactical and combat vehicle power requirements. In FY09, matured and demonstrated intelligent power management components and control strategies on system/demo platform. In FY10, mature and demonstrate intelligent power management utilizing Artificial Intelligence (AI) to optimize vehicle control strategies and provide data for Condition Based Maintenance (CBM); and test, evaluate and demonstrate power and thermal management systems in a relevant laboratory environment. In FY11, will investigate optimal strategy for combining power and thermal management components into a system architecture. This effort is done in coordination with efforts in PE 0602601A, Project H91.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p>		2.706	4.860	1.293	0.000	1.293

**UNCLASSIFIED**

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010				
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive Advanced Technology</i>		<b>PROJECT</b> 441: <i>COMBAT VEHICLE MOBILITY</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>								
<p>Program #11</p> <p>Non-primary Power Sources (NPS): This effort demonstrates component technologies for energy storage and generation. In FY09, performed laboratory assessment of several advanced high energy/power density battery systems to gauge their suitability for final NPS hardware; and demonstrated advanced power generation technologies to meet NPS requirements. In FY10, integrate power generation and energy storage system into advanced power and energy vehicle architecture system; and demonstrate improved engine-off vehicle performance on system demonstrator for silent watch. In FY11, will mature electrochemical cells, modules, and batteries; will demonstrate and refine hybrid battery systems. This effort is done in coordination with efforts in PE 0602601A, Project H91.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p>				3.178	5.700	0.921	0.000	0.921

**UNCLASSIFIED**

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive Advanced Technology</i>	<b>PROJECT</b> 441: <i>COMBAT VEHICLE MOBILITY</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<p>Program #12</p> <p>Force Projection: This effort will focus on reducing the logistics footprint by maturing water generation, recovery, purification, reuse and quality monitoring technologies; and maturing a single, common powertrain lubricant that will serve as engine oil, transmission fluid, and hydraulic fluid for all combat and tactical equipment. In FY11, will conduct field evaluation and military utility assessment of water from air demonstrators; will integrate basic in-line monitoring demonstration technology into purification systems and will design and fabricate advanced hand held monitoring technology for water treatment process monitoring; will develop water reuse technology; will complete laboratory and engine testing and will initiate field evaluation of the single powertrain lubricant. This effort is done in coordination with efforts in PE 0602601A, project H91.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>		0.000	0.000	3.925	0.000	3.925
<p>Program #13</p> <p>Small Business Innovative Research/Small Business Technology Transfer Programs.</p>		0.000	1.247	0.000	0.000	0.000

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R-1 Line Item #33

Page 20 of 90

1228 of 1536

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive</i> <i>Advanced Technology</i>	<b>PROJECT</b> 441: <i>COMBAT VEHICLE MOBILITY</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		38.969	46.797	42.154	0.000	42.154
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>D. Acquisition Strategy</b> N/A						
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive Advanced Technology</i>				<b>PROJECT</b> 497: <i>COMBAT VEHICLE ELECTRO</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
497: <i>COMBAT VEHICLE ELECTRO</i>	7.249	7.474	7.507	0.000	7.507	7.659	7.789	8.923	10.039	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This project matures, integrates, and demonstrates vehicle electronics hardware (displays, sensors, communications systems, and vehicle command/control/driving mechanisms) and software that result in increased crew efficiencies, performance, and/or reduced crew size, and reductions in vehicle maintenance costs. The project advances open system architectures for ground combat vehicles that allow more efficient crew stations to be adapted for a variety of ground platforms. Technical challenges include: increased levels of automation for both manned and unmanned systems, advanced user interfaces that support improved/increased span of control for robotic operations and collaborative vehicle operations, workload management, reliability of driving aids and commander's decision aids, and embedded simulation for battlefield visualization and fully integrated virtual test/evaluation. Additionally this project matures and demonstrates mobility technologies that reduce the weight as well as the operation and sustainment of ground vehicles. This work is performed in conjunction with Robotics Collaboration effort described in project 515. The Robotics Collaboration and Intelligent Secure Mobility Work (ISM) work is performed in close cooperation with the Army Soldier Battle Lab. The cited work is consistent with Strategic Planning Guidance, the Army Science and Technology Master Plan (ASTMP), the Army Modernization Plan, and the Defense Technology Area Plan (DTAP). Work in this project is performed by the Tank Automotive Research, Development, and Engineering Center (TARDEC), Warren, MI, in conjunction with Army Research Laboratory - Human Resources Engineering Directorate (ARL-HRED), Aberdeen, MD.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Improved Mobility and Operations Performance through Autonomous Technologies: This effort matures indirect vision technologies to provide the Soldier with full hemispherical situational awareness in closed hatched vehicle operations. In FY09, defined the mobility & situational awareness performance/limitations of current indirect vision systems; conducted task and workflow analysis for the mobility and local situational awareness tasks of a vehicle crew; identified key cueing technologies for Soldiers that are dismounting to provide local situational awareness; analyzed existing crewstations and software for a baseline mobility and situational awareness task workload experiment; and designed and analyzed experiments on eye-tracking technologies for operational environments. In FY10, refine enhanced crewstations and software based on mobility and local situational awareness tasks and workload; mature local situational awareness warfighter machine interface for dismounting	6.277	6.365	6.534	0.000	6.534

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**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive Advanced Technology</i>	<b>PROJECT</b> 497: <i>COMBAT VEHICLE ELECTRO</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Soldiers and conduct experiment to assess impact of dismount information tools on local situational awareness; integrate enhanced crew station 360/90 (day/night) local situational awareness, assisted mobility, and soldier monitoring/state classification technologies with surrogate platform; and analyze results of the experiments to capture physiological and physical data from mounted soldiers in operational environments. In FY11, will integrate driver assist technologies and mounted Soldier monitoring, along with the local situational awareness system for dismounting Soldiers will integrate motion based cueing, video capture with closed hatch 360/90 Electro-Optic Indirect Vision (EOIV) system; and will conduct warfighter assessment and engineering evaluations to collect enhanced quantitative performance level understanding of future EOIV operations.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #2</p> <p>Enhanced Vehicle Technologies to Improve Lightweight Track Reliability: This effort will improve/optimize lightweight segmented band track technology through utilization of high performance elastomers and design with the goal of improving track durability. In FY09, analyzed data of Failure Mode and Effects Criticality Analysis (FMECA) for High Performance Light-weight Track and a representative current force or baseline legacy counterpart. Analyzed data gaps to identify possible sensors and/or indicators that assisted in determining the state of health of components/subsystems that are primary cost drivers of track systems. In FY10, validate a</p>		0.972	0.922	0.973	0.000	0.973

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>track system diagnostic model to verify dynamic loads and effects of changes in the system; collect track system vehicle test data and investigate features and conditions in the data that correlate to failure modes; and perform a limited correlation exercise between diagnostic model, bench test, and track system test data to assess ability to predict system behaviors and/or failures. In FY11, will identify and demonstrate health monitoring systems for track applications; will identify and mature diagnostic and prognostic algorithms to report health predictions and future failures on track system components; and will develop a health monitoring strategy for track systems. This effort is done in coordination with related efforts in PE 0603005A projects 221 and 441.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #3 Small Business Innovative Research/Small Business Technology Transfer Programs.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p>		0.000	0.187	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive</i> <i>Advanced Technology</i>	<b>PROJECT</b> 497: <i>COMBAT VEHICLE ELECTRO</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		7.249	7.474	7.507	0.000	7.507
<b>C. Other Program Funding Summary (\$ in Millions)</b>						
N/A						
<b>D. Acquisition Strategy</b>						
N/A						
<b>E. Performance Metrics</b>						
Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive Advanced Technology</i>				<b>PROJECT</b> 515: <i>ROBOTIC GROUND SYSTEMS</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
515: <i>ROBOTIC GROUND SYSTEMS</i>	9.864	10.099	10.637	0.000	10.637	10.703	10.802	14.957	19.086	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This project matures and demonstrates unmanned ground vehicle technologies. The main focus is on integrating and demonstrating in relevant environments sensor technologies, perception hardware and software, and robotic control technologies that enable Unmanned Ground Vehicle (UGV) systems to maneuver on- and off-road at militarily significant speeds with minimal human intervention, thereby enabling the Soldier to perform other mission tasks. Challenges addressed include: obstacle avoidance, overcoming perception limitations, intelligent situational behaviors, command and control by Soldier operators, frequency of human intervention, operations in adverse weather, and robots protecting themselves and their surroundings from intruders. Mature technologies are incorporated in UGV technology demonstrators so that performance can be evaluated for tactical maneuver and sustainment applications. Work done in this project is complementary to the Robotics Collaboration effort described in project 497 and the Robotic Vehicle Control Architecture effort described in 53G. The approach builds upon, complements, and does not duplicate previous and ongoing investments conducted under the Joint Robotics Program Office and the Defense Advanced Research Projects Agency, in program element (PE) 0602601A, project H91 (Ground Vehicle Technology) and by the Army Research Laboratory (ARL) PE 0602120A (Sensors and Electronic Survivability). The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this project is performed by Tank Automotive Research, Development, and Engineering Center (TARDEC), Warren, MI, in collaboration with the Army Research Laboratory (ARL), Adelphi and Aberdeen Proving Ground, MD.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Safe Operations of Unmanned systems for Reconnaissance: This effort demonstrates perception, control and tactical behavior technologies to safely conduct urban operations. In FY09, evaluated baseline behaviors that enabled Unmanned Ground Vehicles (UGVs) to safely navigate around people and other vehicles in a realistic military testing environment; evaluated specialized classification algorithms for sensor and algorithm fusion; evaluated machine learning and adaptive tactical behaviors; investigated situational awareness and operational procedures to assure safe UGV employment across anticipated missions; assisted in the development of UGV safety and testing procedures; and investigated and evaluated Modeling and Simulation (M&S) tools to evaluate perception/control algorithms and human-robot interaction. In FY10, provide quantitative performance data	5.464	5.098	10.637	0.000	10.637

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive Advanced Technology</i>	<b>PROJECT</b> 515: <i>ROBOTIC GROUND SYSTEMS</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>based on demonstrations that enable development of Techniques, Tactics and Procedures; develop mission-focused tactical behaviors; and develop and conduct initial warfighter assessment and engineering evaluations including evaluation of combined mobility/mission workload for UGVs and Unmanned Air Vehicles (UAVs). In FY11, will integrate and evaluate behaviors that enable UGVs to navigate safely around people and other vehicles in a realistic military testing environment; will integrate situational awareness and operational procedures to assure safe UGV employment across anticipated missions; will demonstrate tactical behaviors focused on mission execution; will integrate specialized classification algorithms for sensor and algorithm fusion; will increase capabilities of M&amp;S tools to evaluate perception/control algorithms and human-robot interaction; and will evaluate sensors and tactical behaviors that enable the use of UGVs to assist in the security of maneuver elements (i.e., Convoy Operations).</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #2</p> <p>Robotic Vehicle Control Architecture (RVCA) Technology: This effort develops UGV end-to-end control architecture to reduce future technology integration risk and demonstrates the viability of autonomous operations in a relevant environment. In FY09, integrated an Advanced Brass Board (pre-prototype) Autonomous Navigation System (ANS) onto the UGV platform to test and measure system capabilities; conducted a soldier</p>		4.400	4.719	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive</i> <i>Advanced Technology</i>	<b>PROJECT</b> 515: <i>ROBOTIC GROUND SYSTEMS</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
operational experiment; finalized platform system development and updated with latest software interfaces. In FY10, finalize prototype Autonomous Navigation System and RVCA hardware/software designs and interfaces; complete all updates to the Autonomous Platform Demonstrator; perform engineering evaluations and Soldier operational exercises on the Autonomous Platform Demonstrator to test/measure system capabilities.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #3 Small Business Innovative Research/Small Business Technology Transfer Programs.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base		0.000	0.282	0.000	0.000	0.000

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**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive</i> <i>Advanced Technology</i>	<b>PROJECT</b> 515: <i>ROBOTIC GROUND SYSTEMS</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		9.864	10.099	10.637	0.000	10.637
<b>C. Other Program Funding Summary (\$ in Millions)</b>						
N/A						
<b>D. Acquisition Strategy</b>						
N/A						
<b>E. Performance Metrics</b>						
Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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Exhibit R-2A, PB 2011 Army RDT&E Project Justification								DATE: February 2010			
APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE				PROJECT			
2040: Research, Development, Test & Evaluation, Army BA 3: Advanced Technology Development (ATD)				PE 0603005A: Combat Vehicle and Automotive Advanced Technology				533: Ground Vehicle Demonstrations			
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
533: Ground Vehicle Demonstrations	124.301	132.685	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>A. Mission Description and Budget Item Justification</b>											
These are Congressional Interest Items											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
							FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011
Program #1							1.595	0.000	0.000	0.000	0.000
Lightweight Structural Composite Armor for Blast and Ballistic Protection: In FY09, this Congressional Interest Item developed cost-effective structural armor utilizing 3D woven fiber composites with different materials in order to find the most balanced combination for ballistic resistance that reduces vehicle weight in order to enhance war fighter survivability and mobility.											
<i>FY 2009 Accomplishments:</i> FY 2009											
<i>FY 2010 Plans:</i> FY 2010											
<i>Base FY 2011 Plans:</i> FY 2011 Base											
<i>OCO FY 2011 Plans:</i> FY 2011 OCO											
Program #2							3.987	0.000	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive</i> <i>Advanced Technology</i>	<b>PROJECT</b> 533: <i>Ground Vehicle Demonstrations</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>3-D Advanced Battery Technology: In FY09, this Congressional Interest Item developed carbon foam poles in lead acid batteries for low weight and increase power density.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #3</p> <p>Antiballistic Windshield Armor (AWA): In FY09, this Congressional Interest Item focused on developing a pair of mirrored surfaces and opaque armor used in lieu of transparent armor in order to provide a full spectrum view of the environment in front of a tactical vehicle as well as enhanced ballistic protection.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p>		3.589	2.387	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive Advanced Technology</i>	<b>PROJECT</b> 533: <i>Ground Vehicle Demonstrations</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #4</b>  Unmanned Ground Vehicle Initiative (UGVI): In FY09, this Congressional Interest Item developed, integrated, and demonstrated robotic capability in support of national security interests through integration and demonstration of sensor and control technologies to enable robotic systems to maneuver with minimal human intervention in militarily significant environment.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		11.959	10.943	0.000	0.000	0.000
<b>Program #5</b>  Vehicle Armor Structure Development & Testing for Future Combat Systems & JT Light Tactical Vehicle: In FY09, this Congressional Interest Item performed testing on materials for database development. In addition, various components were tested under various environmental conditions to increase design robustness.  <i>FY 2009 Accomplishments:</i> FY 2009		0.797	1.592	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive</i> <i>Advanced Technology</i>	<b>PROJECT</b> 533: <i>Ground Vehicle Demonstrations</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #6</b>  Crosshairs Hostile Fire Indicating System: In FY09, this Congressional Interest Item integrated the DARPA CROSSHAIRS Hostile Fire Indication System with the Iron Curtain Active Protection System (APS).  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.994	0.000	0.000	0.000	0.000
<b>Program #7</b>		2.552	0.000	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive</i> <i>Advanced Technology</i>	<b>PROJECT</b> 533: <i>Ground Vehicle Demonstrations</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Defect-Free Commercially Viable Si/C Semiconductor Using Superlattice Technology: In FY09, this Congressional Interest Item developed defect free superlattice substrate Si/C materials to be used in the development of Semiconductors.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #8</p> <p>Rotary Multi-Fuel Auxiliary Power Unit M1A1 Abrams Tank: In FY09, this Congressional Interest Item developed quiet, continuous, non-primary electrical power for extended engine-off operation and a system designed to fit into Abrams auxiliary power unit (APU) space claim.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p>		2.392	0.000	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive Advanced Technology</i>	<b>PROJECT</b> 533: <i>Ground Vehicle Demonstrations</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #9  Tactical Rocket Propelled Grenade Airbag Protection System (TRAPS) Enhancement: In FY09, this Congressional Interest Item completed physics based model and simulation of TRAPS. Testing will be completed at EMRTC to verify and validate the model.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.797	0.000	0.000	0.000	0.000
Program #10  Development of Logistical Fuel Processors to Meet Army/TARDEC/TACOM Needs. This is a Congressional Interest Item.		2.791	1.194	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #11 Ground Forces Readiness Enabler for Advanced Tactical Vehicles (GREAT-V): This is a Congressional Interest Item.		0.797	0.796	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #12		1.994	2.387	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Adv Lithium Iron Phosphate Battery Sys for Army Combat Hybrid HMMWV &amp; Other Army Vehicle Platforms: In FY09, this Congressional Interest Item developed cells and battery packs for hybrid HMMWVs and developed lithium battery packs.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #13</p> <p>No-Idle Climate Control for Military Vehicles: In FY09, this Congressional Interest Item produced a modified commercial-off-the-shelf no idle climate control system.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p>		1.595	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #14  Diminishing Manufacturing Sources and Material Shortages (DMSMS) Case Resolution Program: In FY09, this Congressional Interest Item provided a capability to coordinate with commercial industry on a broad scale.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		2.392	0.000	0.000	0.000	0.000
Program #15  Hybrid Electric (Heavy Truck) Vehicle: In FY09, this Congressional Interest Item developed engine propulsion systems for heavy tactical vehicles.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010		2.392	1.592	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #16</b>  Michigan Technological University's Project for Diverse Sensing for Synergistic Force Protection in Urban Threat Environments: In FY09, this Congressional Interest Item developed supporting technology for a sensor and processor for use by mobile ground force (vehicle and dismount) protection in dense urban environments against urban weapons threats.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.797	1.592	0.000	0.000	0.000
<b>Program #17</b>  Ground Vehicle Integration Technologies: In FY09, this Congressional Interest Item leveraged commercial virtual-design technology pioneered in the automobile industry to develop a virtual-design environment capable of simulating military vehicles and modifications to these vehicles in a way that provides for rapid trade-off analyses.		2.392	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #18  Advanced Hybrid Electric Vehicle Technologies for Fuel Efficient Blast Protected Vehicle: In FY09, this Congressional Interest Item utilized alternative fuels and improved energy efficiencies to improve vehicle mobility and protection.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.197	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #19  Fire Shield: In FY09, this Congressional Interest Item upgraded, updated and downsized Full Spectrum Active Protection Close-In Shield (FCLAS) technology, applied/integrated the improved FCLAS components into the close-in active protection concept, developed/demoed the "proof of concept" on vehicle platform and obtained Fire Shield (FS) component hardware for testing.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		3.189	3.183	0.000	0.000	0.000
Program #20  Power and Energy Research Equipment Upgrades: In FY09, this Congressional Interest Item expanded the in-house testing capability at TARDEC to evaluate high power components for future combat and wheeled vehicles.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010		5.980	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #21  Advanced Performance Transparent Armor for Tactical Wheeled Vehicles: In FY09, this Congressional Interest Item developed transparent armor to allow for better protection at equivalent weights, or similar protection at reduced weights.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.197	0.000	0.000	0.000	0.000
Program #22  Model-Based Engineering Environment: In FY09, this Congressional Interest Item made 3D Computer-Aided Design (CAD) models a more integrated part of the Ground System Integration Domain's (GSID) Product Lifecycle Management (PLM) activities. Specific focus was in modernizing the "Tech Data Loop" utilized for spare part procurements to include 3D models and their associated attributes.		0.797	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #23  Lithium Ion Battery Exchange Program: In FY09, this Congressional Interest Item provided for Abrams battery upgrade to 28 volt Li-ion for increase power for silent watch.		2.392	0.796	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #24		1.994	0.000	0.000	0.000	0.000

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R-1 Line Item #33

Page 43 of 90

1251 of 1536

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Medium Sized Unmanned Ground Vehicles Platform: In FY09, this Congressional Interest Item researched advanced sensor capabilities, communications and network technologies.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #25</p> <p>MRAP Supportability System (MSS): In FY09, this Congressional Interest Item improved and extended the Product Lifecycle Management (PLM) capabilities currently available. Specific focus was on connecting the product's technical data with the engineering, analysis, and logistics activities within the Ground System Integration Domain (GSID).</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p>		3.987	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #26  End-to-End Vehicle Survivability Technology: In FY09, this Congressional Interest Item utilized insight optimization framework to optimize and physically simulate blast mitigation components for a current fleet vehicle.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.595	0.000	0.000	0.000	0.000
Program #27  FCV Advanced Suspension System: In FY09, this Congressional Interest Item developed Magneto-Rheological (M-R) Compressible fluids for heavy combat vehicle suspensions.		1.595	2.149	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #28  Hull Humvee Protection Program: In FY09, this Congressional Interest Item developed a proof-of-principle one piece, add-on, retro-fit V-shaped armor to be installed on the HMMWV for the purpose of demonstration and validation.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.994	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #29  Implementation of an Advanced Tactical Wheeled Armored Vehicle System: In FY09, this Congressional Interest Item researched combining the best attributes of a conventional armored vehicle and a Mine Resistant Ambush Protected (MRAP) type vehicle.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		2.990	0.000	0.000	0.000	0.000
Program #30  Light Tactical Vehicle Ambulance Shelter: In FY09, this Congressional Interest Item developed a lightweight, composite, armor-ready shelter for a two door Medical Mission Module/HMMWV cargo variant, referred to as the ECV2, integrating the A-kit/B-kit design approach with the objective of significantly improving system survivability and mobility.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010		2.392	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #31  Payload and Advanced Development for Next Generation Robot Platform: In FY09, this Congressional Interest Item developed and evaluated a manipulator arm and gripper sized to the 400 lb iRobot Warrior platform for both indoor and outdoor operations.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.994	0.000	0.000	0.000	0.000
Program #32  Robotics Vehicle Secure Communications: In FY09, this Congressional Interest Item enhanced unmanned ground vehicle communications for Emergency-Stop, video, audio, vehicle control, with the use of secure wireless radio technology, which can ensure proper radio bandwidth and prioritize traffic from the vehicle enabling required features to function properly and in a timely manner.		1.994	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #33  Advanced Corrosion Protection for Military Vehicles: In FY09, this Congressional Interest Item researched and demonstrated technologies to enhance Army corrosion prevention and control through development of new materials and application processes.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		2.392	2.387	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #34  Combat Vehicle Electrical Power-21st Century (CVEP-21): In FY09, this Congressional Interest Item provided the Abrams with a potential solution to increase the electrical power output.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.797	0.000	0.000	0.000	0.000
Program #35  Applied Power Management Control and Integration: In FY09, this Congressional Interest Item developed an optimized non-primary system (NPS) solutions by hybridizing energy storage technology using peak shaving with small power generation devices for capability increases.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010		0.797	0.000	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive</i> <i>Advanced Technology</i>	<b>PROJECT</b> 533: <i>Ground Vehicle Demonstrations</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #36  Stryker Second Source Tire Research: In FY09, this Congressional Interest Item developed a second source for Stryker tires.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.797	0.000	0.000	0.000	0.000
Program #37  Magneto-Rheological (MR) Suspensions for Tactical Wheeled Vehicles: In FY09, this Congressional Interest Item developed magneto-rheological (M-R) dampers to handle the increasing payloads of armored vehicles.  <i>FY 2009 Accomplishments:</i> FY 2009		2.392	0.000	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive</i> <i>Advanced Technology</i>	<b>PROJECT</b> 533: <i>Ground Vehicle Demonstrations</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #38</b>  Ceramic and Metal Matrix Composite (MMC) Armor Development Using Ring Extruder Technology: In FY09, this Congressional Interest Item developed a range of alternatives which the government can consider for potential application of the 12-Screw Ring Extruder Continuous Mixing Manufacturing process to meet current and future military requirements.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.797	0.796	0.000	0.000	0.000
<b>Program #39</b>		3.987	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Next Generation Diesel Engine for Ground Vehicles: In FY09, this Congressional Interest Item developed diesel engine technologies for increased power and efficiency.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #40</p> <p>Dynamometer Facility Upgrade Program at TARDEC: In FY09, this Congressional Interest Item provided upgrades to the dynamometer facility in preparation for the power and energy building.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p>		3.189	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #41 Advanced Carbon Hybrid Battery for Hybrid Electric Vehicles. This is a Congressional Interest Item.		0.000	0.796	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #42 Advanced Technology for Energy Storage. This is a Congressional Interest Item.		0.000	1.592	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #43 Electric All Terrain Ultra Light Vehicle for the Minnesota National Guard. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.592	0.000	0.000	0.000
Program #44 Fuel System Component Technology Research. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009		0.000	1.592	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #45 Hybrid Electric Drive All Terrain Vehicle. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.592	0.000	0.000	0.000
Program #46 Integrated Defense Technical Information. This is a Congressional Interest Item.		0.000	1.592	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #47 All Composite Lightweight Military Vehicle. This is a Congressional Interest Item.		0.000	1.592	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #48		0.000	1.592	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive</i> <i>Advanced Technology</i>	<b>PROJECT</b> 533: <i>Ground Vehicle Demonstrations</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
30-kW Auxiliary Power for Armored Combat Vehicles. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #49  Compact 10 Kilowatt Generator Set for Army and Marine Combat Vehicles. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.592	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #50 Future Tactical Truck Carbon Composite Shelter & Retrofit of Current Vehicle Shelters. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.592	0.000	0.000	0.000
Program #51 Military Installation Electric Vehicle Demonstration Project. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base		0.000	1.592	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #52 Networked Reliability and Safety Early Evaluation System (NRSEES). This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.592	0.000	0.000	0.000
Program #53 All Composite Bus Program. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010		0.000	1.990	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #54  Unmanned Robotic System Utilizing Hydrocarbon Fueled Solid Oxide Fuel Cell. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	2.387	0.000	0.000	0.000
Program #55  Friction Stir Welding Program. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009		0.000	2.387	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #56  Advanced Lightweight Multi-Functional Multi-Threat Composite Armor Material Technology. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	2.387	0.000	0.000	0.000
Program #57  On-board Vehicle Power Systems Development. This is a Congressional Interest Item.		0.000	2.467	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive</i> <i>Advanced Technology</i>	<b>PROJECT</b> 533: <i>Ground Vehicle Demonstrations</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #58 Fully Burdened Cost of Fuel and Alternative Energy Methodology and Conceptual Model. This is a Congressional Interest Item.		0.000	2.785	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #59		0.000	2.866	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Vehicle Maintenance and Prognostics System. This is a Congressional Interest Item.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #60</p> <p>VSIL: Armored Vehicle Components and Systems Simulated in Cost-Effective Virtual Design and Test Environment. This is a Congressional Interest Item.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>		0.000	3.183	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #61 Hybrid Engine Development Program for Tactical Wheeled Vehicle Fleet. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	3.183	0.000	0.000	0.000
Program #62 Zouline Armor. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	3.342	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #63 Program Increase. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	3.730	0.000	0.000	0.000
Program #64 Advanced Battery Materials and Manufacturing. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	3.979	0.000	0.000	0.000

**UNCLASSIFIED**

R-1 Line Item #33

Page 66 of 90

1274 of 1536

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive</i> <i>Advanced Technology</i>	<b>PROJECT</b> 533: <i>Ground Vehicle Demonstrations</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #65 Army Vehicle Condition Based Maintenance. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	3.979	0.000	0.000	0.000
Program #66 Plug-in Hybrid Electric Vehicle. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	3.979	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #67 Simulation Based Reliability and Safety (SimBRS) Program. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	4.874	0.000	0.000	0.000
Program #68 Advanced Battery Development Program. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	8.953	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive</i> <i>Advanced Technology</i>	<b>PROJECT</b> 533: <i>Ground Vehicle Demonstrations</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #69 Alternative Energy Advanced Technology Development/Demonstration. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	18.155	0.000	0.000	0.000
Program #70 Advanced Composites Development for Light Weight, Low Cost Transportation Systems Using 3+ Extruder: In FY09, this Congressional Interest Item developed improved productivity through manufacturing process integration by using a "Powder to Parts" continuous manufacturing process.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base		2.392	2.387	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive Advanced Technology</i>	<b>PROJECT</b> 533: <i>Ground Vehicle Demonstrations</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #71  Tactical Wheeled Vehicle Structures for Improved Survivability and Performance: In FY09, this Congressional Interest Item focused on advanced joint design, methods and technologies, advance monolithic and multi-material solutions, and enhanced structural response to blast/shock events.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		7.973	0.000	0.000	0.000	0.000
Program #72  Wireless Analysis and Visualization Engines for Sensors (WAVES): In FY09, this Congressional Interest Item evaluated a wide range of unmanned sensors that provides information back to the user. It prioritized the information that is critical to the user and presents it on display.  <i>FY 2009 Accomplishments:</i> FY 2009		0.797	0.000	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive</i> <i>Advanced Technology</i>	<b>PROJECT</b> 533: <i>Ground Vehicle Demonstrations</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #73  Enhanced Military Vehicle Maintenance System Demo Project with Anniston Army Depot and Auburn Univ: In FY09, this Congressional Interest Item reduced infant mortality of rebuilt military vehicle components at Anniston Army Depot.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.595	2.785	0.000	0.000	0.000
Program #74		2.392	0.000	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive Advanced Technology</i>	<b>PROJECT</b> 533: <i>Ground Vehicle Demonstrations</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>N-STEP-Enabled Manufacturing Cell for Future Combat Systems: In FY09, this Congressional Interest Item leveraged the Standard for the Exchange of Product Model Data (STEP)/ISO manufacturing tools to improve productivity, efficiencies and quality.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #75</p> <p>C4ISR Auxiliary Power Unit (APU) for Soldier Tactical Applications: In FY09, this Congressional Interest Item developed non-primary power solutions for multiple military ground vehicle platforms during engine-off operations.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p>		1.595	0.000	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive</i> <i>Advanced Technology</i>	<b>PROJECT</b> 533: <i>Ground Vehicle Demonstrations</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #76 Fire Resistant Fuels. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		3.189	0.000	0.000	0.000	0.000
Program #77 Superlattice Semiconductors for Mobile SS Lighting and Solar Power Applications. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009		2.392	2.785	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive</i> <i>Advanced Technology</i>	<b>PROJECT</b> 533: <i>Ground Vehicle Demonstrations</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #78 MATTRACKS. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.994	0.000	0.000	0.000	0.000
Program #79 High-Pressure Mobile Water Delivery System. This is a Congressional Interest Item.		0.798	0.000	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive</i> <i>Advanced Technology</i>	<b>PROJECT</b> 533: <i>Ground Vehicle Demonstrations</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #80 Robotics Manipulators for Ordnance Disposal. This is a Congressional Interest Item.		0.748	0.000	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #81		3.189	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Joint Combat Support Trailer. In FY09, this Congressional Interest Item further developed and demonstrated advanced, high-performance aluminum structures and components and advanced designs for improved medium tactical trailers.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
Accomplishments/Planned Programs Subtotals		124.301	132.685	0.000	0.000	0.000
<b>C. Other Program Funding Summary (\$ in Millions)</b>						
N/A						
<b>D. Acquisition Strategy</b>						
N/A						
<b>E. Performance Metrics</b>						
Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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<b>APPROPRIATION/BUDGET ACTIVITY</b>			<b>R-1 ITEM NOMENCLATURE</b>					<b>PROJECT</b>			
2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>			PE 0603005A: <i>Combat Vehicle and Automotive Advanced Technology</i>					53D: <i>NAC Demonstration Initiatives (CA)</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
53D: <i>NAC Demonstration Initiatives (CA)</i>	41.067	18.384	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>A. Mission Description and Budget Item Justification</b>											
These are Congressional Interest Items											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
							<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1							2.392	2.388	0.000	0.000	0.000
Advanced Thermal Management System: In FY09, this Congressional Interest Item provided for the transition from demonstration to production for thermal and or oil management retrofit systems kits to market for both military vehicles.											
<i>FY 2009 Accomplishments:</i>											
FY 2009											
<i>FY 2010 Plans:</i>											
FY 2010											
<i>Base FY 2011 Plans:</i>											
FY 2011 Base											
<i>OCO FY 2011 Plans:</i>											
FY 2011 OCO											
Program #2							0.797	2.785	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Hydraulic Hybrid Vehicles (HHV) for the Tactical Wheeled Fleet: In FY09, this Congressional Interest Item provided for the development of a series hydraulic hybrid drive train technology for military tactical vehicle applications.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #3</p> <p>Special Operations Vehicle - Lightweight, Armored, Hybrid, Power Generating, Tactical Vehicle: In FY09, this Congressional Interest Item developed, engineered and fabricated a Joint All terrain Modular Mobility Asset Vehicle.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p>		1.994	0.795	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #4  Novel Onboard Hydrogen Storage System Development: In FY09, this Congressional Interest Item provided for the development and demonstration of an alkaline fuel cell system with increased durability and decreased weight using improved manufacturing technologies.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.798	0.000	0.000	0.000	0.000
Program #5  Base Security Systems: In FY09, this Congressional Interest Item developed base security systems for the Michigan National Guard (MING) bases across the state of Michigan.		1.197	0.000	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive</i> <i>Advanced Technology</i>	<b>PROJECT</b> 53D: <i>NAC Demonstration Initiatives (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #6</b>  Alternative Energy Research: In FY09, this Congressional Interest Item provided for alternative energy research in three areas Advanced Energy Storage, Micro Grid and Alternative Fuels. Advanced Energy Storage demonstrated the first dual-use pilot cell manufacturing plant for advanced energy storage systems. Micro grid will build and demonstrate a micro grid with plug-in electric vehicles to determine the technical readiness of micro grids to accept power from various inputs while charging the selected vehicles and provide output power to various applications. Alternative Fuels advanced technology employing Fischer-Tropsch synthesis for production of military fuels from non-petroleum sources.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010		19.934	0.000	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive Advanced Technology</i>	<b>PROJECT</b> 53D: <i>NAC Demonstration Initiatives (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #7  Next Generation Non-Tactical Vehicle Propulsion: In FY09, this Congressional Interest Item continued the development and demonstration of state of the art fuel cell Powertrain in light duty vehicles.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.595	0.000	0.000	0.000	0.000
Program #8  Advanced Drivetrains for Enhanced Mobility and Safety: In FY09, this Congressional Interest Item developed a front to rear transfer case to enable active torque management on a military tactical vehicle.  <i>FY 2009 Accomplishments:</i> FY 2009		1.595	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #9</b>  Advanced Digital Hydraulic Hybrid Drive System: In FY09, this Congressional Interest Item demonstrated a retrofit-able, multi-purpose series hybrid hydraulic system on a military tactical vehicle.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.994	1.990	0.000	0.000	0.000
<b>Program #10</b>  Field Deployable Fleet Hydrogen Fueling. This is a Congressional Interest Item.		0.000	2.388	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive</i> <i>Advanced Technology</i>	<b>PROJECT</b> 53D: <i>NAC Demonstration Initiatives (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #11 Defense Advanced Transportation Technology Program Hybrid Truck Users Forum. This is a Congressional Interest Item.		0.000	4.775	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #12		1.595	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Light Weight Medical Evacuation Unit: In FY09, this Congressional Interest Item designed, developed, built, tested, demonstrated and delivered a vehicle capable of providing uninterrupted, lifesaving medical treatment and evacuation.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #13</p> <p>Advanced Lightweight Multi-Functional Multi-Threat Composite Armor Technology: In FY09, this Congressional Interest Item will provide for the design of composite material to be multifunctional (provide protection and reduce heat signature) with self sensing technologies.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p>		2.392	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive Advanced Technology</i>	<b>PROJECT</b> 53D: <i>NAC Demonstration Initiatives (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #14  Lightweight Partial Hybrid Electric Military Transport Vehicle: In FY09, this Congressional Interest Item provided technical support for TARDEC's National Automotive Center hybrid vehicle platform.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.595	0.000	0.000	0.000	0.000
Program #15  Plug-in Hybrid Vehicle Electrification Program: In FY09, this Congressional Interest Item provided for the development, demonstration and validation of new technologies for grid to vehicle and vehicle to grid power flow and communications through the use of Plug In Hybrid Electric Vehicles and/or electric vehicles for military and commercial applications.		3.189	3.263	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive</i> <i>Advanced Technology</i>	<b>PROJECT</b> 53D: <i>NAC Demonstration Initiatives (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		41.067	18.384	0.000	0.000	0.000
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>D. Acquisition Strategy</b> N/A						
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>			<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive Advanced Technology</i>				<b>PROJECT</b> 53G: <i>FUTURE COMBAT SYSTEMS (FCS)</i>				
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
53G: <i>FUTURE COMBAT SYSTEMS (FCS)</i>	11.368	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This project was focused on Science and Technology (S&T) efforts between the Army and Defense Advanced Research Projects Agency (DARPA) to develop technologies for Future Combat Systems (FCS). This project ends in FY09. Continuing efforts focused on Unmanned Ground Vehicles (UGVs) transitioned to Project 515. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  In FY09, finalized control architecture designs for the control of UGVs by Soldier operators; finalized designs and finished development of the mission execution, computer operating environment, vehicle management, sensor management and fusion hardware and software for UGV control and integrated components onto the vehicle platform in preparation for engineering evaluations. Related work is also being conducted in the Robotic Vehicle Control Architecture Technology effort in project 515.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base	11.368	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive</i> <i>Advanced Technology</i>	<b>PROJECT</b> 53G: <i>FUTURE COMBAT SYSTEMS (FCS)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		11.368	0.000	0.000	0.000	0.000
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>D. Acquisition Strategy</b> N/A						
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive Advanced Technology</i>				<b>PROJECT</b> C66: <i>DC66</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
C66: <i>DC66</i>	0.654	2.431	4.304	0.000	4.304	4.278	3.450	3.158	3.399	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

The purpose of this project is to conduct resesarch on classified efforts. The details of these efforts may be provided to appropriately cleared individuals upon request.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1	0.654	2.363	4.304	0.000	4.304
Classified efforts					
<i>FY 2009 Accomplishments:</i>					
FY 2009					
<i>FY 2010 Plans:</i>					
FY 2010					
<i>Base FY 2011 Plans:</i>					
FY 2011 Base					
<i>OCO FY 2011 Plans:</i>					
FY 2011 OCO					
Program #2	0.000	0.068	0.000	0.000	0.000
Small Business Innovative Research/Small Business Technology Trasfer Programs					

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603005A: <i>Combat Vehicle and Automotive</i> <i>Advanced Technology</i>	<b>PROJECT</b> C66: <i>DC66</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		0.654	2.431	4.304	0.000	4.304
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>D. Acquisition Strategy</b> N/A						
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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**Exhibit R-2, PB 2011 Army RDT&E Budget Item Justification** **DATE:** February 2010

<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603006A: <i>Command, Control, Communications Advanced Technology</i>
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COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	11.307	12.352	8.102	0.000	8.102	7.073	7.316	8.556	11.666	0	74.474
257: <i>DIGITAL BATTLEFLD COMM</i>	2.391	3.730	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
592: <i>SPACE APPLICATION TECH</i>	4.687	3.568	4.442	0.000	4.442	4.812	5.018	6.216	9.291	Continuing	Continuing
DF7: <i>DF7</i>	4.229	5.054	3.660	0.000	3.660	2.261	2.298	2.340	2.375	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Efforts in this program element (PE) mature and demonstrate advanced space technology applications that support the Army's ability to control and exploit space assets that contribute to current and future military operations as defined in the national, DoD, and Army space policies. This PE provides applications for enhanced intelligence, reconnaissance, surveillance, target acquisition, position/navigation, missile warning, ground-to-space surveillance, and command and control capabilities. Project 592 supports the maturation and demonstration of Space Applications Technology efforts that provide technology options for networked and integrated surveillance and command and control capabilities to enable information superiority, enhanced situational awareness, and support for distributed operations. Project 592 also matures and demonstrates high altitude and space sensor and communications payloads for Army applications and provides technology risk reduction capability for ground-to-space surveillance system development. Project DF7 supports classified activities. Properly accessed individuals can obtain further information from the Assistant Secretary of the Army for Acquisition Logistics & Technology (ASAALT) Special Programs Office. Project 257 funds congressional special interest items. Work in this PE is coordinated with PE 0602120A (Sensors and Electronic Survivability) and PE 0603008 (Electronic Warfare Advanced Technology). The cited work is consistent with the Department of Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this PE is performed by the US Army Space and Missile Defense Technical Center in Huntsville, AL.

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<b>Exhibit R-2, PB 2011 Army RDT&amp;E Budget Item Justification</b>	<b>DATE:</b> February 2010
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603006A: <i>Command, Control, Communications Advanced Technology</i>
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**B. Program Change Summary (\$ in Millions)**

	<u><b>FY 2009</b></u>	<u><b>FY 2010</b></u>	<u><b>FY 2011 Base</b></u>	<u><b>FY 2011 OCO</b></u>	<u><b>FY 2011 Total</b></u>
Previous President's Budget	11.544	8.667	8.146	0.000	8.146
Current President's Budget	11.307	12.352	8.102	0.000	8.102
Total Adjustments	-0.237	3.685	-0.044	0.000	-0.044
• Congressional General Reductions		-0.065			
• Congressional Directed Reductions					
• Congressional Rescissions		0.000			
• Congressional Adds		3.750			
• Congressional Directed Transfers					
• Reprogrammings	0.067	0.000			
• SBIR/STTR Transfer	-0.304	0.000			
• Adjustments to Budget Years	0.000	0.000	-0.044	0.000	-0.044

**Change Summary Explanation**

FY10 Congressionally directed increases.

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603006A: <i>Command, Control, Communications Advanced Technology</i>				<b>PROJECT</b> 257: <i>DIGITAL BATTLEFLD COMM</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
257: <i>DIGITAL BATTLEFLD COMM</i>	2.391	3.730	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b><u>A. Mission Description and Budget Item Justification</u></b>											
Congressional Interest Item funding for Digital Battlefield advanced technology development.											
<b><u>B. Accomplishments/Planned Program (\$ in Millions)</u></b>											
							<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Vertical/Horizontal Integration of Space Technologies and Applications (VISTA): In FY09, developed and demonstrated VISTA intelligent agent software and architecture in a jammer warning distribution application.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO							2.391	0.000	0.000	0.000	0.000
Program #2  Program Increase							0.000	3.730	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603006A: <i>Command, Control, Communications Advanced Technology</i>	<b>PROJECT</b> 257: <i>DIGITAL BATTLEFLD COMM</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		2.391	3.730	0.000	0.000	0.000
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>D. Acquisition Strategy</b> N/A						
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603006A: <i>Command, Control, Communications Advanced Technology</i>				<b>PROJECT</b> 592: <i>SPACE APPLICATION TECH</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
592: <i>SPACE APPLICATION TECH</i>	4.687	3.568	4.442	0.000	4.442	4.812	5.018	6.216	9.291	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Efforts in this project mature and demonstrate advanced space technology applications that support the Army's ability to control and exploit space assets that contribute to current and future military operations as defined in the national, DoD, and Army space policies. This project matures and demonstrates advanced technologies in the areas of light weight materials, miniaturization, reduced power consumption, and advanced data collection, processing, and dissemination. This project also develops algorithms that process space and near space sensor data in real and near real time for integration into battlefield operating systems. It matures and demonstrates payloads, sensors and data down link systems for tactically responsive space and high altitude platforms. This project provides space advanced technology risk reduction capability for ground-to-space surveillance and systems development. Work in this Project is coordinated with PE 0602120A (Sensors and Electronic Survivability) and PE 0603008 (Electronic Warfare Advanced Technology). The cited work is consistent with the Department of Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this PE is performed by the US Army Space and Missile Defense Technical Center in Huntsville, AL. This program is designated as a DoD Space Program.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Vertical/Horizontal Integration of Space Technology and Applications (VISTA): This effort matures and demonstrates algorithms and intelligent agent based software applications to provide missile threat warning for Warfighters on-the-move. In FY09, matured and demonstrated vertical and horizontal integration of missile threat warning, collaborative planning, and tailored data as well as information distribution to verify compatibility of intelligent agent and knowledge management technologies. In coordination with the US Army Communications - Electronics Research, Development, and Engineering Center (CERDEC), integrated and demonstrated VISTA with Army networks and within battle command applications. In FY10, mature the intelligent agent software technology including automated and seamless distribution of relevant space and strategic system-developed situational awareness information to specific Brigade and below tactical units in a format that can be directly integrated into their applicable Battle Command System, including Force XXI Battle Command Brigade and Below (FBCB2) and Command and Control Personal Computer (C2PC); and demonstrate the	3.290	2.450	2.236	0.000	2.236

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603006A: <i>Command, Control, Communications Advanced Technology</i>	<b>PROJECT</b> 592: <i>SPACE APPLICATION TECH</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
assets; will complete the development of a flight ready EO/IR imaging space sensor; will prepare a small satellite with data exfiltration capability for launch integration.						
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #3 Small Business Innovative Research/Small Business Technology Transfer Programs		0.000	0.086	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010				
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603006A: <i>Command, Control, Communications Advanced Technology</i>		<b>PROJECT</b> 592: <i>SPACE APPLICATION TECH</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Accomplishments/Planned Programs Subtotals				4.687	3.568	4.442	0.000	4.442
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A								
<b>D. Acquisition Strategy</b> N/A								
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.								

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Exhibit R-2A, PB 2011 Army RDT&E Project Justification									DATE: February 2010		
APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE				PROJECT			
2040: Research, Development, Test & Evaluation, Army BA 3: Advanced Technology Development (ATD)				PE 0603006A: Command, Control, Communications Advanced Technology				DF7: DF7			
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
DF7: DF7	4.229	5.054	3.660	0.000	3.660	2.261	2.298	2.340	2.375	Continuing	Continuing
<b>A. Mission Description and Budget Item Justification</b>											
The purpose of the project is to conduct classified research efforts. The details of the efforts may be provided upon request to appropriately cleared individuals.											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
							FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011
Program #1							4.229	4.913	3.660	0.000	3.660
Classified efforts											
FY 2009 Accomplishments:											
FY 2009											
FY 2010 Plans:											
FY 2010											
Base FY 2011 Plans:											
FY 2011 Base											
OCO FY 2011 Plans:											
FY 2011 OCO											
Program #2							0.000	0.141	0.000	0.000	0.000
Small Business Innovative Research/Small Business Technology Transfer Programs											

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010				
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603006A: <i>Command, Control, Communications Advanced Technology</i>		<b>PROJECT</b> DF7: <i>DF7</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009								
<i>FY 2010 Plans:</i> FY 2010								
<i>Base FY 2011 Plans:</i> FY 2011 Base								
<i>OCO FY 2011 Plans:</i> FY 2011 OCO								
Accomplishments/Planned Programs Subtotals				4.229	5.054	3.660	0.000	3.660
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A								
<b>D. Acquisition Strategy</b> N/A								
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.								

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**Exhibit R-2, PB 2011 Army RDT&E Budget Item Justification** **DATE:** February 2010

<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603007A: <i>Manpower, Personnel and Training Advanced Technology</i>
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COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	6.725	7.371	7.921	0.000	7.921	8.023	8.387	8.987	9.348	0	64.683
792: <i>Personnel Performance &amp; Training</i>	6.725	7.371	7.921	0.000	7.921	8.023	8.387	8.987	9.348	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This project matures and demonstrates advanced behavioral and social science technologies that enhance performance to ensure that the Warfighter keeps pace with the transformations in systems, weapons, equipment, and mission requirements to meet the goals of the future force. These technologies provide key capabilities through training methods and techniques that prepare Soldiers and leaders to effectively operate in complex digitized, networked environments, enable the use of embedded training technologies envisioned for future command and control (C2) systems, and foster cognitive, behavioral, and psychological flexibility, adaptability, and mission readiness. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work is performed and managed by the US Army Research Institute (ARI) for the Behavioral and Social Sciences in Arlington, VA.

**B. Program Change Summary (\$ in Millions)**

	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011 Base</u>	<u>FY 2011 OCO</u>	<u>FY 2011 Total</u>
Previous President's Budget	6.830	7.410	7.989	0.000	7.989
Current President's Budget	6.725	7.371	7.921	0.000	7.921
Total Adjustments	-0.105	-0.039	-0.068	0.000	-0.068
• Congressional General Reductions		-0.039			
• Congressional Directed Reductions					
• Congressional Rescissions			0.000		
• Congressional Adds			0.000		
• Congressional Directed Transfers					
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.105	0.000			
• Adjustments to Budget Years	0.000	0.000	-0.068	0.000	-0.068

**UNCLASSIFIED**

R-1 Line Item #35

Page 1 of 5

1309 of 1536

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603007A: <i>Manpower, Personnel and Training</i> <i>Advanced Technology</i>				<b>PROJECT</b> 792: <i>Personnel Performance &amp; Training</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
<i>792: Personnel Performance &amp; Training</i>	6.725	7.371	7.921	0.000	7.921	8.023	8.387	8.987	9.348	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This project matures and demonstrates advanced behavioral and social science technologies that enhance performance to ensure that the Warfighter keeps pace with the transformations in systems, weapons, equipment, and mission requirements to meet the goals of the future force. These technologies provide key capabilities through training methods and techniques that prepare Soldiers and leaders to effectively operate in complex digitized, networked environments, enable the use of embedded training technologies envisioned for future command and control (C2) systems, and foster cognitive, behavioral, and psychological flexibility, adaptability, and mission readiness. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work is performed and managed by the US Army Research Institute (ARI) for the Behavioral and Social Sciences in Arlington, VA.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Personnel Technology: This effort develops technologies to assess how Soldiers and units are impacted by Army mission, policy, or program changes. In FY09, continued attitude and opinion research on factors that influence Soldier and Family satisfaction, retention, and readiness through design and analysis of surveys. In FY10, investigate various methods and technologies to more rapidly assess attitudes and opinions across the Army to be more responsive to the fast-paced operational demands of overseas contingency operations and improve understanding of assessment methods of Soldiers' attitudes and opinions to quantify factors influencing Soldiers' career plans. In FY11, will demonstrate and validate FY10 methods and technologies to streamline data collections and more rapidly assess attitudes and opinions across the Army; and evaluate trends of Soldier satisfaction, especially in regard to deployment length and dwell time (i.e., back home), and the Army's care and concern for Soldiers and their families.	1.353	1.357	1.500	0.000	1.500

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**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603007A: <i>Manpower, Personnel and Training</i> <i>Advanced Technology</i>	<b>PROJECT</b> 792: <i>Personnel Performance &amp; Training</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #2</b>  Training Technology and Leader Development: This effort provides training techniques that enable Soldiers to take full advantage of advances in technology and systems as they evolve and helps the Army attain its goals of embedded training in Future Force systems. In FY09, matured prototype training support packages that enable improved commander/staff performance in network-enabled environments; validated and refined assessment measures and metrics used in single-user immersive training technologies; exploited training tools/techniques to improve Drill Sergeant skills as trainers and improve initial entry training so first-term Soldiers are better prepared for operational deployments; and evaluated techniques leaders need as basic elements for leadership in changing, complex environments.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010		5.372	0.000	0.000	0.000	0.000

**UNCLASSIFIED**

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603007A: <i>Manpower, Personnel and Training</i> <i>Advanced Technology</i>	<b>PROJECT</b> 792: <i>Personnel Performance &amp; Training</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #3</b>  Training Technology and Leader Development (cont'd): In FY10, establish guidelines for optimizing the use of blended learning environments for Army training (e.g., TRADOC schools); assess the level of preparedness and performance through behavioral evaluation tools following graduation from training programs to develop improved training strategies; demonstrate two Web-based training tools (one to predict skill retention and one to develop techniques, tactics, and procedures to improve training outcomes); exploit and improve emerging development and measurement methods that can facilitate the Army's capability to produce leaders who can more easily adapt to change and complexity. In FY11, will refine guidelines for training effectiveness based on operational relevance of training outcomes in TRADOC courses; will demonstrate effectiveness of training tools/methods such as massively multiplayer simulations (MMPS) through empirical assessment; will demonstrate adaptive leadership and negotiation skills and techniques as well as measurement methods for leader development; and will develop and refine methods and models for maintaining training relevance to operational units.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base		0.000	5.890	6.421	0.000	6.421

**UNCLASSIFIED**

R-1 Line Item #35

Page 4 of 5

1312 of 1536



**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603007A: <i>Manpower, Personnel and Training</i> <i>Advanced Technology</i>	<b>PROJECT</b> 792: <i>Personnel Performance &amp; Training</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #4 Small Business Innovation Research/Small Business Technology Transfer Programs		0.000	0.124	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		6.725	7.371	7.921	0.000	7.921
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>D. Acquisition Strategy</b> N/A						
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

**UNCLASSIFIED**

R-1 Line Item #35

Page 5 of 5

1313 of 1536

**UNCLASSIFIED**

**Exhibit R-2, PB 2011 Army RDT&E Budget Item Justification** **DATE:** February 2010

<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603008A: <i>Electronic Warfare Advanced Technology</i>
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COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	61.192	57.199	50.359	0.000	50.359	53.896	54.932	55.855	59.409	0	443.201
TR1: <i>TAC C4 TECHNOLOGY INT</i>	36.435	37.344	37.862	0.000	37.862	37.882	38.415	38.497	40.354	Continuing	Continuing
TR2: <i>Secure Tactical Information Integration</i>	13.195	12.851	12.497	0.000	12.497	16.014	16.517	17.358	19.055	Continuing	Continuing
TR8: <i>C3 DEMONSTRATIONS (CA)</i>	11.562	7.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Efforts in this program element (PE) mature and demonstrate technologies for secure, mobile, wireless networks that will operate reliably in diverse and complex terrain, in all environments. Technologies are matured and demonstrated to address the seamless integrated communications challenge with distributed, mobile, secure, self-organizing communications networks. A key objective is to demonstrate seamlessly integrated communications technologies across all network tiers, ranging from unattended networks and sensors through maneuver elements and airborne and space assets. To accomplish the goal, this PE investigates and leverages external communication technologies and combines technology options in a series of Command, Control, Communications, and Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) On-The-Move (OTM) demonstrations to measure the battlefield effectiveness (project TR1). This PE also provides: protection technologies for tactical wireless networks against modern network attacks; and supports collaborative technologies for information sharing between battlefield functional communities (project TR2). Several tasks are conducted in conjunction with the Defense Advanced Research Projects Agency (DARPA) and the other Services. Project TR8 funds congressional special interest items. Work in this PE is fully coordinated with PE 0602782A (Command, Control, Communications Technology), PE 0603772A (Advanced Tactical Computer Science and Sensor Technology), PE 0602120A (Sensors and Electronic Survivability) and 0602270A (EW Technology). The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work is performed by the Army Research, Development, and Engineering Command (RDECOM), Communications-Electronics Research, Development, and Engineering Center (CERDEC), Fort Monmouth, NJ and Aberdeen Proving Ground, MD.

**UNCLASSIFIED**

**UNCLASSIFIED**

<b>Exhibit R-2, PB 2011 Army RDT&amp;E Budget Item Justification</b>	<b>DATE:</b> February 2010
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603008A: <i>Electronic Warfare Advanced Technology</i>
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**B. Program Change Summary (\$ in Millions)**

	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011 Base</u>	<u>FY 2011 OCO</u>	<u>FY 2011 Total</u>
Previous President's Budget	62.353	50.458	50.599	0.000	50.599
Current President's Budget	61.192	57.199	50.359	0.000	50.359
Total Adjustments	-1.161	6.741	-0.240	0.000	-0.240
• Congressional General Reductions		-0.299			
• Congressional Directed Reductions					
• Congressional Rescissions		0.000			
• Congressional Adds		7.040			
• Congressional Directed Transfers					
• Reprogrammings	0.324	0.000			
• SBIR/STTR Transfer	-1.485	0.000			
• Adjustments to Budget Years	0.000	0.000	-0.240	0.000	-0.240

**Change Summary Explanation**

FY10 Congressionally directed increases.

**UNCLASSIFIED**

R-1 Line Item #36

Page 2 of 22

1315 of 1536

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603008A: <i>Electronic Warfare Advanced Technology</i>				<b>PROJECT</b> TR1: <i>TAC C4 TECHNOLOGY INT</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
TR1: <i>TAC C4 TECHNOLOGY INT</i>	36.435	37.344	37.862	0.000	37.862	37.882	38.415	38.497	40.354	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Efforts in this project mature and demonstrate key communications, mobile networking technologies to enable commanders and individual Soldiers to survive and fight by providing secure, reliable, mobile communications network solutions that function in complex and diverse terrain. The efforts here concentrate on three major goals: provide a series of technology demonstrations of Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) capabilities to significantly reduce the risk associated with the networks of networks concept; provide critical links in the ability to communicate and move large amounts of information across the force structure in a seamless, integrated manner conducive to a highly mobile manned and unmanned force structure; and assess the Technology Readiness Level (TRL) of emerging network technologies in an operationally relevant environment. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this project is performed by the Army Research, Development, and Engineering Command (RDECOM), Communications-Electronics Research, Development, and Engineering Center (CERDEC), Fort Monmouth, NJ and Aberdeen Proving Ground, MD.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Antenna Technologies: This effort matures and demonstrates low cost, power efficient, antenna technologies for terrestrial and tactical satellite ground. In FY09, matured and demonstrated a low profile Ku/Ka single beam SATCOM antenna; matured single beam low profile hybrid Ka/Q band satellite communications (SATCOM) on-the-move (OTM) antenna. In FY10, complete development of low profile Ka/Ku single beam SATCOM OTM antenna and conduct field demonstration; integrate Ka/Q band power amplifiers into a single prototype and conduct lab testing; mature and evaluate single beam low profile hybrid Ka/Q band SATCOM OTM antenna; mature small aperture Blue Force Tracking (BFT) SATCOM terminal to enable accurate position location dissemination using military satellite to replace costly commercial satellite services. In FY11, will demonstrate Ka/Q band SATCOM OTM antenna with integrated power amplifier and tracking system; will complete and demonstrate a very low profile blue force tracking (BFT) antenna system; will mature conformal and embedded antenna design; will conduct sub-system compatibility testing for a selected platform using electromagnetic	3.943	5.961	8.967	0.000	8.967

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603008A: <i>Electronic Warfare Advanced Technology</i>	<b>PROJECT</b> TR1: <i>TAC C4 TECHNOLOGY INT</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Modeling and Simulation (M&amp;S); and will develop mockup test bed for validation. Work related to this effort is also being accomplished under PE 0602782A/project H92.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #2</p> <p>Wireless Information Assurance (IA): This effort matures and demonstrates technologies to protect wireless tactical networks against computer network attacks with an emphasis on defending against attack methods not previously seen. In FY09, matured and demonstrated IA technologies enabling information exchange across activity domains ensuring survivability of tactical networks and critical information against information warfare attacks; matured and demonstrated network management/information assurance fault correlation engine that reduces the software footprint by creating an integrated suite of network operations tools. In FY10, mature and demonstrate a Mobile Ad Hoc Networking (MANET) malicious code detection service to thwart zero day attacks; demonstrate a response system that receives the root cause analysis from the correlation engine then develops and recommends a response plan to address the security problem; mature autonomous adaptive middleware and evaluate in a laboratory environment. In FY11, will develop and mature the mission generation engine to allow for dynamic reconfiguration of a subset of network parameters (e.g. topology) based on mission specifications; will demonstrate computer network protection using Mission to Policy Translation Engine and Adaptive Middleware,</p>		3.736	9.245	9.296	0.000	9.296

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603008A: <i>Electronic Warfare Advanced Technology</i>	<b>PROJECT</b> TR1: <i>TAC C4 TECHNOLOGY INT</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Tactical Public Key Infrastructure, and Cross Domain Solutions in a relevant environment. Work related to this effort is also being accomplished under PE 0602782A/project H92.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #3</p> <p>Proactive Integrated Link Selection for Network Robustness: This effort demonstrates proactive link selection algorithms to optimize use of all available networked communications link types, maximizes network throughput and simplifies network planning and maintenance. In FY09, completed implementation of deployed mode link selection algorithms; conducted final architecture, design maturation, and integration of planning and deployed mode link selection algorithms; conducted performance testing in a relevant field environment of all planning and deployed mode link selection technologies with representative hardware, and transitioned link selection optimization algorithms to PM WIN-T, Navy Office of Naval Research and Naval Research Laboratory, PEO Missiles and Space and PEO STRI.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p>		8.811	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603008A: <i>Electronic Warfare Advanced Technology</i>	<b>PROJECT</b> TR1: <i>TAC C4 TECHNOLOGY INT</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #4</p> <p>Dismounted Communications in Urban Terrain: This effort matures and demonstrates technologies that enable dismounted soldier wireless networked communications in complex terrain such as urban environments and inside buildings. In FY09, matured communications capabilities for dismounted Soldier operating in highly complex communications environments through the use of adaptive processing, networking algorithms, and network security features such as employing random noise waveforms and policy based network management, fault correlation low probability of intercept, low probability of detection technologies to reduce communications systems vulnerability and improve reliability. In FY10, adapt and mature space time adaptive processing for use on dismounted Soldiers radio equipment; develop a tactical one-way certifiable Cross Domain information sharing device.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p>		2.447	1.955	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603008A: <i>Electronic Warfare Advanced Technology</i>	<b>PROJECT</b> TR1: <i>TAC C4 TECHNOLOGY INT</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<p>Program #5</p> <p>Applied Communications and Information Networking (ACIN): This effort adapts and matures emerging commercial wireless, networked communications technologies for military use. In FY09, matured and demonstrated commercial networking and communications technology in intelligent agents and mobile networking; provided rapid adaptation of commercial communications equipment for military use through the development of new architectures combining commercial and military unique technologies; provided modeling and simulation and planning tools for communications/network planning. In FY10, adapt and mature emerging commercial (802.16e, 802.22 and 802.11n) wireless networking technology for military use by adapting the technology for use in military frequency bands and assessing security vulnerabilities; mature radio frequency propagation modeling and simulation, and planning tools for use in urban environments and complex terrain; evaluate and adapt commercial software defined radios with cognitive radio technology. In FY11, will develop and evaluate emerging cognitive networking technologies for wireless networks including cognitive radios, cross layer network protocols, and investigate associated communications, architectures, and hardware components; will develop, digitize satellite communications (SATCOM) system technologies to reduce size, weight power and cost (SWAP-C) for strategic ground terminals.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p>		1.346	1.628	1.642	0.000	1.642

**UNCLASSIFIED**



**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603008A: <i>Electronic Warfare Advanced Technology</i>	<b>PROJECT</b> TR1: <i>TAC C4 TECHNOLOGY INT</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<p>Program #6</p> <p>C4ISR On-The-Move (OTM): In FY09, assessed the capability, functionality, and performance of the FY09 programmed increments of Joint Tactical Radio System (JTRS) Handheld Manpack Small (HMS) for dismount Soldiers, unmanned ground sensors, non-line of sight launch system and intelligent munitions systems; assessed WIN-T increment 2 and 3 functionality including enhanced quality of service architecture, information assurance solutions to enable network security across a wide area network using multiple encryption devices with minimal loss of data, and selected network operations management functions; assessed the technology readiness level (TRL) of Army S&amp;T efforts maturing in the FY09 timeframe in an operationally relevant field environment; continued to support Future Combat System (FCS) technical evaluations to explore FY09 programmed increments of Army Battle Command.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>		10.848	0.000	0.000	0.000	0.000
Program #7		0.000	8.304	8.131	0.000	8.131

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603008A: <i>Electronic Warfare Advanced Technology</i>	<b>PROJECT</b> TR1: <i>TAC C4 TECHNOLOGY INT</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>C4ISR On-The-Move (OTM): In FY10, assess increments of JTRS HMS and Ground Mobile Radio (GMR) for mounted &amp; dismounted Soldiers, unmanned ground and aerial sensors, non-line of sight launch systems and intelligent munitions systems: will continue to assess WIN-T functionality including quality of service architecture, information assurance solutions to enable network security with minimal data loss, selected network operations management functions, and associated networks; will assess the TRL of S&amp;T efforts in an operationally relevant environment; will continue to support tech evaluations to explore programmed increments of Battle Command and Unified Battle Command. In FY11, will assess the capability, functionality, and performance of network integrated architectures and emerging capabilities that support the Army Brigade Combat Team Modernization Plan; will evaluate the FY11 programmed increments of JTRS for mounted and dismounted Soldiers and platforms, unmanned ground and aerial sensors, and intelligent munitions systems in support of the Army Brigade Combat Team Modernization Plan; will evaluate WIN-T functionality, including enhanced quality of service architecture, information assurance solutions to enable network security across a wide area network using multiple encryption devices with minimal loss of data, and selected network operations management functions; will assess the TRL of Army S&amp;T efforts maturing in the FY11 timeframe in an operationally relevant environment to facilitate Technology Transition; will continue to support research and development (R&amp;D) of enabling Future Force capabilities and accelerate such capabilities to enhance the current force.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603008A: <i>Electronic Warfare Advanced Technology</i>		<b>PROJECT</b> TR1: <i>TAC C4 TECHNOLOGY INT</i>		
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Program #8</p> <p>C4ISR Network Mining: This effort matures data mining that provides the link between the transaction and analytical systems on large-scale information technology. Data mining consists of five major elements: extract, transform, and load transaction data onto the data warehouse system; storing, and managing the data in a multidimensional database system; providing data access; analyzing the data by application software; and presenting the data in a useful format. In FY09, matured network data mining software to analyze security concerns and systems vulnerability, and system of systems architecture via (1) vulnerability analysis at the waveform and networking layers, and (2) development of software and/or hardware to secure systems for deployment; analyzed spectrum availability and utilization; investigated cognitive networking technologies and its impacts on current and future force networks. In FY10, conduct analysis and perform modeling and simulation (M&amp;S) of various fidelity of intelligence, surveillance, and reconnaissance (ISR) performance over restricted bandwidth networks; examine and represent in modeling and simulation (M&amp;S) varying fidelity carrier to noise radio and voice over Internet protocol (IP) solutions for future force networks. In FY11, will apply network mining software to analyze emerging protocols and standards for use over military networks; will evaluate commercial systems for technology insertion to programs of record and develop architecture to decrease stovepipe and proprietary network implementations.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>		5.304	5.331	5.345	0.000	5.345

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010				
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603008A: <i>Electronic Warfare Advanced Technology</i>		<b>PROJECT</b> TR1: <i>TAC C4 TECHNOLOGY INT</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Program #9</p> <p>Cognitive Networking: This effort matures and demonstrates technologies enabling wireless networks to sense network and spectrum conditions, and automatically adapt for more efficient use. In FY10, mature cognitive radio policy software by standardizing Dynamic Spectrum Access (DSA) policy language to allow interoperability of disparate Next Generation (XG) radio communications platforms; mature spectrum sensors interoperable with cognitive antennas to increase spectrum efficiency and allow opportunity for use of spectrum gray spaces leading to more efficient use of current spectral resources; mature wafer antenna technology and superconducting microelectronics based all digital transceiver and digital signal processing (DSP) components to provide an increase in satellite communications (SATCOM) channel and throughput capacity; mature cooperative SATCOM network routing technology to provide for SATCOM signal blockage mitigation. In FY11, will mature the cognitive network tools developed under PE 0602782A/project H92 to be able to evaluate and analyze networks with and without cognitive capabilities; will mature RF based technologies. Work related to this effort is also being accomplished under PE 0602782A/project H92.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>				0.000	3.979	4.481	0.000	4.481
<p>Program #10</p> <p>Small Business Innovative Research/Small Business Technology Transfer Programs</p>				0.000	0.941	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603008A: <i>Electronic Warfare Advanced Technology</i>	<b>PROJECT</b> TR1: <i>TAC C4 TECHNOLOGY INT</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		36.435	37.344	37.862	0.000	37.862
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>D. Acquisition Strategy</b> N/A						
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603008A: <i>Electronic Warfare Advanced Technology</i>				<b>PROJECT</b> TR2: <i>Secure Tactical Information Integration</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
<i>TR2: Secure Tactical Information Integration</i>	13.195	12.851	12.497	0.000	12.497	16.014	16.517	17.358	19.055	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Efforts in this project mature and demonstrate technologies with enhanced capabilities to analyze, plan, execute, and assess operations, at tactical and strategic operational levels, by integrating decision support and intelligence based software to provide a more comprehensive understanding of a given adversary and the environment. Efforts mature and demonstrate technologies to improve mission execution success by providing software to more tightly couple operations and intelligence, and to better facilitate collaboration between individuals and teams. Efforts in tactical cross domain solutions demonstrate software based technologies enabling information sharing across operations and intelligence security domains that replace current application specific hardware solutions. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this project is performed by the Army Research, Development, and Engineering Command, Communications (RDECOM)-Electronics Research Development and Engineering Center (CERDEC), Fort Monmouth, NJ and Aberdeen Proving Ground, MD, and the Army Research Laboratory (ARL), Adelphi, MD.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Theater Effects Based Operations (TEBO) Advanced Concept Technology Demonstration (ACTD): The TEBO ACTD demonstrates an Effects-based Operations (EBO) process and provides United States Forces Korea with enhanced capabilities to analyze, plan, execute, and assess effects-based operations at the strategic-theater and operational levels by integrating a framework of processes, tools, and tactics, techniques and procedures. In FY09, initiated the sixth and final developmental spiral; participated in the two annual Korean exercises - Key Resolve (2QFY09) and Ulchi Forward Guardian (4QFY09) as well as in Pacific Command's (PACOM) Terminal Fury exercise; transitioned activities from the TEBO toolset to Defense Information Systems Agency (DISA) and Net-Centric Enterprise Services (NCES).	13.195	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #2  Collaborative Battle Management: This effort mature and demonstrate technologies to improve sharing and understanding of data between the intelligence and operations communities. In FY10, leverage existing net-centric data strategies and extend by adding concept-based data meta-tagging; mature portability framework and develop implementations for the Force XXI Battle Command, Brigade and Below (FBCB2), and Distributed Common Ground Station-Army (DCGS-A) environments; mature a universal collaboration bridge permitting disparate collaboration schemes such as mIRC (internet relay chat), Jabber, and SameTime to interoperate; mature a digital mission representation and its data, information and decision requirements to enable the ability to share and understand data between communities of interest (Intel/Ops/Geospatial); mature software to associate Intel requirements, geospatial data needs and collection opportunities with operational mission tasks for Intel and Battle Command (BC) communities; mature integrated Intel/Ops decision support tools to include planning and execution software support services, priority information requests management, and collection/sensor management. In FY11, will mature universal collaboration bridge to include additional capabilities, such as white boarding; will mature and demonstrate software to associate Intel requirements, geospatial data needs and collection opportunities with operational mission tasks for Intel and BC communities and allow for Warfighter modification of system information to adapt to dynamic enemy tactics; will mature Integrated Intel/Ops services		0.000	6.681	6.947	0.000	6.947

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>for collaboration/visualization across software environments; will mature and demonstrate integrated intelligence/operations decision support tools for planning and execution software support services, priority information requests management, and collection/sensor management; will mature and demonstrate multi-touch based mission collaboration.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #3</p> <p>Tactical Cross Domain Solutions: This effort matures and demonstrates Service Oriented Architecture (SOA) Cross Domain Solution (CDS) to enable assured sharing of information across multiple security domains. In FY10, mature and demonstrate cross domain web services on high assurance operating systems (e.g., Green Hills Integrity, Lynx Works Lynx OS) that provide trusted labeling service (applies security labeling classification and releasability labels to data), data regarding service (used to sanitize security labeled messages before they cross security domain boundaries), and domain boundary service (ensures that cross security domain requirements are fulfilled before information is released from one security domain to another). In FY11, will demonstrate one-way Position Location Information (PLI) transfer from unclassified to classified networks, and further mature guard to process two-way digital data flow; will mature the prototype and demonstrate/test a general tool to be able to be used by any program to identify malicious code both with a developed application or on the network.</p>		0.000	5.926	5.550	0.000	5.550

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #4 Small Business Innovative Research/Small Business Technology Transfer Programs		0.000	0.244	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		13.195	12.851	12.497	0.000	12.497

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>		<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603008A: <i>Electronic Warfare Advanced Technology</i>	<b>PROJECT</b> TR2: <i>Secure Tactical Information Integration</i>
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A		
<b>D. Acquisition Strategy</b> N/A		
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.		

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603008A: <i>Electronic Warfare Advanced Technology</i>				<b>PROJECT</b> TR8: <i>C3 DEMONSTRATIONS (CA)</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
TR8: <i>C3 DEMONSTRATIONS (CA)</i>	11.562	7.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>A. Mission Description and Budget Item Justification</b> Congressional Interest Item funding for C3 Demonstrations.											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
							<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Portable Mobile Emergency Broadband Systems (PMEBS): In FY09, this Congressional Interest Item developed rapidly deployed wireless ad-hoc portable communications system, that is self-configuring, self-healing and multi-hopping (AES -256 mesh capable) to meet low cost, near-term, off-the shelf solutions which can supplement existing technology gaps for the last mile communications.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO							3.987	3.184	0.000	0.000	0.000
Program #2							1.197	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Advanced Wireless Technologies: In FY09, this Congressional Interest Item developed a radio technology engine, which combined individual radio transmitter and receiver chipsets into a one piece radio transceiver chipset design that could be integrate on any wireless communication device platform or Personal Communications Device (PCD).</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #3</p> <p>Applied Communications and Information Networking (ACIN): In FY09, this Congressional Interest Item matured and demonstrated commercial networking and communications technology in intelligent agents and mobile networking; provided rapid adaptation of commercial communications equipment for military use through the development of new architectures combining commercial and military unique technologies; provided modeling and simulation and planning tools for communications/network planning.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p>		3.189	3.024	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603008A: <i>Electronic Warfare Advanced Technology</i>	<b>PROJECT</b> TR8: <i>C3 DEMONSTRATIONS (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #4</b>  Maritime C4ISR System: In FY09, this Congressional Interest Item developed the ability to deploy a sensor platform that does not require significant local infrastructure support.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.797	0.000	0.000	0.000	0.000
<b>Program #5</b>  Networked Dynamic Spectrum Access Investigation Enhanced MBITR: In FY09, this Congressional Interest Item researched and developed dynamic spectrum access (DSA) scalability and evaluated all DSA functionality.		2.392	0.000	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603008A: <i>Electronic Warfare Advanced Technology</i>	<b>PROJECT</b> TR8: <i>C3 DEMONSTRATIONS (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #6 Cybersecurity in Tactical Environments. This is a Congressional Interest Item.		0.000	0.796	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		11.562	7.004	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>		<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603008A: <i>Electronic Warfare Advanced Technology</i>	<b>PROJECT</b> TR8: <i>C3 DEMONSTRATIONS (CA)</i>
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A		
<b>D. Acquisition Strategy</b> N/A		
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.		

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**Exhibit R-2, PB 2011 Army RDT&E Budget Item Justification** **DATE:** February 2010

<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603015A: <i>Next Generation Training &amp; Simulation Systems</i>
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COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	24.769	25.362	15.334	0.000	15.334	13.317	19.060	20.236	21.481	0	154.893
HB5: <i>IMMERSIVE ENVIRONMENTS DEMONSTRATIONS (CA)</i>	1.993	1.990	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
S28: <i>Immersive Learning Environments</i>	4.728	3.001	3.054	0.000	3.054	3.154	3.257	3.353	3.442	Continuing	Continuing
S29: <i>MODELING &amp; SIMULATION - Adv Tech Dev</i>	3.769	5.852	7.380	0.000	7.380	5.262	5.320	6.368	7.402	Continuing	Continuing
S31: <i>Modeling and Simulation Infrastructure Technology</i>	9.794	10.460	4.900	0.000	4.900	4.901	10.483	10.515	10.637	Continuing	Continuing
S33: <i>TRAINING AND SIMULATION SYSTEMS INITIATIVES (CA)</i>	4.485	4.059	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Efforts in this program element (PE) mature and demonstrate tools to enable effective training capability for the Warfighter. The PE matures and demonstrates simulation technologies developed by the Institute for Creative Technology (project S28); incorporates advanced modeling and simulation (M&S), training, and leader development technology into immersive training demonstrations as well as demonstrates a framework for future embedded training and simulation systems for future force combat and tactical vehicles, and dismounted Soldier systems (project S29); develops, integrates and demonstrates an overarching M&S architecture that incorporates multi-resolution entity-based models, simulations, and tools to enable Network-Centric Warfare (NCW) M&S capability (project S31). Immersive Environments Demonstrations (project HB5) and Training and Simulation Initiatives (project S33) fund congressional special interest items. Work in this PE is related, to and fully coordinated with efforts in PE 0602308A (Advanced Concepts and Simulation), PE 0602785 (Manpower/Personnel/Training Technology), PE 0602787A (Medical Technology), and PE 0603007A (Manpower, Personnel and Training Advance Technology). The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this PE is performed by the Research, Development, and Engineering Command (RDECOM), Simulation and Training Technology Center (STTC), Orlando, FL.

**UNCLASSIFIED**

R-1 Line Item #38

Page 1 of 20

1336 of 1536



**UNCLASSIFIED**

<b>Exhibit R-2, PB 2011 Army RDT&amp;E Budget Item Justification</b>	<b>DATE:</b> February 2010
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603015A: <i>Next Generation Training &amp; Simulation Systems</i>
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**B. Program Change Summary (\$ in Millions)**

	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011 Base</u>	<u>FY 2011 OCO</u>	<u>FY 2011 Total</u>
Previous President's Budget	25.298	19.415	19.407	0.000	19.407
Current President's Budget	24.769	25.362	15.334	0.000	15.334
Total Adjustments	-0.529	5.947	-4.073	0.000	-4.073
• Congressional General Reductions		-0.133			
• Congressional Directed Reductions					
• Congressional Rescissions		0.000			
• Congressional Adds		6.080			
• Congressional Directed Transfers					
• Reprogrammings	0.180	0.000			
• SBIR/STTR Transfer	-0.709	0.000			
• Adjustments to Budget Years	0.000	0.000	-4.073	0.000	-4.073

**Change Summary Explanation**

FY10 Congressionally directed increases.FY11 funding realigned to higher priority efforts.

**UNCLASSIFIED**

R-1 Line Item #38

Page 2 of 20

1337 of 1536

**UNCLASSIFIED**

**Exhibit R-2A, PB 2011 Army RDT&E Project Justification** **DATE:** February 2010

<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>			<b>R-1 ITEM NOMENCLATURE</b> PE 0603015A: <i>Next Generation Training &amp; Simulation Systems</i>				<b>PROJECT</b> HB5: <i>IMMERSIVE ENVIRONMENTS DEMONSTRATIONS (CA)</i>				
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
<i>HB5: IMMERSIVE ENVIRONMENTS DEMONSTRATIONS (CA)</i>	1.993	1.990	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Congressional Interest Item funding for Immersive Environments advanced technology development.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Program #1</p> <p>Joint Fires and Effects Training System (JFETS). Provided immersive capabilities for institutional training and enhancements to the field. Improved portable capability (smaller footprint for Joint Forward Observer Military Transition Team and deployed training), provided inclusion of Air Defense Artillery training capability as well as provided balance in training capability (Institutional and home station training) by providing enhancements to fielded Call For Fire Trainer systems.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>	1.993	1.990	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603015A: <i>Next Generation Training &amp; Simulation Systems</i>	<b>PROJECT</b> HB5: <i>IMMERSIVE ENVIRONMENTS DEMONSTRATIONS (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
	Accomplishments/Planned Programs Subtotals	1.993	1.990	0.000	0.000	0.000
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>D. Acquisition Strategy</b> N/A						
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603015A: <i>Next Generation Training &amp; Simulation Systems</i>				<b>PROJECT</b> S28: <i>Immersive Learning Environments</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
<i>S28: Immersive Learning Environments</i>	4.728	3.001	3.054	0.000	3.054	3.154	3.257	3.353	3.442	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Efforts in this project mature and demonstrate immersive technologies that include the application of photorealistic synthetic environments, multi-sensory interfaces, virtual humans, and training applications on low-cost game platforms. This project uses advanced modeling, simulation, and leadership development techniques to leverage the emerging immersive technologies that are created at the Institute of Creative Technologies (ICT) University Affiliated Research Center (UARC) at the University of Southern California to formulate training demonstrations with an emphasis on urban operations and asymmetric warfare. The ICT's collaboration with its entertainment partners creates a true synthesis of creativity and technology that harnesses the capabilities of industry, and the research and development community to advance the Army's ability to train and practice military skills across the full spectrum of conflict. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy and the Army Science and Technology Master Plan. Work in this project is performed by the Research, Development, and Engineering Command (RDECOM), Simulation and Training Technology Center (STTC), Orlando, FL.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Immersive Techniques: This effort demonstrates and matures technological advancements from PE 0602308A/ project D02 into complex state-of-the-art simulation environments in support of multi-student and team training. In FY09, integrated photorealistic representations of complex terrain; integrated rendering of specific individual facial features onto interactive virtual human models; demonstrated intelligent tutoring/computer coaching with virtual instructors; developed and demonstrated tools which reduced the man-hours required to convert and enhance terrain data to/from various data formats; and developed learning environment focused on preparing leaders on exercising decisions in complex environments within cultural environments. In FY10, demonstrate and refine methods and technologies that expand immersive environments to support multi-student and team training; demonstrate and mature methods to support computer generated after-action reviews, virtual human-based mentoring, and computer-directed scenario adaptation based on multi-player distributed training techniques; and	4.728	2.917	3.054	0.000	3.054

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603015A: <i>Next Generation Training &amp; Simulation Systems</i>	<b>PROJECT</b> S28: <i>Immersive Learning Environments</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>mature and assess environment for leaders to practice decision making skills in complex, cultural environments. In FY11, will mature and refine software tools that rapidly author automated tutoring systems for specific training applications; will mature methods to implement training applications on portable and mobile devices.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #2 Small Business Innovative Research/Small Business Technology Transfer Programs</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p>		0.000	0.084	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603015A: <i>Next Generation Training &amp; Simulation Systems</i>	<b>PROJECT</b> S28: <i>Immersive Learning Environments</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		4.728	3.001	3.054	0.000	3.054
<b>C. Other Program Funding Summary (\$ in Millions)</b>						
N/A						
<b>D. Acquisition Strategy</b>						
N/A						
<b>E. Performance Metrics</b>						
Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603015A: <i>Next Generation Training &amp; Simulation Systems</i>				<b>PROJECT</b> S29: <i>MODELING &amp; SIMULATION - Adv Tech Dev</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
S29: <i>MODELING &amp; SIMULATION - Adv Tech Dev</i>	3.769	5.852	7.380	0.000	7.380	5.262	5.320	6.368	7.402	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Efforts in this project mature and demonstrate next generation training and simulation systems that focus on integrating virtual threats, asymmetric warfare, network-centric operations, and embedding training capabilities and technologies into operational go-to-war future force systems to include dismounted warrior systems. The synergy between these embedded training capabilities and the immersive training advanced technology development in project S28 provides Army units with a set of complementary embedded and deploy-on-demand systems that provide just-in-time, dynamic, realistic training, and mission rehearsal capabilities. Demonstrations include technologies that form a framework for future training applications for the range of future force operations such as robotic control and other sensor operations; mission planning and rehearsal; command, control, and maneuver; Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) network analysis to support distributed simulations; and vehicle system interface requirements. This project creates a joint environment by synchronizing virtual and constructive simulated forces with the next generation and current training systems from the Army, Navy, Air Force, and Marine forces. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this project is performed by the Research, Development, and Engineering Command (RDECOM), Simulation and Training Technology Center (STTC), Orlando, FL.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Embedded Techniques: This effort matures and demonstrates capabilities (most provided from PE 0602308A/ project C90) built into or added onto operational systems, subsystems, or equipment, to enhance and maintain the skill proficiency of Soldiers, and maximizes component commonality among combat vehicles and Soldier computer systems. In FY09, matured combat vehicle and dismounted soldier embedded training systems by conducting experiments in operational environments; conducted demonstrations, provided results and prototypes for dismounted soldier embedded training to support next generation soldier systems in collaboration with U.S. Army Natick Soldier Research, Development and Engineering Center (NSRDEC) and U.S. Army Communications-Electronic Research, Development and Engineering Center (CERDEC). In FY10, team with	3.769	5.688	5.880	0.000	5.880

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603015A: <i>Next Generation Training &amp; Simulation Systems</i>	<b>PROJECT</b> S29: <i>MODELING &amp; SIMULATION - Adv Tech Dev</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #3 Small Business Innovative Research/Small Business Technology Transfer Programs		0.000	0.164	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		3.769	5.852	7.380	0.000	7.380

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>		<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603015A: <i>Next Generation Training &amp; Simulation Systems</i>	<b>PROJECT</b> S29: <i>MODELING &amp; SIMULATION - Adv Tech Dev</i>
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A		
<b>D. Acquisition Strategy</b> N/A		
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.		

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603015A: <i>Next Generation Training &amp; Simulation Systems</i>				<b>PROJECT</b> S31: <i>Modeling and Simulation Infrastructure Technology</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
<i>S31: Modeling and Simulation Infrastructure Technology</i>	9.794	10.460	4.900	0.000	4.900	4.901	10.483	10.515	10.637	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Efforts in this project mature and demonstrate a distributed modeling and simulation (M&S) environment referred to as the Modeling Architecture for Technology, Research, and Experimentation (MATREX). MATREX develops a robust Modeling and Simulation (M&S) environment and Distributed Virtual Laboratory (DVL) wherein a collection of multi-fidelity models, simulations and tools can be integrated and mapped to an evolving architecture for conducting multi-scale (time and spatial resolution) M&S activities to provide M&S data and information to multiple users. MATREX provides a unifying M&S architecture, supporting tools and infrastructure that synchronize and integrate multi-resolution (time and space) modeling applications such as Live, Virtual, and Constructive training applications, operational studies of Network-Centric Warfare (NCW) concepts and technologies, or the modeling of Battle Command operations with elements of advanced communications, information flow, data fusion, decision-making, and information warfare. MATREX also works to address M&S issues of modeling scalability, network design, enterprise services, and third party software compatibility issues. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this project is led by the Research, Development, and Engineering Command (RDECOM), Simulation and Training Technology Center (STTC), Orlando, FL, and executed across the Command.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  MATREX: This effort matures and demonstrates modeling and simulation technologies and techniques that support Army experimentation and test events to assess and improve the decision-making through the use of multi-fidelity models, simulations and tools. In FY09, investigated and developed methodologies (e.g., Distributed Data Management (DDM) and Run-Time Infrastructure (RTI) distribution strategies) to increase MATREX scalability for modeling a future force Brigade Combat Team and enabled accurate assessments of command and control concepts; matured and demonstrated technologies and techniques to shorten M&S event setup time in support of Army experimentation and test events; integrated and implemented data collection and analysis tools to assess consistency of analysis results throughout an acquisition life cycle; connected additional Army sites into the MATREX DVL to expand the Army's ability to conduct geographically-distributed M&S	9.794	10.167	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603015A: <i>Next Generation Training &amp; Simulation Systems</i>	<b>PROJECT</b> S31: <i>Modeling and Simulation Infrastructure Technology</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>efforts; conducted initial study of Internet Protocol version 6 (IPv6) and evaluated it for anticipated upgrade to DVL network. In FY10, mature a multi-organization Army laboratory data collection process to support Army technology readiness level demonstrations and to enable consistent data structure/interoperability for multi-organization use throughout the development/design cycle; assess and improve current analysis tools to provide an integrated acquisition support capability for Army decision making; improve simulation for modeling of weather, terrain, chemical-biological-radiological-nuclear effects, human behavior, human decision-making and networked sensor fusion; improve M&amp;S support architectures for cross-domain M&amp;S environment interoperability to include live fire testing, Soldier and hardware-in-the-loop experiments, and software-based testing environments.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #2</p> <p>MATREX (Cont.): In FY11, will demonstrate cross-command data collection and analysis tools for integrated acquisition support capability; will mature integrated M&amp;S representation of Battle Command (future force network planning, pre-operation checkout, and integration with tactical command and control devices); will integrate M&amp;S support architectures for cross-domain M&amp;S environment interoperability; and will fuse multi-resolution capabilities for modeling weather, terrain, chemical-biological effects and human behavior/human decision-making, networked sensor fusion, and tactical network to meet future analysis needs.</p>		0.000	0.000	4.900	0.000	4.900

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603015A: <i>Next Generation Training &amp; Simulation Systems</i>	<b>PROJECT</b> S31: <i>Modeling and Simulation Infrastructure Technology</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #3 Small Business Innovative Research/Small Business Technology Transfer Programs		0.000	0.293	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		9.794	10.460	4.900	0.000	4.900

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>		<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603015A: <i>Next Generation Training &amp; Simulation Systems</i>	<b>PROJECT</b> S31: <i>Modeling and Simulation Infrastructure Technology</i>
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A		
<b>D. Acquisition Strategy</b> N/A		
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.		

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Exhibit R-2A, PB 2011 Army RDT&E Project Justification									DATE: February 2010		
APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE				PROJECT			
2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				PE 0603015A: <i>Next Generation Training &amp; Simulation Systems</i>				S33: <i>TRAINING AND SIMULATION SYSTEMS INITIATIVES (CA)</i>			
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
S33: <i>TRAINING AND SIMULATION SYSTEMS INITIATIVES (CA)</i>	4.485	4.059	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>A. Mission Description and Budget Item Justification</b>											
Congressional Interest Item funding for Training and Simulation Systems advanced technology development.											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
							FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011
Program #1							1.595	0.000	0.000	0.000	0.000
Vigilant Auto-ID and Access Control System. In FY09, this Congressional Interest Item developed a person-borne improvised explosives device integrated countermeasure.											
<i>FY 2009 Accomplishments:</i>											
FY 2009											
<i>FY 2010 Plans:</i>											
FY 2010											
<i>Base FY 2011 Plans:</i>											
FY 2011 Base											
<i>OCO FY 2011 Plans:</i>											
FY 2011 OCO											
Program #2							0.498	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603015A: <i>Next Generation Training &amp; Simulation Systems</i>	<b>PROJECT</b> S33: <i>TRAINING AND SIMULATION SYSTEMS INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Experiential Technologies for Urban Warfare and Disaster Response. In FY09, this Congressional Interest Item developed crowd and digital human modeling technologies.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #3</p> <p>Joint Medical Simulation Technology Research &amp; Development Center (JMSTRDC). In FY09, this Congressional Interest Item started development of an immersive environment with virtual patients to train sick call &amp; preliminary physical exam procedures, an adaptive instructional tutoring system to train sick call procedures, a card game to train combat medics &amp; combat lifesavers, and training for the use of hemostatic agents.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p>		1.595	1.273	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603015A: <i>Next Generation Training &amp; Simulation Systems</i>	<b>PROJECT</b> S33: <i>TRAINING AND SIMULATION SYSTEMS INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #4  Mobile Medic Training Program. In FY09, this Congressional Interest Item continued research and development of Combat Life Saver (CLS) applications on mobile devices.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.797	0.000	0.000	0.000	0.000
Program #5  HapMed Combat Medic Trainer. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009		0.000	0.796	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603015A: <i>Next Generation Training &amp; Simulation Systems</i>	<b>PROJECT</b> S33: <i>TRAINING AND SIMULATION SYSTEMS INITIATIVES (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #6  Combat Medic Trainer. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.990	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals		4.485	4.059	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>		<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603015A: <i>Next Generation Training &amp; Simulation Systems</i>	<b>PROJECT</b> S33: <i>TRAINING AND SIMULATION SYSTEMS INITIATIVES (CA)</i>
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A		
<b>D. Acquisition Strategy</b> N/A		
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.		

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**Exhibit R-2, PB 2011 Army RDT&E Budget Item Justification** **DATE:** February 2010

<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603103A: <i>Explosives Demilitarization Technology</i>
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COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	17.213	12.495	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	29.708
D51: <i>Explosives Demil Tech</i>	10.232	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
D91: <i>EXPLOSIVE DEMIL DEMONSTRATIONS</i>	6.981	12.495	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

The objective of this program element (PE) is to support the Explosive Demilitarization Technology Program, a cooperative interservice, interagency effort dedicated to the maturation of safe, efficient, and environmentally acceptable processes for the closed disposal of conventional munitions (project D51). Project D91 funds congressional interest items. This project transitions to PE 0605805/project F24 in FY10. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work is integrated through the leadership of the Product Manager for Demilitarization and the Joint Ordnance Commanders Group Munitions Demilitarization/Disposal Subgroup leveraging support from the Department's Environmental Security Technology Certification Program (ESTCP), the Strategic Environmental Research and Development Program (SERDP), the Joint DOD/DOE Munitions Technology Program, and complementary Service science and technology programs. The Technology Directorate, Defense Ammunition Center, serves as the program manager (PM) Demilitarization's technical and programmatic support staff in this effort.

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<b>Exhibit R-2, PB 2011 Army RDT&amp;E Budget Item Justification</b>	<b>DATE:</b> February 2010
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603103A: <i>Explosives Demilitarization Technology</i>
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**B. Program Change Summary (\$ in Millions)**

	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011 Base</u>	<u>FY 2011 OCO</u>	<u>FY 2011 Total</u>
Previous President's Budget	13.720	0.000	0.000	0.000	0.000
Current President's Budget	17.213	12.495	0.000	0.000	0.000
Total Adjustments	3.493	12.495	0.000	0.000	0.000
• Congressional General Reductions		-0.065			
• Congressional Directed Reductions					
• Congressional Rescissions		0.000			
• Congressional Adds		12.560			
• Congressional Directed Transfers					
• Reprogrammings	3.877	0.000			
• SBIR/STTR Transfer	-0.384	0.000			

**Change Summary Explanation**

FY09 funding increase is due to Congressional interest items reprogrammed for proper execution. This project transitions to Budget Activity 6, PE 0605805A Project F24 beginning in FY 2010.

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**Exhibit R-2A, PB 2011 Army RDT&E Project Justification** **DATE:** February 2010

<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603103A: <i>Explosives Demilitarization Technology</i>	<b>PROJECT</b> D51: <i>Explosives Demil Tech</i>
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COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
D51: <i>Explosives Demil Tech</i>	10.232	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This project matures safe, efficient, and environmentally acceptable processes for the closed disposal of conventional munitions including explosives, missiles, missile components, and large rocket motors. Efforts in this program emphasize environmentally compliant technologies to enhance existing methods for munitions resource recovery and recycling (R3) and treatment, and seek alternatives to open burning/open detonation (OB/OD). This project transitions to PE 0605805/project F24 in FY10. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. The Technology Directorate, Defense Ammunition Center, serves as the PM Demilitarization's technical and programmatic support staff in this effort.

**B. Accomplishments/Planned Program (\$ in Millions)**

	FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011
Program #1  Resource Recovery and Reuse (R3): This effort focused on enhancing existing methods of munitions R3. In FY09, matured and demonstrated demilitarization by induction heating meltout (DIHME) project for 60mm, 81mm, and 120mm mortars; initiated development of machine vision for other projectiles; initiated transition of propellant conversion to fertilizer technology; continued research and development alternatives for ammonium perchlorate; demonstrated nitroamine high explosive (HMX) requalification technology; and continued Joint Program integration.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010	6.390	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603103A: <i>Explosives Demilitarization Technology</i>	<b>PROJECT</b> D51: <i>Explosives Demil Tech</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #2  Advanced Destruction: This effort focused on destruction of munitions. In FY09, initiated testing and development of Acid Hydrolysis technology; initiated design to demil M433- high explosive dual purpose (HEDP) Cartridges.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.703	0.000	0.000	0.000	0.000
Program #3  Supercritical Water Oxidation (SCWO): This effort developed technology for use in cleanup of waste streams associated with demilitarization of conventional weapons. In FY09, matured and demonstrated SCWO technology to treat liquid effluent from a supercritical water oxidation reactor.		0.589	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603103A: <i>Explosives Demilitarization Technology</i>	<b>PROJECT</b> D51: <i>Explosives Demil Tech</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #4  Advanced Munitions Disassembly: This effort focused on the disassembly of conventional munitions. In FY09, completed operational demonstration and initiated transition of rocket motor segmenting technique.		0.785	0.000	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #5		0.765	0.000	0.000	0.000	0.000

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R-1 Line Item #40

Page 5 of 12

1360 of 1536



**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603103A: <i>Explosives Demilitarization Technology</i>	<b>PROJECT</b> D51: <i>Explosives Demil Tech</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Advanced Removal: This effort developed propellant cooling technology to remove propellant from a rocket motor case. In FY09, initiated design and fabrication of a propellant removal system using Augering techniques; initiated design and fabrication of a flexible multi-missile milling system.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
Accomplishments/Planned Programs Subtotals		10.232	0.000	0.000	0.000	0.000
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>D. Acquisition Strategy</b> N/A						
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>			<b>R-1 ITEM NOMENCLATURE</b> PE 0603103A: <i>Explosives Demilitarization Technology</i>					<b>PROJECT</b> D91: <i>EXPLOSIVE DEMIL DEMONSTRATIONS</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
D91: <i>EXPLOSIVE DEMIL DEMONSTRATIONS</i>	6.981	12.495	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

These are Congressional Interest Items

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Cryofracture/Plasma Arc Demilitarization Program: In FY09, this Congressional Interest Item designed and demonstrated a state-of-the-art demilitarization technology that exploits both cryofracture processing and plasma arc thermal treatment as an alternative to open burning, open detonation, and conventional incineration for the demilitarization of small-to medium-sized, explosive-containing conventional items.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO	1.596	6.366	0.000	0.000	0.000
Program #2	0.798	1.592	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603103A: <i>Explosives Demilitarization Technology</i>	<b>PROJECT</b> D91: <i>EXPLOSIVE DEMIL DEMONSTRATIONS</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Unserviceable Ammunition Demilitarization via Chemical Dissolution: In FY09, this Congressional Interest Item designed and constructed an environmentally friendly system to dispose of high-risk, high-cost, unserviceable, and obsolete ammunition stored at Tooele Army Depot.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #3</p> <p>Press-Loaded Explosive Projectile Washout Line: In FY09, this Congressional Interest Item designed and built a technology to safely dispose of hundreds of thousands of obsolete, Vietnam-era projectiles filled with toxic press-loaded explosives that have been stored for decades.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p>		0.798	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603103A: <i>Explosives Demilitarization Technology</i>	<b>PROJECT</b> D91: <i>EXPLOSIVE DEMIL DEMONSTRATIONS</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #4  Zumwalt National Program for Countermeasures to Biological and Chemical Threats. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.194	0.000	0.000	0.000
Program #5  Advanced Reactive Armor Systems. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009		0.000	1.592	0.000	0.000	0.000

**UNCLASSIFIED**

R-1 Line Item #40

Page 9 of 12

1364 of 1536

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603103A: <i>Explosives Demilitarization Technology</i>	<b>PROJECT</b> D91: <i>EXPLOSIVE DEMIL DEMONSTRATIONS</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #6  Ultra Wideband Active RF Detection of IEDs. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.751	0.000	0.000	0.000
Program #7  Range Scrap Disposal, Hawthorne Army Depot. This is a Congressional Interest Item.		0.798	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603103A: <i>Explosives Demilitarization Technology</i>	<b>PROJECT</b> D91: <i>EXPLOSIVE DEMIL DEMONSTRATIONS</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #8 MLRS Disposal System. This is a Congressional Interest Item.		2.991	0.000	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		6.981	12.495	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>		<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603103A: <i>Explosives Demilitarization Technology</i>	<b>PROJECT</b> D91: <i>EXPLOSIVE DEMIL DEMONSTRATIONS</i>
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A		
<b>D. Acquisition Strategy</b> N/A		
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.		

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**Exhibit R-2, PB 2011 Army RDT&E Budget Item Justification** **DATE:** February 2010

<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603105A: <i>MILITARY HIV RESEARCH</i>
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COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	14.867	29.502	6.688	0.000	6.688	6.796	6.909	7.031	7.139	0	85.620
H29: <i>MED PROTECT AGNST HIV</i>	6.892	6.622	6.688	0.000	6.688	6.796	6.909	7.031	7.139	Continuing	Continuing
T16: <i>MILITARY HIV INITIATIVES CA</i>	7.975	22.880	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This program element (PE) matures and demonstrates advanced technology of candidate human immunodeficiency virus (HIV) vaccines, prepare and conduct human clinical studies to assess safety and efficacy of candidate HIV vaccines, conduct research to control HIV infection in military environments, protect the military blood supply from HIV, and protect military personnel from risks associated with the HIV infection. All HIV technology development activities are conducted in compliance with US Food and Drug Administration (FDA) regulations. FDA requires thorough testing in animal models (preclinical testing) to ensure safety and efficacy prior to approving controlled clinical testing of drugs, vaccines, and medical devices in humans. Normally, clinical trials are conducted in three phases to prove safety and effectiveness of the drug, vaccine, and device for the targeted disease or condition. An increasing number of test subjects are used in each subsequent phase. All test results are submitted to FDA for evaluation to ultimately obtain approval (licensure) for routine medical use. This program is jointly managed through an Interagency Agreement by the US Army Medical Research and Materiel Command (MRMC), the National Institutes of Health, and the National Institute of Allergy and Infectious Diseases (NIAID). This project contains no duplication with any effort within the Military Departments or other government organizations. Work is related to and fully coordinated with work funded in program element PE 0602787A, project 873 (HIV Exploratory Research). The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this PE is performed by the Walter Reed Army Institute of Research (WRAIR), Silver Spring, MD, and its overseas laboratories; and the Naval Medical Research Center (NMRC), Silver Spring, MD, and its overseas laboratories. The Henry M. Jackson Foundation, located in Rockville, MD provides support for FDA testing and other research under cooperative agreement.

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<b>Exhibit R-2, PB 2011 Army RDT&amp;E Budget Item Justification</b>	<b>DATE:</b> February 2010
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603105A: <i>MILITARY HIV RESEARCH</i>
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**B. Program Change Summary (\$ in Millions)**

	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011 Base</u>	<u>FY 2011 OCO</u>	<u>FY 2011 Total</u>
Previous President's Budget	15.064	6.657	6.723	0.000	6.723
Current President's Budget	14.867	29.502	6.688	0.000	6.688
Total Adjustments	-0.197	22.845	-0.035	0.000	-0.035
• Congressional General Reductions		-0.155			
• Congressional Directed Reductions					
• Congressional Rescissions		0.000			
• Congressional Adds		23.000			
• Congressional Directed Transfers					
• Reprogrammings	0.226	0.000			
• SBIR/STTR Transfer	-0.423	0.000			
• Adjustments to Budget Years	0.000	0.000	-0.035	0.000	-0.035

**Change Summary Explanation**

FY10 Congressionally directed increases.

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603105A: <i>MILITARY HIV RESEARCH</i>				<b>PROJECT</b> H29: <i>MED PROTECT AGNST HIV</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
H29: <i>MED PROTECT AGNST HIV</i>	6.892	6.622	6.688	0.000	6.688	6.796	6.909	7.031	7.139	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This project funds research to develop candidate human immunodeficiency virus (HIV) vaccines, assess their safety and effectiveness in testing with human subjects, and protect the military personnel from risks associated with HIV infection. In addition, it is designed to find ways to protect the blood supply from contamination with the virus. All HIV technology development is conducted in compliance with US Food and Drug Administration (FDA) regulations. Tests in human subjects are conducted to demonstrate safety and effectiveness, as required by FDA regulation. Studies are conducted stepwise, first to prove safety, second to demonstrate the desired effectiveness of the drug, vaccine or device for the targeted disease or condition in a small study, and third to demonstrate effectiveness in large, diverse human population trials. All test results are submitted to the FDA for evaluation to ultimately obtain approval (licensure) for medical use. This project supports studies for effectiveness testing on small study groups after which they transition to the next phase of development for completion of effectiveness testing in larger populations. This program is jointly managed through an Interagency Agreement by the US Army Medical Research and Materiel Command (MRMC) and the National Institute of Allergy and Infectious Diseases (NIAID). This project contains no duplication with any effort within the Military Departments or other government organizations. Work is related to and fully coordinated with work funded in program element PE 0602787A, project 873 (HIV Exploratory Research) are further matured under PE 0603807A, project 811. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this PE is performed by the Walter Reed Army Institute of Research (WRAIR), Silver Spring, MD, and its overseas laboratories. Significant work is conducted under a cooperative agreement with the Henry M. Jackson Foundation, Rockville, MD.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  HIV Program: In FY09, assessed ongoing vaccine trials to down-select various candidates and further develop vaccines. Tested human volunteers in the US and Africa to assess the safety and physiological response of vaccines prepared with additional HIV subtypes (strains of the HIV virus). Continued large scale human studies testing in Thailand to assess the effectiveness of the vaccine candidate that has previously shown good safety profiles. In FY10, test in human volunteers in Africa to assess the safety and physiological response of vaccines prepared with additional HIV subtypes. Continue large scale testing in humans in Thailand. In FY11, if	6.892	6.436	6.688	0.000	6.688

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603105A: <i>MILITARY HIV RESEARCH</i>	<b>PROJECT</b> H29: <i>MED PROTECT AGNST HIV</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>warranted, will expand testing in human volunteers in Africa and Asia to assess the safety and effectiveness of a vaccine combination designed for more than one HIV subtype.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #2</p> <p>Small Business Innovative Research/Small Business Technology Transfer Programs</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>		0.000	0.186	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010				
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603105A: <i>MILITARY HIV RESEARCH</i>		<b>PROJECT</b> H29: <i>MED PROTECT AGNST HIV</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Accomplishments/Planned Programs Subtotals				6.892	6.622	6.688	0.000	6.688
<b>C. Other Program Funding Summary (\$ in Millions)</b>								
N/A								
<b>D. Acquisition Strategy</b>								
N/A								
<b>E. Performance Metrics</b>								
Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.								

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603105A: <i>MILITARY HIV RESEARCH</i>				<b>PROJECT</b> T16: <i>MILITARY HIV INITIATIVES CA</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
T16: <i>MILITARY HIV INITIATIVES CA</i>	7.975	22.880	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>A. Mission Description and Budget Item Justification</b>											
Congressional Interest Item projects for HIV Research.											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
							<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1 Test, Treatment and Preventive Vaccines. This Congressional Interest Item conducts research into human immunodeficiency virus.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO							7.975	19.896	0.000	0.000	0.000
Program #2 HIV Prevention and Reducing Risk to US Military Personnel. This is a Congressional Interest Item							0.000	2.984	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010				
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603105A: <i>MILITARY HIV RESEARCH</i>		<b>PROJECT</b> T16: <i>MILITARY HIV INITIATIVES CA</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009								
<i>FY 2010 Plans:</i> FY 2010								
<i>Base FY 2011 Plans:</i> FY 2011 Base								
<i>OCO FY 2011 Plans:</i> FY 2011 OCO								
Accomplishments/Planned Programs Subtotals				7.975	22.880	0.000	0.000	0.000
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A								
<b>D. Acquisition Strategy</b> N/A								
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.								

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<b>Exhibit R-2, PB 2011 Army RDT&amp;E Budget Item Justification</b>										<b>DATE:</b> February 2010	
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603125A: <i>Combating Terrorism - Technology Development</i>							
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	12.656	11.927	10.550	0.000	10.550	12.191	4.856	4.941	5.016	0	72.687
DF5: <i>AGILE INTEGRATION &amp; DEMONSTRATION</i>	12.656	11.927	10.550	0.000	10.550	12.191	4.856	4.941	5.016	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This program element (PE)/project accelerates technologies with high payoff to address current operational shortfalls or future force capability gaps. This PE demonstrates programs requiring accelerated action to fill critical technology gaps. In addition, project DF5 includes the Rapid Equipping Force (REF) effort to develop a Transportable Hybrid Electric Power Station (THEPS) that incorporates solar technology, wind technology, advanced storage technology, and intelligent power management technology to reduce use of fossil fuel generators. Work in this PE is related to and fully coordinated with PE 0603710A (Night Vision Advanced Technology), PE 0602303A (Missile Technology), PE 0602105A (Materials Technology), PE 0602618A (Ballistics Technology), PE 0602601A (Combat Vehicle and Automotive Technology), PE 0603005A (Combat Vehicle and Automotive Advanced Technology) and PE 0602705A (Electronics and Electronic Devices). The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this PE is performed by the Army Research, Development, and Engineering Command (RDECOM) and efforts are executed by the appropriate Research, Development, and Engineering Centers (RDECs).

**B. Program Change Summary (\$ in Millions)**

	<b><u>FY 2009</u></b>	<b><u>FY 2010</u></b>	<b><u>FY 2011 Base</u></b>	<b><u>FY 2011 OCO</u></b>	<b><u>FY 2011 Total</u></b>
Previous President's Budget	13.022	11.989	11.375	0.000	11.375
Current President's Budget	12.656	11.927	10.550	0.000	10.550
Total Adjustments	-0.366	-0.062	-0.825	0.000	-0.825
• Congressional General Reductions		-0.062			
• Congressional Directed Reductions					
• Congressional Rescissions			0.000		
• Congressional Adds			0.000		
• Congressional Directed Transfers					
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.366	0.000			
• Adjustments to Budget Years	0.000	0.000	-0.825	0.000	-0.825

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R-1 Line Item #42

Page 1 of 5

1375 of 1536

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603125A: <i>Combating Terrorism - Technology Development</i>				<b>PROJECT</b> DF5: <i>AGILE INTEGRATION &amp; DEMONSTRATION</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
DF5: <i>AGILE INTEGRATION &amp; DEMONSTRATION</i>	12.656	11.927	10.550	0.000	10.550	12.191	4.856	4.941	5.016	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This program element (PE)/project accelerates technologies with high payoff to address current operational shortfalls or future force capability gaps. This PE demonstrates programs requiring accelerated action to fill critical technology gaps. In addition, project DF5 includes the Rapid Equipping Force (REF) effort to develop a Transportable Hybrid Electric Power Station (THEPS) that incorporates solar technology, wind technology, advanced storage technology, and intelligent power management technology to reduce use of fossil fuel generators. Work in this PE is related to and fully coordinated with PE 0603710A (Night Vision Advanced Technology), PE 0602303A (Missile Technology), PE 0602105A (Materials Technology), PE 0602618A (Ballistics Technology), PE 0602601A (Combat Vehicle and Automotive Technology), PE 0603005A (Combat Vehicle and Automotive Advanced Technology) and PE 0602705A (Electronics and Electronic Devices). The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this PE is performed by the Army Research, Development, and Engineering Command (RDECOM) and efforts are executed by the appropriate Research, Development, and Engineering Centers (RDECs).

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  AIDE: This effort accelerates the development and testing of capabilities that address future force needs. It identifies maturing technologies from within all Army research and development (R&D) activities and the Department of Energy (DOE), to accelerate the development of suitable technologies to the Warfighter for demonstration. Emphasis continues to be on those high payoff and cost effective areas that provide the operational forces increased protection and survivability, and meet the Operational Need Statements of the deployed forces in Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF). In FY09, completed maturation, demonstration and evaluation of FY08-09 efforts in preparation for transition to operation units. Identified and matured, through prototype development and testing, additional new technologies from all sources that can be accelerated to overcome the changing capability gaps and requirements shortfalls experienced by operational forces around the globe. Projects included three power and energy programs that will introduce smart cell	8.172	7.903	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010				
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603125A: <i>Combating Terrorism - Technology Development</i>		<b>PROJECT</b> DF5: <i>AGILE INTEGRATION &amp; DEMONSTRATION</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>technologies using solar power and fuel cells to decrease the logistical Forward Operation Base (FOB) foot print and decrease fuel consumption; one program to enhance IED incident prediction tools; a smart rocket launcher interface system; a hands-on cricothyrotomy trainer; and a solar powered refrigeration unit for soldiers in OEF and OIF. In FY10, integrate 3-D fusion for persistent stare opeatioans on constant hawk, field advance trama and wound treatments for hemostasis, integrate 30mm ammunition lethailty improvements and field advance IED interegration, communication and thermal viewing technologies to clearance teams in OEF and OIF.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>								
<p>Program #2</p> <p>Transportable Hybrid Electric Power Station (THEPS): THEPS incorporates solar technology, wind technology, advanced storage technology, and intelligent power management technology to reduce use of fossil fuel generators. In FY09, developed and demonstrated larger size (10-15kW) THEPS that allows flexibility in support of remote operations tactical command posts; develop and demonstrated the networked THEPS to provide an intelligent power grid for more efficiencies and redundancies. In FY10, conduct THEPS demonstration at remote sites and operating bases; continue demonstrations at Forward Operating Bases (FOB) with less logistics tail and more cost avoidance as a result of consuming less fossil fuel. FY11: Hybrid Intelligent Power (HI Power): an intelligent power grid design that allows for the most efficient use of power sources available and</p>				4.484	3.690	10.550	0.000	10.550

**UNCLASSIFIED**

R-1 Line Item #42

Page 3 of 5

1377 of 1536



**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603125A: <i>Combating Terrorism - Technology Development</i>	<b>PROJECT</b> DF5: <i>AGILE INTEGRATION &amp; DEMONSTRATION</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		12.656	11.927	10.550	0.000	10.550
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>D. Acquisition Strategy</b> N/A						
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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**Exhibit R-2, PB 2011 Army RDT&E Budget Item Justification** **DATE:** February 2010

<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603270A: <i>Electronic Warfare Technology</i>
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COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	32.544	21.877	18.350	0.000	18.350	18.654	18.977	22.793	28.551	0	180.096
K12: <i>EW Demonstrations (CA)</i>	9.170	2.785	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
K15: <i>ADVANCED COMM ECM DEMO</i>	14.155	9.342	9.393	0.000	9.393	9.548	9.724	11.391	14.034	Continuing	Continuing
K16: <i>NON-COMMO ECM TECH DEM</i>	9.219	9.750	8.957	0.000	8.957	9.106	9.253	11.402	14.517	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Efforts in this program element (PE) mature and demonstrate electronic warfare (EW) technologies intended to deny, disrupt, locate, or destroy the enemy's Command, Control, and Communications (C3) systems and intelligence, surveillance and reconnaissance assets. This PE matures both countermeasures (CM) and counter-countermeasures (CCM) to deny the enemy the use of their systems while protecting US assets from enemy deception and jamming. This PE supports the maturation and demonstration of technologies to locate and exploit enemy communication systems including computer networks (project K15) and multifunctional EW capability to enhance platform survivability (jamming) and the detection, identification and geo-location of emitters of interest to provide near real-time situational awareness to the commander (project K16). Project K12 funds congressional special interest items. Work in this PE is coordinated with PE 0603313A (Missile and Rocket Advanced Technology), PE 0603003A (Aviation Advanced Technology), PE 0602270A (EW Techniques), PE 0602120A (Sensors and Electronic Survivability), and PE 0603772A (Advanced Tactical Computer Science). The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this PE is performed by the Army Research, Development, and Engineering Command (RDECOM), Communications-Electronics Research, Development, and Engineering Center (CERDEC), Fort Monmouth, NJ and Aberdeen Proving Ground, MD.

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<b>Exhibit R-2, PB 2011 Army RDT&amp;E Budget Item Justification</b>	<b>DATE:</b> February 2010
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603270A: <i>Electronic Warfare Technology</i>
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**B. Program Change Summary (\$ in Millions)**

	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011 Base</u>	<u>FY 2011 OCO</u>	<u>FY 2011 Total</u>
Previous President's Budget	33.086	19.192	18.513	0.000	18.513
Current President's Budget	32.544	21.877	18.350	0.000	18.350
Total Adjustments	-0.542	2.685	-0.163	0.000	-0.163
• Congressional General Reductions		-0.115			
• Congressional Directed Reductions					
• Congressional Rescissions		0.000			
• Congressional Adds		2.800			
• Congressional Directed Transfers					
• Reprogrammings	0.257	0.000			
• SBIR/STTR Transfer	-0.799	0.000			
• Adjustments to Budget Years	0.000	0.000	-0.163	0.000	-0.163

**Change Summary Explanation**

FY10 - Congressional directed increases.

**UNCLASSIFIED**

R-1 Line Item #43

Page 2 of 18

1381 of 1536

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603270A: <i>Electronic Warfare Technology</i>				<b>PROJECT</b> K12: <i>EW Demonstrations (CA)</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
K12: <i>EW Demonstrations (CA)</i>	9.170	2.785	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Congressional Interest Item funding for Electronic Warfare Demonstrations.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Aerial Canopy MASINT System (ACMS): In FY09, this Congressional Interest Item developed an auto-rotating package to provide a slow decent speed capable for the sensor system to deposit in the tree tops; integrated photovoltaic cells provided a recharge capability for long endurance missions.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO	1.994	0.000	0.000	0.000	0.000
Program #2	1.994	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010				
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603270A: <i>Electronic Warfare Technology</i>		<b>PROJECT</b> K12: <i>EW Demonstrations (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>								
<p>Program #4</p> <p>Non-communications ECM Technology Demonstration: In FY09, this Congressional Interest Item upgraded current C-IED collection, examination and characterization facilities; augmented the integration of Hostile Fire Indicator (HFI), Special Purpose Electronic Attack (SPEA), and Tactical Common Data Link (TCDL) payloads on Class III/IV surrogate platforms (UH-60); integrated airborne Air Survivability Equipment (ASE)/SPEA/TCDL capability with ground stations, a network, DCGS-A workstation, and PM C4ISR OTM facility; tested this demonstrable prototype against live and virtual mounted and dismounted adversaries for persistent surveillance, protection, and attack operations.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p>				1.195	0.000	0.000	0.000	0.000

**UNCLASSIFIED**



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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603270A: <i>Electronic Warfare Technology</i>	<b>PROJECT</b> K12: <i>EW Demonstrations (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #5</b>  Highly Mobile Remote Controlled IED Countermeasure: In FY09, this Congressional Interest Item continued development and demonstration of lightweight, high performance Improvised Explosive Device Countermeasures (IED) system for the dismounted warfighter; completed Band C backpack and size reduction of Band A&B backpacks.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.797	0.000	0.000	0.000	0.000
<b>Program #6</b>  ALQ-211 Networked EW Controller: In FY09, this Congressional Interest Item completed software and hardware requirements; completed lab demo.  <i>FY 2009 Accomplishments:</i> FY 2009		1.595	0.796	0.000	0.000	0.000

**UNCLASSIFIED**

R-1 Line Item #43

Page 6 of 18

1385 of 1536

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603270A: <i>Electronic Warfare Technology</i>	<b>PROJECT</b> K12: <i>EW Demonstrations (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #7  Advanced Ground Electronic Warfare & Signals Intelligence System. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.989	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals		9.170	2.785	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>		<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603270A: <i>Electronic Warfare Technology</i>	<b>PROJECT</b> K12: <i>EW Demonstrations (CA)</i>
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A		
<b>D. Acquisition Strategy</b> N/A		
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.		

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603270A: <i>Electronic Warfare Technology</i>				<b>PROJECT</b> K15: <i>ADVANCED COMM ECM DEMO</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
K15: <i>ADVANCED COMM ECM DEMO</i>	14.155	9.342	9.393	0.000	9.393	9.548	9.724	11.391	14.034	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Efforts in this project mature and demonstrate the ability to locate and identify modern tactical battlefield enemy and blue force radio frequency (RF) communications, radars, and computer networks and nodes to enable uninterrupted air and ground based intelligence collection and long range targeting operations in a hostile electromagnetic and cyber environment. This project matures and demonstrates communications countermeasures (CM) and counter-countermeasures (CCM) technologies to first intercept, then identify, and locate tactical communications and degrade threat computer networks and their components. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this project is performed by the Army Research, Development, and Engineering Command (RDECOM), Communications-Electronics Research, Development, and Engineering Center (CERDEC), Ft. Monmouth NJ and Aberdeen Proving Ground, MD.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Offensive Operations: This effort matures and demonstrates integrated Electronic Attack (EA)/Computer Network Operations (CNO) capability to execute Force Protection (FP), Electronic Attack (EA), Electronic Surveillance (ES), and Signals Intelligence (SIGINT) missions in a dynamic, distributed and coordinated fashion. The result will be the capability to engage a multitude of diverse multi-node, multi-waveform, multi-platform and cyber (internetworked computer) targets while maximizing overall network efficiency and effectiveness while preserving blue force/non-combatant communications. In FY10, develop and mature algorithms for distributed scheduling and predicted impact; will mature high-fidelity models of next generation techniques to include lethal effects and threat/node characterization. In FY11, will enhance system baseline for distributed operation; will focus techniques development on threat priorities; will identify and implement system and network load balancing techniques to ensure effective and efficient operation; will develop techniques to ensure coordination and interoperability with Counter RCIED (Remote Control Improvised Explosive Device) Electronic Warfare (CREW) systems. Work related to this effort is also being accomplished under PE 0603270A/project K16.	0.000	4.578	4.696	0.000	4.696

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603270A: <i>Electronic Warfare Technology</i>	<b>PROJECT</b> K15: <i>ADVANCED COMM ECM DEMO</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #2</p> <p>Stand-off Non-Cooperative Multi-Intelligence Technologies: This effort matures and demonstrates technologies to detect, identify, map, and display structural layouts, identify and locate personnel, RF devices and anomalies located within structures and complex terrain to provide dismounted and remote users with the capability to conduct standoff ISR in a three dimensional urban battlespace. In FY10, analyze and design optimum sensor mix; develop and mature software algorithms and hardware; mature modeling and simulation for sensor mix. In FY11, improve and implement new algorithms and techniques for detection of slow-moving and stationary personnel inside structures and reduce false positives due to multipath in urban environments; leverage data from Improvised Electronic Device (IED) efforts to develop algorithms that would allow through-wall detection of personnel carrying weapons and explosive devices; assess/leverage recent developments in 3-D visualization and mapping efforts and apply radio frequency detection techniques as necessary to selected ground radars and/or their ground stations.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p>		0.000	4.577	4.697	0.000	4.697

**UNCLASSIFIED**

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603270A: <i>Electronic Warfare Technology</i>	<b>PROJECT</b> K15: <i>ADVANCED COMM ECM DEMO</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #3</b>  Networked Electronic Warfare (EW): This effort provides the capability to autonomously detect, classify, correlate, and geo-locate modern wireless communication emitters on the battle field and in urban terrain. In FY09, integrated commercial off-the-shelf 3-D visualization and mapping tools with geo-location solution set for optimal urban situational awareness and emitter representation; integrated capabilities into net-centric solution that combines jamming and detection/location/neutralization capabilities; completed algorithm development and validation and fabrication of adaptive processing arrays. Related work is also accomplished under PE 0602270A/project 442, PE 0602270A/project 906, and PE 0603270A/project K16.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base		9.067	0.000	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603270A: <i>Electronic Warfare Technology</i>	<b>PROJECT</b> K15: <i>ADVANCED COMM ECM DEMO</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<p>Program #4</p> <p>Combat Identification (CID) Technology Demonstration: This effort matures and demonstrates real time CID technologies for light weight tactical vehicles and Soldiers. In FY09, matured and demonstrated the Soldier Radio Waveform (SRW) as a radio-based application that would provide both a target identification (TI) and situational awareness (SA) capability for light vehicle applications as well as urban and open terrain operation for Soldier level applications; matured TI interrogation approaches utilizing either laser or radio frequency components; enhanced the SRW software to allow it to respond to directed interrogations for TI capability as well as to provide SA capability even in Global Positioning System denied environments; integrated and demonstrated the processor, transceiver, and antenna for the miniaturized Battlefield Target Identification Device (BTID) CID system on light weight tactical vehicles. Work related to this effort is also being accomplished under PE 0602120A/project H15.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>		5.088	0.000	0.000	0.000	0.000
<p>Program #5</p> <p>Small Business Innovative Research/Small Business Technology Transfer Programs</p>		0.000	0.187	0.000	0.000	0.000

**UNCLASSIFIED**

R-1 Line Item #43

Page 12 of 18

1391 of 1536

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603270A: <i>Electronic Warfare Technology</i>	<b>PROJECT</b> K15: <i>ADVANCED COMM ECM DEMO</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		14.155	9.342	9.393	0.000	9.393
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>D. Acquisition Strategy</b> N/A						
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603270A: <i>Electronic Warfare Technology</i>				<b>PROJECT</b> K16: <i>NON-COMMO ECM TECH DEM</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
K16: <i>NON-COMMO ECM TECH DEM</i>	9.219	9.750	8.957	0.000	8.957	9.106	9.253	11.402	14.517	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Efforts in this project mature and demonstrate non-communication, multi-functional electronic warfare capabilities that enhance the survivability of Army air and ground platforms and dismounted forces. This project matures and demonstrates radio frequency (RF), infrared (IR) and electro-optical (EO) sensor and jamming source technologies to detect, locate, deceive, and neutralize (jam) booby traps, radar directed target acquisition systems, target-tracking sensors, surface-to-air missiles (SAMs), air-to-air missiles (AAMs), top attack and electronically fuzed munitions. This project also matures and demonstrates Electronic Support (ES) technologies to detect, identify, and geolocate emitters of interest from an effective standoff distance and provide near real-time situational awareness. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this project is performed by the Army Research, Development, and Engineering Command (RDECOM), Communications-Electronic Research, Development, and Engineering Center (CERDEC), Ft. Monmouth NJ and Aberdeen Proving Ground, MD, and the Army Research Lab, Adelphi MD.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Distributed Aperture Infrared Countermeasures (DAIRCM) Technologies: This effort matures and demonstrates an integrated laser source, distribution system, and beam director that support multi-function helicopter protection with an integrated cueing capability. In FY10, investigate and mature a laser pointer tracker (LPT) to be aligned bore-sited with the UV-based CMWS sensors. The LPT will scan areas of interest cued by the missile warning system (MWS) and receive laser return for the incoming threat. In FY11, will complete design of integrated missile warning and multi-band laser demonstration system; will integrate advanced two color IR missile warning system to improve overall system performance with high probability of detection/low false alarm, while the pointer-tracker will expand the mission profile by increasing pointer-tracker reliability and permit simultaneous multiple threat engagement; will develop target identification database for mission post analysis; will finalize digital threat-warning hardware design; will perform testing on correlation algorithms and architecture.	0.000	4.665	4.405	0.000	4.405

**UNCLASSIFIED**

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603270A: <i>Electronic Warfare Technology</i>	<b>PROJECT</b> K16: <i>NON-COMMO ECM TECH DEM</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #2</p> <p>Advanced Tactical Radio Frequency Countermeasures (ATRFCM) Technologies: This effort matures and demonstrates an integrated Electronic Warfare/Direction Finding system for the protection of platforms from emerging RF threats. In FY10, mature and demonstrate improved wideband frequency waveform generators for higher spectral purity and modulation flexibility; wideband receivers capable of high speed, dynamic signal demodulation and data collection; and high power, efficient, RF amplifiers, for improved Electronic Warfare (EW)/communications compatibility; begin integration into a working brassboard for lab and field testing; develop and mature integrated and distributed packaging for improved vehicle integration and thermal performance. In FY11, will optimize platform protection capabilities through the coordination of real-time dynamic antenna selection; will demonstrate real time on-the-move direction finding and geolocation capabilities that will complement targeting and cueing activities of overarching force protection and Comms EW missions to support a common operating picture.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p>		0.000	4.864	4.552	0.000	4.552

**UNCLASSIFIED**

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603270A: <i>Electronic Warfare Technology</i>	<b>PROJECT</b> K16: <i>NON-COMMO ECM TECH DEM</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #3</p> <p>Networked Electronic Warfare: This effort provides autonomous detection, classification, correlation, and geolocation capability against modern wireless emitters and other threats supporting force protection technology. In FY09, completed algorithm development and validation of adaptive processing arrays; integrated visualization and mapping tools with geolocation solution sets; demonstrated capability in the lab. Work related to this effort is also being accomplished under PE 0602270A/project 442; PE 0602270A/project 906, and PE 0603270A/project K15.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>		2.175	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603270A: <i>Electronic Warfare Technology</i>	<b>PROJECT</b> K16: <i>NON-COMMO ECM TECH DEM</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Program #4</p> <p>Cueing Sensor: This effort matures and demonstrates low cost infrared sensors that detect rocket propelled grenades, anti-tank guided missiles, tank fired and high energy anti-tank rounds and then cues active protection systems for Army vehicles. In FY09, demonstrated the cueing sensor software and hardware against different types of live fire munitions (threats to ground vehicle); demonstrated the capability to detect, declare, and classify the live fire threats; transitioned the cueing sensor hardware and software to the active protection system (APS) effort for integration into the kinetic energy APS vehicle survivability system. Work related to this effort is also being accomplished under PE 0602270A/project 442.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>		7.044	0.000	0.000	0.000	0.000
<p>Program #5</p> <p>Small Business Innovative Research/Small Business Technology Transfer Programs</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p>		0.000	0.221	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010				
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603270A: <i>Electronic Warfare Technology</i>		<b>PROJECT</b> K16: <i>NON-COMMO ECM TECH DEM</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010								
<i>Base FY 2011 Plans:</i> FY 2011 Base								
<i>OCO FY 2011 Plans:</i> FY 2011 OCO								
Accomplishments/Planned Programs Subtotals				9.219	9.750	8.957	0.000	8.957
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A								
<b>D. Acquisition Strategy</b> N/A								
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.								

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<b>Exhibit R-2, PB 2011 Army RDT&amp;E Budget Item Justification</b>										<b>DATE:</b> February 2010	
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603313A: <i>Missile and Rocket Advanced Technology</i>							
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	74.967	86.559	84.553	0.000	84.553	73.859	66.520	67.025	82.484	0	620.520
206: <i>MISSILE SIMULATION</i>	3.429	3.499	3.502	0.000	3.502	3.554	3.612	4.668	5.715	Continuing	Continuing
263: <i>FUTURE MSL TECH INTEGR(FMTI)</i>	35.800	42.271	42.002	0.000	42.002	44.241	42.145	39.356	42.785	Continuing	Continuing
550: <i>COUNTER ACTIVE PROTECTION</i>	14.940	8.085	8.547	0.000	8.547	8.137	5.719	7.805	11.860	Continuing	Continuing
704: <i>Advanced Missile Demo</i>	5.955	7.775	18.418	0.000	18.418	5.810	4.834	12.938	19.822	Continuing	Continuing
G03: <i>Area Defense Advanced Technology</i>	1.926	1.988	12.084	0.000	12.084	12.117	10.210	2.258	2.302	Continuing	Continuing
NA6: <i>Missile and Rocket Initiatives (CA)</i>	12.917	22.941	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This program element (PE) matures and demonstrates advanced missile technologies to enhance weapon system lethality, survivability, agility, deployability, and affordability. The emphasis in this PE is on smaller, lighter weight, more affordable missiles. This PE supports high fidelity simulations including real-time Hardware-in-the-Loop (HWIL) for the design, demonstration and testing of advanced tactical missiles and interceptors (project 206); the maturation and demonstration of missile components with capabilities for locating targets in clutter, precision guidance, high speed missile flight, and missile communications, command, and control (project 263); development of a guided interceptor to work with the active protection system (APS) being developed for the ground combat vehicle (project 550); maturation and demonstration of tracking and fire control radar technologies against rocket, artillery, and mortar threats (project 704); and the maturation and demonstration of technologies required for force protection against Unmanned Aerial Vehicles and rotary wing aircraft (project G03). Project NA6 funds congressional special interest items. Work in this PE is related to, and fully coordinated with PE 0602303A (Missile Technology), PE 0603003A (Aviation Advanced Technology), PE 0603270A (Electronic Warfare Technology), PE 0602624A (Weapons and Munitions Technology), PE 0603004A (Weapons and Munitions Advanced Technology), PE 0602307A (Advanced Weapons Technology), and PE 0603005A (Combat Vehicle and Automotive Advanced Technology). The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this PE is performed by the Aviation and Missile Research, Development, and Engineering Center (AMRDEC) located at Huntsville, AL.

**UNCLASSIFIED**

R-1 Line Item #44

Page 1 of 32

1398 of 1536

**UNCLASSIFIED**

<b>Exhibit R-2, PB 2011 Army RDT&amp;E Budget Item Justification</b>	<b>DATE:</b> February 2010
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603313A: <i>Missile and Rocket Advanced Technology</i>
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**B. Program Change Summary (\$ in Millions)**

	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011 Base</u>	<u>FY 2011 OCO</u>	<u>FY 2011 Total</u>
Previous President's Budget	76.702	63.951	63.683	0.000	63.683
Current President's Budget	74.967	86.559	84.553	0.000	84.553
Total Adjustments	-1.735	22.608	20.870	0.000	20.870
• Congressional General Reductions		-0.452			
• Congressional Directed Reductions					
• Congressional Rescissions		0.000			
• Congressional Adds		23.060			
• Congressional Directed Transfers					
• Reprogrammings	0.364	0.000			
• SBIR/STTR Transfer	-2.099	0.000			
• Adjustments to Budget Years	0.000	0.000	20.870	0.000	20.870

**Change Summary Explanation**

FY10 Congressionally directed increases FY11 increases for Deployable Force Protection and force protection technologies.

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603313A: <i>Missile and Rocket Advanced Technology</i>				<b>PROJECT</b> 206: <i>MISSILE SIMULATION</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
206: <i>MISSILE SIMULATION</i>	3.429	3.499	3.502	0.000	3.502	3.554	3.612	4.668	5.715	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This project matures and demonstrates modeling and simulation tools for missile design and analysis and improved Hardware-in-the-Loop (HWIL) simulation capabilities. Evaluation of missile technology by means of HWIL provides a cost-effective method that supports missile maturation throughout weapon system life cycles and permits a reduction in the number of flight tests required, as well as improving the confidence of flight test readiness and probability of flight test success. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this project is performed by the Aviation and Missile Research, Development, and Engineering Center, (AMRDEC) Huntsville, AL.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Missile Simulation: This effort matures and demonstrates advanced simulation technologies to support missile design, analysis and test including Hardware-in-the-Loop (HWIL) simulation, missile component and system simulations and simulations to support missile design trade studies. In FY09, continued the common HWIL framework development by testing standard high bandwidth interfaces for an infrared (IR) seeker, 6-degree-of-freedom (6-DOF) simulation, and facility modules (clock, signal injection, and software). Investigated and developed passive IR projector with polarization capability to evaluate polarized infrared sensors ability to acquire and discriminate targets. Continued development of millimeter wave (MMW) synthetic aperture radar (SAR) integration and signal processing techniques for high-resolution characterization and validation database development. In FY10, integrate and test the following components: common HWIL capabilities including PC based scene generation, short-wave IR projector, facility monitor, 6-DOF simulation, signal injection system, and seeker hardware. Develop a sample interface for the HWIL laser radar (LADAR) projection system. Transition new IR solar source developed under PE 0602303A to analyze solar implications on missile system performance. Develop a visualization environment to parametrically evaluate art-of-the-possible missile component capabilities. In FY11, will enhance the common HWIL computing capability to support data-intensive	3.429	3.405	3.502	0.000	3.502

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603313A: <i>Missile and Rocket Advanced Technology</i>	<b>PROJECT</b> 206: <i>MISSILE SIMULATION</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>LADAR and radar projection seeker simulations. Will continue development of seeker signal injection for active radar and LADAR seekers and improvements to the solar simulator. Continue development of a visualization environment developing capability to parametrically evaluate missile system performance.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #2</p> <p>Small Business Innovative Research/Small Business Technology Transfer Programs</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p>		0.000	0.094	0.000	0.000	0.000

**UNCLASSIFIED**

R-1 Line Item #44

Page 4 of 32

1401 of 1536

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603313A: <i>Missile and Rocket Advanced Technology</i>	<b>PROJECT</b> 206: <i>MISSILE SIMULATION</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		3.429	3.499	3.502	0.000	3.502
<b>C. Other Program Funding Summary (\$ in Millions)</b>						
N/A						
<b>D. Acquisition Strategy</b>						
N/A						
<b>E. Performance Metrics</b>						
Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603313A: <i>Missile and Rocket Advanced Technology</i>				<b>PROJECT</b> 263: <i>FUTURE MSL TECH INTEGR(FMTI)</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
263: <i>FUTURE MSL TECH INTEGR(FMTI)</i>	35.800	42.271	42.002	0.000	42.002	44.241	42.145	39.356	42.785	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This project matures and demonstrates advanced tactical missile technologies such as seekers, controllable thrust motors (gels, pintle-controlled solids, and air breathing) for propulsion, airframes, and guidance and controls for tactical missiles. The project goal is to reduce the cost per kill of precision guided missiles. The project matures the technologies developed and funded under PE 0602303A and directly supports systems managed by the Program Executive Officer for Missiles and Space. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this project is performed by the Aviation and Missile Research, Development, and Engineering Center (AMRDEC), Huntsville, AL.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Enhanced Seeker Development: This effort matures seeker technology for the Non-Line-of-Sight Launch System (NLOS-LS). In FY09, performed two captive flight tests and continued evaluation and maturation of seeker technology, aided target acquisition, and electronics. Transitioned to PEO Missiles & Space as a spiral upgrade to NLOS-LS System Development and Demonstration program.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base	0.962	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603313A: <i>Missile and Rocket Advanced Technology</i>	<b>PROJECT</b> 263: <i>FUTURE MSL TECH INTEGR(FMTI)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #2</b>  Advanced Propulsion and Warheads: This effort matures propulsion and warhead technology for the Non-Line-of-Sight Launch System (NLOS-LS). In FY09, performed integrated system concept demonstrations and evaluations of an NLOS-LS cargo variant for rapid, precision deployment of submunitions.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.923	0.000	0.000	0.000	0.000
<b>Program #3</b>  Modeling/Simulation and System Performance Evaluation: This effort matures Modeling and Simulation technology for the Non-Line-of-Sight Launch System (NLOS-LS). In FY09, performed many-on-many system trade studies and generated detailed simulation models for evaluation of NLOS-LS variants and Precision Attack Munitions upgrades. Continued to address manufacturing and affordability issues. Conducted excursions to expand the envelope of simulation evaluated conditions.		0.962	0.000	0.000	0.000	0.000

**UNCLASSIFIED**

R-1 Line Item #44

Page 7 of 32

1404 of 1536

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603313A: <i>Missile and Rocket Advanced Technology</i>	<b>PROJECT</b> 263: <i>FUTURE MSL TECH INTEGR(FMTI)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #4  Technology for Non-Line-of-Sight Launch System (NLOS-LS) Variants: This effort focuses on demonstrating technologies that leverage the NLOS-LS Container Launch Unit (C/LU) to provide a versatile mix of fires for defeat of conventional and asymmetrical threats in all environments. This effort leverages technology development activities from PE602303A. In FY10, design and develop critical components to support concept refinement and sample fabrication of NLOS-LS variant missiles capable of rapid, precision deployment of lethal and non-lethal payloads. Perform subsystem and system-level testing in a laboratory environment. Perform an evaluation of payload delivery feasibility through proof-of-principle flight tests and high fidelity simulations. Investigate, identify and coordinate design interfaces for selected high payoff payload candidates and evaluate and mature the most promising interfaces to enable integration into the NLOS-LS variant.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010		0.000	4.296	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603313A: <i>Missile and Rocket Advanced Technology</i>	<b>PROJECT</b> 263: <i>FUTURE MSL TECH INTEGR(FMTI)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #5  Technology for Guided Missiles and Interceptors: This effort develops and demonstrates guidance and stable flight technologies for highly responsive missiles and interceptors. Efforts support Defense against Rockets, Artillery, and Mortar (PE 0603313, Project 263) and Kinetic Energy Active Protection System Guided Interceptor (PE 0603313, Project 550).In FY11, will develop and demonstrate guidance and control, seeker, propulsion, and aerodynamic technologies in support of tactical missile and interceptor design for force protection systems. Will develop technologies to support highly responsive guidance of tactical interceptors to the intended high velocity threat.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	0.000	7.219	0.000	7.219
Program #6		7.489	7.221	11.656	0.000	11.656

**UNCLASSIFIED**

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010				
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603313A: <i>Missile and Rocket Advanced Technology</i>		<b>PROJECT</b> 263: <i>FUTURE MSL TECH INTEGR(FMTI)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Applied Smaller, Lighter, and Cheaper (SLC) Missile Components: Matures and demonstrates technology developed in PE602303A that focuses on developing increasingly smaller, lighter, and cheaper missile components to enhance current system capabilities against asymmetric threats for transition to the next generation small precision munitions. Mature technologies will transition to PEO Missiles and Space. In FY09, conducted requirements analysis and trade studies for small, low cost electronics and seeker/sensor systems including height of burst sensor (HOBS), high-reliability Tube-launched, Optically-tracked, Wire-guided (TOW) rate sensor for missile guidance, and Joint Air-to-Ground Missile (JAGM) electronic safe and arm device (ESAD). Leveraged latest in nanotechnology and electronics packaging to achieve a reduction in size and weight of small, light, missile form factors to meet urban and emerging threats. Integrated the Multi-Purpose Warhead (MPW) with Javelin and conducted tandem/Insensitive Munition tests. In FY10, fabricate, integrate, and functionally test composite JAGM guidance electronics unit (GEU) housing for improving thermal dissipation; complete image-based stabilization/people tracking subsystems; conduct static/dynamic ESAD testing for JAGM and complete technical data package; and down-select and flight test TOW rate sensor package for missile guidance. In FY11, will demonstrate image-based stabilization/tracker using captive flight test simulated target imagery. Will conduct static/dynamic tests of high performance propulsion system with increased insensitive munition capabilities, will perform functional/environmental tests on composite JAGM sample guidance electronics unit housing, will demonstrate advanced interconnects in representative small precision munition processor, and will fabricate and field test form factored semi-active laser seeker.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p>								

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**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603313A: <i>Missile and Rocket Advanced Technology</i>	<b>PROJECT</b> 263: <i>FUTURE MSL TECH INTEGR(FMTI)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<p>Program #7</p> <p>Close Combat Networking of Weapons and Sensors: This effort matures and demonstrates enabling technology to provide network lethality capability for transition to Javelin and Tube-launched, Optically-tracked, Wire-guided (TOW) missile systems that increase warfighter lethality, survivability, and situational awareness. In FY09, continued maturation of mission software; conducted sample strap-on Far Target Locator (FTL) and network interface card development; integrated and demonstrated system level future force (Soldier Radio Waveform) radio interoperability; performed integration and testing with the Javelin Command Launch Unit (CLU). Conducted planning for a networked lethality demonstration employing current and future tactical radios. In FY10, complete and fully integrate all mission application enhancements with sample networked Improved Target Acquisition System (ITAS) and networked CLU with strap-on FTL and perform system-level tests, followed by CLU and ITAS network integration. Conduct cooperative networked TOW ITAS and Javelin CLU capability demonstration.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>		4.809	5.396	0.000	0.000	0.000
Program #8		2.318	4.726	3.382	0.000	3.382

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603313A: <i>Missile and Rocket Advanced Technology</i>	<b>PROJECT</b> 263: <i>FUTURE MSL TECH INTEGR(FMTI)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Multi-Mission/Multi-Purpose Single Missile Propulsion: This effort matures and demonstrates enhanced capability missile propulsion that provide longer ranges, increasing mission flexibility, and shorter flight times while increasing system insensitive munitions capability and mission robustness in air-to-ground, ground-to-ground, and ground-to-air roles for transition to PEO Missiles &amp; Space. In FY09, completed concept designs for the best candidate motor and fabricated critical components (including propellants, engine, expulsion systems, and controls) for variable propulsion motors. Began validation of critical components of these designs. In FY10, complete testing of missile motor critical components, select best technical approach and begin design, analysis and fabrication of flight-ready motor hardware for static testing. In FY11, will complete static testing of missile motors over operational temperature range and begin fabrication of flight-weight hardware assets in order to conduct flight testing.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #9</p> <p>Defense against Rockets, Artillery, and Mortars (RAM): This effort develops and demonstrates an integrated system capable of countering multiple simultaneous RAM threats. The integrated system consists of two missile interceptor concepts, integration with the vertical launch Non-Line-of-Sight Launch System (NLOS-LS) Container Launch Unit, a Technical Fire Control node to provide the firing solution and launch command, and</p>		17.337	4.881	4.891	0.000	4.891

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603313A: <i>Missile and Rocket Advanced Technology</i>	<b>PROJECT</b> 263: <i>FUTURE MSL TECH INTEGR(FMTI)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Tracking and Fire Control radar to track the threat RAM and feed the target location to the Technical Fire Control. In order to provide more clarity, starting in FY10, this effort has been moved to two additional relevant efforts within PE 0603313A Enhanced Precision Interceptor Technology and Technical Fire Control Technology, PE 0603313A, Project 704. This effort transitions activities from Defense against RAM Interceptor, PE 0602303A. In FY09, initiated final designs of two interceptor designs, pitch-over apparatus, launcher, and technical fire control brassboard component technologies. Began fabrication of two interceptor designs, pitch-over apparatus, launcher, and technical fire control components to be used in Hardware-in-the-Loop (HWIL) testing. Updated and verified system-level RAM Interceptor simulations based on test results. In FY10, complete final designs of vertical launch and pitch-over components. Integrate the launcher, pitch-over apparatus, interceptor, and technical fire control components for system level HWIL testing. Update the vertical launch and pitch-over component designs, software, and simulations based on test results. In FY11, will continue system-level HWIL testing to verify required performance and develop components and integrate for guided flight tests against single RAM targets. Will update the vertical launch and pitch over designs and system simulation based on test results.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
Program #10		0.000	7.785	7.922	0.000	7.922

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603313A: <i>Missile and Rocket Advanced Technology</i>	<b>PROJECT</b> 263: <i>FUTURE MSL TECH INTEGR(FMTI)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Enhanced Precision Interceptor Technology: This effort develops and demonstrates interceptor concepts and technology with the required accuracy and lethality to defeat rocket, artillery, and mortar (RAM) threats.. This effort is in collaboration with the task entitled Defense against RAM. In FY10, complete final designs, fabricate, and perform testing of interceptor components. Integrate interceptor components and conduct system-level Hardware-in-the-Loop (HWIL) testing. Update the interceptor designs and simulations based on the test results. In FY11, will fabricate flight test interceptors for guided flight tests against single RAM targets and will perform pre-flight HWIL testing on each interceptor. Will continue system-level HWIL testing and prepare interceptors for guided flight tests by verifying correct fire control solution and launch command are generated. Will update the interceptor design and system simulation based on test results.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #11</p> <p>Technical Fire Control Technology: This effort develops and demonstrates technical fire control hardware and software necessary to generate and execute a firing solution for an interceptor to defeat rocket, artillery, and mortar (RAM) threats. This effort is in collaboration with the task entitled Defense against RAM. In FY10, complete final designs, fabricate, and perform testing of technical fire control components and software. Integrated with interceptor to support system-level Hardware-in-the-Loop (HWIL) testing. Update the technical</p>		0.000	6.812	6.932	0.000	6.932

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>fire control design and software and update simulations based on the test results. In FY11, will fabricate one technical fire control node for guided flight tests against single RAM targets, Will develop technical fire control software and integrate technical fire control with the interceptor components to support system-level HWIL testing verifying correct fire control solution and launch command are generated. Will update the technical fire control design and system simulation based on test results.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #12 Small Business Innovative Research/Small Business Technology Transfer Programs</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p>		0.000	1.154	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603313A: <i>Missile and Rocket Advanced Technology</i>	<b>PROJECT</b> 263: <i>FUTURE MSL TECH INTEGR(FMTI)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		35.800	42.271	42.002	0.000	42.002
<b>C. Other Program Funding Summary (\$ in Millions)</b>						
N/A						
<b>D. Acquisition Strategy</b>						
N/A						
<b>E. Performance Metrics</b>						
Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603313A: <i>Missile and Rocket Advanced Technology</i>				<b>PROJECT</b> 550: <i>COUNTER ACTIVE PROTECTION</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
550: <i>COUNTER ACTIVE PROTECTION</i>	14.940	8.085	8.547	0.000	8.547	8.137	5.719	7.805	11.860	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This project matures and demonstrates integrated survivability technologies and techniques for lightweight combat platforms including light armored vehicles, tactical wheeled vehicles, and helicopters. Efforts include the development of guided interceptors for active protection systems (APS) capable of defeating tank-fired large caliber anti-armor threats, anti-tank guided missiles and long range rocket propelled grenades (RPGs). Work in this project on APS is in collaboration with PE 0602624A (Weapons and Munitions Technologies), project H28, PE 0603004 (Advanced Munitions Demonstration) and PE 0603005A (Combat Vehicle and Automotive Advanced Technology), project 221. This project complements work done on adaptive infrared suppressor and acoustic signature technologies matured in the PE 0603003A (Aviation Advanced Technology), project 313. This effort is building on the expertise developed in support of rockets, missile, sensors, and active control to develop innovative solutions for survivability. The cited work is consistent with the Department of Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this project is performed by the Aviation and Missile Research, Development, and Engineering Center (AMRDEC), Huntsville, AL.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Kinetic Energy Active Protection System (KEAPS) Guided Interceptor: This effort develops and demonstrates an interceptor to defeat threats to combat vehicle survivability focusing on tank fired kinetic energy threats. This effort demonstrates interceptor performance against kinetic energy tank rounds through a series of up to ten guided flight tests incrementally integrating key components as their designs mature and updating interceptor design. Goals of the KEAPS effort remain constant, but efforts in FY10 have been revised to synchronize with the needs of the Army's new ground combat vehicle program. In FY09, completed integration of interceptor components and conducted three successful controlled flight tests guiding the interceptor through preprogrammed maneuvers. Completed field testing of the seeker and tested it in Hardware-in-the-Loop (HWIL) to evaluate seeker dynamic performance against kinetic energy threats. Conducted one guided flight test which demonstrated that the interceptor has sufficient guidance accuracy to defeat live threats. Integrated seeker into guided	14.940	7.877	8.547	0.000	8.547

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603313A: <i>Missile and Rocket Advanced Technology</i>	<b>PROJECT</b> 550: <i>COUNTER ACTIVE PROTECTION</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>interceptor for flight testing. Began fabrication of additional interceptors for guided flight tests. In FY10, conduct up to five guided flight tests against live threats to evaluate guidance accuracy under increasing degrees of launch error and evaluate electronic safe and arm device (ESAD) performance. Integrate target detection device (TDD) into guided interceptor for flight testing. Conduct dynamic/dynamic warhead testing to verify warhead performance against kinetic energy tank round. In FY11, will conduct up to two guided flight tests against live threats to evaluate TDD performance limits. Will integrate pop-up-pitch-over (PUPO) apparatus into interceptor and conduct up to two guided flight tests to verify the interceptor can navigate through PUPO maneuver. Integrate warhead into interceptor and conduct up to two full end-to-end flight tests from PUPO through threat defeat.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #2 Small Business Innovative Research/Small Business Technology Transfer Programs</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p>		0.000	0.208	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603313A: <i>Missile and Rocket Advanced Technology</i>	<b>PROJECT</b> 550: <i>COUNTER ACTIVE PROTECTION</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		14.940	8.085	8.547	0.000	8.547
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>D. Acquisition Strategy</b> N/A						
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603313A: <i>Missile and Rocket Advanced Technology</i>				<b>PROJECT</b> 704: <i>Advanced Missile Demo</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
704: <i>Advanced Missile Demo</i>	5.955	7.775	18.418	0.000	18.418	5.810	4.834	12.938	19.822	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This project matures advanced state-of-the-art missile system concepts and related hardware to enhance weapon system lethality, survivability, agility, versatility, deployability, and affordability for defense against the future force air and ground, armored and non-armored threats. The cited work is consistent with the Department of Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this project is performed by the Aviation and Missile Research, Development, and Engineering Center (AMRDEC), Huntsville, AL.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Counter Rockets, Artillery, Mortars (CRAM) Tracking and Fire Control: This effort matures and demonstrates radar technology to provide 360 degree, near hemispherical coverage for tracking and command intercept of RAM threats. This effort determines the trajectory and location of the threat and feeds that information to the Technical Fire Control to generate a firing solution. This task supports Defense Against Rocket, Artillery, and Mortar, PE0603313A Project 263 to perform system-level demonstration. In FY09, completed the fabrication and integration of a sample surveillance sensor. Tested the integrated surveillance sensor in an open air environment to verify the technology can acquire and track small mortar and rocket targets with very low radar cross sections. Completed final design and began fabrication and integration of fire control sensor components. In FY10, complete fire control sensor assembly fabrication and begin to integrate with the other system components developed. Conduct laboratory testing to demonstrating the fire control sensor can track RAM targets with the required accuracy. In FY11, will complete fabrication of the fire control sensor hardware and software to support guided flight testing of interceptors. Will verify tracking and fire control radar accuracy through modeling and simulation and testing to verify it meets the required performance. Will update the tracking and fire control fire control design and system simulation based on test results.	5.955	7.558	11.918	0.000	11.918

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603313A: <i>Missile and Rocket Advanced Technology</i>	<b>PROJECT</b> 704: <i>Advanced Missile Demo</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #2</b>  Counter Rocket, Artillery, and Mortar (RAM) Interceptor Integration: This effort integrates technologies from Defense against Rockets, Artillery, and Mortars, PE 0603313A, Project 263 and performs system-level Hardware-in-the-Loop (HWIL) testing to verify system performance. In FY11, will support system-level HWIL testing. Will integrate technologies for two missile concept designs to perform guided flight testing against single RAM threats.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base		0.000	0.000	6.500	0.000	6.500

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**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603313A: <i>Missile and Rocket Advanced Technology</i>	<b>PROJECT</b> 704: <i>Advanced Missile Demo</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #3 Small Business Innovative Research/Small Business Technology Transfer Program		0.000	0.217	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		5.955	7.775	18.418	0.000	18.418
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>D. Acquisition Strategy</b> N/A						
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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**Exhibit R-2A, PB 2011 Army RDT&E Project Justification** **DATE:** February 2010

<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603313A: <i>Missile and Rocket Advanced Technology</i>	<b>PROJECT</b> G03: <i>Area Defense Advanced Technology</i>
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COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
G03: <i>Area Defense Advanced Technology</i>	1.926	1.988	12.084	0.000	12.084	12.117	10.210	2.258	2.302	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This project matures and demonstrates Air Defense Missile technology to support brigade force protection capability against the following potential threats: Unmanned Aerial Vehicles, rotary wing aircraft and Large Caliber Rockets, Cruise Missiles, etc. and to expand the protection envelope to a division/corps area. The cited work is consistent with the Department of Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this project is performed by the Aviation and Missile Research, Development, and Engineering Center (AMRDEC), Huntsville, AL.

**B. Accomplishments/Planned Program (\$ in Millions)**

	FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011
<p>Program #1</p> <p>Air Defense Advanced Technology: This effort matures and demonstrates missile technology to provide capability for warfighter force protection against low and slow flying air vehicle threats in all environments without increasing the force structure. This effort leverages activities from PE 0602303A, project 214. In FY09, continued to perform trade studies and lethality analysis through modeling and simulation of air defense concepts, selected the most favorable concepts for further development, and began maturation and demonstration of associated underlying critical component technologies. In FY10, mature and develop critical components for an air defense capability, perform component testing in a laboratory environment, and develop high fidelity simulations. In FY11, will continue development and demonstration of critical components and perform integration and demonstration of an air defense system capability in a relevant environment.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p>	1.926	1.932	2.084	0.000	2.084

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603313A: <i>Missile and Rocket Advanced Technology</i>	<b>PROJECT</b> G03: <i>Area Defense Advanced Technology</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #2</p> <p>Deployable Force Protection Missile Technology: This effort demonstrates affordable missile technology to provide force protection for smaller forward operating bases (FOB). This effort will integrate existing and developmental missile technology and develop novel fire control and guidance and control systems to use missiles for a deployable force protection role. In FY11, will demonstrate missile system technologies for affordable effects to provide area protection for smaller FOBs. Will develop guidance, control, actuation, and propulsion technology to enable 360 degree protection. Will develop fire control systems to provide 360 degree protection to a re-configurable protected area using multiple missiles and launchers.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p>		0.000	0.000	10.000	0.000	10.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603313A: <i>Missile and Rocket Advanced Technology</i>	<b>PROJECT</b> G03: <i>Area Defense Advanced Technology</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #3 Small Business Innovative Research/Small Business Technology Transfer Programs		0.000	0.056	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		1.926	1.988	12.084	0.000	12.084
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>D. Acquisition Strategy</b> N/A						
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>			<b>R-1 ITEM NOMENCLATURE</b> PE 0603313A: <i>Missile and Rocket Advanced Technology</i>					<b>PROJECT</b> NA6: <i>Missile and Rocket Initiatives (CA)</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
NA6: <i>Missile and Rocket Initiatives (CA)</i>	12.917	22.941	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Congressional Interest Item funding for Missile and Rocket advanced technology development.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Rapid Response System for Protection of Air and Ground Vehicles: In FY09, this Congressional Interest Item supported development of a high data rate passive infrared (IR) sensor technology. This technology has direct application to future active protection technology for aircraft and ground vehicles in detecting, cueing, and tracking the IR signatures of threat weapons.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO	4.146	2.547	0.000	0.000	0.000
Program #2	1.595	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603313A: <i>Missile and Rocket Advanced Technology</i>	<b>PROJECT</b> NA6: <i>Missile and Rocket Initiatives (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>High Fidelity Virtual Simulation and Analysis (HFVSA): In FY09, this Congressional Interest Item supported extending, leveraging, and preparing the existing vast aviation and missile modeling &amp; simulation capabilities in the Advanced Prototyping, Engineering and Experimentation (APEX) Labs to the larger Army.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #3</p> <p>Heavy Fuel High Efficiency Turbine Engine: In FY09, this Congressional Interest Item supported building flight weight high efficiency turbine engine (HETE).</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p>		1.994	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603313A: <i>Missile and Rocket Advanced Technology</i>	<b>PROJECT</b> NA6: <i>Missile and Rocket Initiatives (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #4  Long Range Hypersonic Interceptor: This In FY09, this Congressional Interest Item supported a study that concentrates on investigating technologies that apply to countering the emerging threat posed to the US and its allies by very high speed strike weapons.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.797	1.592	0.000	0.000	0.000
Program #5  Advanced Commercial Technology Insertion for Aviation & Missile Research, Development, & Engineering: In FY09, this Congressional Interest Item supported development of a system architecture to standardize/renovate graphical scene generation for Hardware-in-the-Loop.  <i>FY 2009 Accomplishments:</i> FY 2009		2.392	3.084	0.000	0.000	0.000

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R-1 Line Item #44

Page 28 of 32

1425 of 1536

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603313A: <i>Missile and Rocket Advanced Technology</i>	<b>PROJECT</b> NA6: <i>Missile and Rocket Initiatives (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #6</b>  Army Responsive Tactical Space System Exerciser (ARTSSE): In FY09, this Congressional Interest Item developed a system simulation testbed key to the performance analysis and evaluation of Operationally Responsive Space (ORS) technologies.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.993	2.985	0.000	0.000	0.000
<b>Program #7</b>  Foil Bearing Supported UAV Engine. This is a Congressional Interest Item.		0.000	0.796	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603313A: <i>Missile and Rocket Advanced Technology</i>	<b>PROJECT</b> NA6: <i>Missile and Rocket Initiatives (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #8 Captive Carry Sensor Test-Bed. This is a Congressional Interest Item.		0.000	2.388	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #9		0.000	3.024	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603313A: <i>Missile and Rocket Advanced Technology</i>	<b>PROJECT</b> NA6: <i>Missile and Rocket Initiatives (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Anti-Tamper Research and Development. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #10 Waterside Wide Area Tactical Coverage & Homing (WaterWATCH). This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	3.182	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603313A: <i>Missile and Rocket Advanced Technology</i>	<b>PROJECT</b> NA6: <i>Missile and Rocket Initiatives (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #11 Scenario Generation for Integrated Air and Missile Defense Evaluation. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	3.343	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals		12.917	22.941	0.000	0.000	0.000
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>D. Acquisition Strategy</b> N/A						
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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**Exhibit R-2, PB 2011 Army RDT&E Budget Item Justification** **DATE:** February 2010

<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603606A: <i>Landmine Warfare and Barrier Advanced Technology</i>
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COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	36.883	34.855	26.953	0.000	26.953	32.791	31.626	32.616	35.441	0	258.118
608: <i>COUNTERMINE &amp; BAR DEV</i>	26.789	25.299	22.022	0.000	22.022	27.780	26.534	27.432	30.174	Continuing	Continuing
64C: <i>COUNTERMINE DEMONSTRATIONS (CA)</i>	6.837	4.695	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
683: <i>Area Denial Sensors</i>	3.257	4.861	4.931	0.000	4.931	5.011	5.092	5.184	5.267	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This program element (PE) matures and demonstrates sensor and neutralization technologies required to detect, identify, and then mitigate the effects of landmines, minefields, and obstacles. This PE also conducts modeling and simulation activities to assess the effectiveness of system concepts. This PE supports the maturation and demonstration of enabling component and subsystems for countermine technologies in the areas of countermine and barrier development (project 608), and area denial sensors (project 683). Project 64C funds congressional special interest items. Work in this PE is related to and fully coordinated with PE 0602120A, (Sensors and Electronic Survivability), PE 0602624A, (Weapons and Munitions Technology), PE 0602712A, (Countermine Systems), PE 0602784A (Military Engineering Technology), PE 0603710A, (Night Vision Advanced Technology), and the US Marine Corps. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this PE is performed by the Army Research, Development, and Engineering Command (RDECOM)/Communications-Electronics Research, Development, and Engineering Center (CERDEC), Fort Belvoir, VA.

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<b>Exhibit R-2, PB 2011 Army RDT&amp;E Budget Item Justification</b>	<b>DATE:</b> February 2010
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603606A: <i>Landmine Warfare and Barrier Advanced Technology</i>
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**B. Program Change Summary (\$ in Millions)**

	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011 Base</u>	<u>FY 2011 OCO</u>	<u>FY 2011 Total</u>
Previous President's Budget	37.534	30.317	30.116	0.000	30.116
Current President's Budget	36.883	34.855	26.953	0.000	26.953
Total Adjustments	-0.651	4.538	-3.163	0.000	-3.163
• Congressional General Reductions		-0.182			
• Congressional Directed Reductions					
• Congressional Rescissions		0.000			
• Congressional Adds		4.720			
• Congressional Directed Transfers					
• Reprogrammings	0.190	0.000			
• SBIR/STTR Transfer	-0.841	0.000			
• Adjustments to Budget Years	0.000	0.000	-3.163	0.000	-3.163

**Change Summary Explanation**

FY10 funding increase is due to congressional adds.FY11 funding reduced to support higher priority Army initiatives.

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603606A: <i>Landmine Warfare and Barrier</i> <i>Advanced Technology</i>				<b>PROJECT</b> 608: <i>COUNTERMINE &amp; BAR DEV</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
608: <i>COUNTERMINE &amp; BAR DEV</i>	26.789	25.299	22.022	0.000	22.022	27.780	26.534	27.432	30.174	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Efforts in this project mature and demonstrate countermine technologies for finding and neutralizing surface and buried threats in varying vegetation, soil, weather, and diurnal conditions. Activities include remote/standoff detection of minefields and neutralization of booby traps, landmines, and minefields. This project also evaluates airborne threat detection sensors and matures them for lightweight plug-and-play use, on unmanned aerial systems (UASs) in mission specific applications. Efforts are supported by modeling and simulation assessments to define potential system effectiveness. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this PE is performed by the Army Research, Development, and Engineering Command (RDECOM)/Communications-Electronics Research, Development, and Engineering Center (CERDEC), Ft. Belvoir, VA. Minefield neutralization efforts are closely coordinated with Navy/US Marine Corps.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Threat Detection and Neutralization for Route Clearance: This effort demonstrates capabilities to detect and neutralize surface and shallow buried threats on primary and secondary roads from tactical standoff ranges. In FY09, continued development of detection and neutralization components and algorithms for the electro optic infrared (EO/IR) graphical user interface (GUI) to reduce operator workload; conducted series of demonstrations and selected the promising technologies for convoy escort and route clearance prototypes; demonstrated sensor fusion algorithms to reduce false alarm rates in high clutter/urban environments. In FY10, demonstrate standoff detection system integration concepts on manned ground vehicles; mature EO/IR GUI algorithms to improve system performance; mature radar fusion algorithms to reduce false alarms; and improve performance of grenade shape charge munitions from PE 0602712A, project H24 for standoff explosive neutralization capability. In FY11, will complete fabrication of prototypes for the standoff detection and standoff neutralization grenade technologies; and will perform tests and conduct demonstrations of the brassboards for the standoff detection and standoff neutralization grenade technologies as systems-of-systems concepts.	6.286	10.279	10.365	0.000	10.365

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603606A: <i>Landmine Warfare and Barrier</i> <i>Advanced Technology</i>	<b>PROJECT</b> 608: <i>COUNTERMINE &amp; BAR DEV</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #2</p> <p>Mine and Minefield Detection Payload for Tactical Unmanned Aerial Systems (TUAS): This effort provides the TUAS with a capability to detect booby traps, threat deployment activity, minefields and homemade explosives (HME). In FY09, conducted trade studies and modeling of sensor candidates to meet size, weight, and power constraints of a medium altitude TUAS airborne payload; matured sensors and algorithms tailored to sensor selection and mission; integrated sensor package for manned flight test. In FY10, perform flight testing/data collections on manned aircraft; mature algorithms based on sensor data collections and analysis; and complete detailed payload design. In FY11, will complete demonstrator payload build and sensor integration; will complete laboratory evaluation of payload; will integrate payload on a manned aircraft; will conduct initial flight testing in a relevant environment to baseline payload and target detection performance; and will complete the payload and begin testing to verify performance.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p>		7.931	8.157	5.047	0.000	5.047

**UNCLASSIFIED**

R-1 Line Item #46

Page 4 of 12

1433 of 1536

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603606A: <i>Landmine Warfare and Barrier</i> <i>Advanced Technology</i>	<b>PROJECT</b> 608: <i>COUNTERMINE &amp; BAR DEV</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #3</b>  Threat/Mine Detection for In Road Obstacles: This effort advances ground penetrating radar (GPR) and metal detection (MD) technologies integrated onto vehicles to detect the evolving underbelly threats on primary and secondary roads. This effort leverages the technology results from forward looking radar technology investigations under the Threat Detection and Neutralization for Route Clearance effort. In FY09, matured GPR capabilities by combining modules into vehicle sized sensor array; matured electromagnetic detection technologies for deeply buried in-road metallic threats while increasing on-route speeds; matured metal detection capabilities and began integration onto unmanned ground vehicle; demonstrated the improved unmanned GPR capability. In FY10, complete GPR demonstration; begin integration of a combined MD and GPR sensor suite which includes a modular lightweight mount to interface with tactical ground vehicles; begin fabrication of combined metal detection/GPR sensor. In FY11, will complete fabrication of system demonstrators for the integrated MD/GPR detection technologies; will perform tests and conduct demonstrations of a MD/GPR system on a manned ground vehicle.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010		12.572	6.293	6.610	0.000	6.610

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010				
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603606A: <i>Landmine Warfare and Barrier</i> <i>Advanced Technology</i>		<b>PROJECT</b> 608: <i>COUNTERMINE &amp; BAR DEV</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO								
Program #4 Small Business Innovative Research/Small Business Technology Transfer Programs  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO				0.000	0.570	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals				26.789	25.299	22.022	0.000	22.022
<b>C. Other Program Funding Summary (\$ in Millions)</b>								
N/A								
<b>D. Acquisition Strategy</b>								
N/A								

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R-1 Line Item #46

Page 6 of 12

1435 of 1536

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>		<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603606A: <i>Landmine Warfare and Barrier Advanced Technology</i>	<b>PROJECT</b> 608: <i>COUNTERMINE &amp; BAR DEV</i>

**E. Performance Metrics**

Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>			<b>R-1 ITEM NOMENCLATURE</b> PE 0603606A: <i>Landmine Warfare and Barrier Advanced Technology</i>				<b>PROJECT</b> 64C: <i>COUNTERMINE DEMONSTRATIONS (CA)</i>				
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
64C: <i>COUNTERMINE DEMONSTRATIONS (CA)</i>	6.837	4.695	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Congressional Interest Item funding for Countermine advanced technology development.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Advanced Demining Technology. In FY09, this Congressional Interest Item developed and integrated dual sensor deep search Unexploded Ordnance (UXO) detection system onto a robotic platform; improved clutter rejection and automatic target recognition (ATR) algorithms along with semi-autonomous navigation modules, and integrated onto robotic platform.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO	5.880	4.695	0.000	0.000	0.000
Program #2	0.957	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603606A: <i>Landmine Warfare and Barrier</i> <i>Advanced Technology</i>	<b>PROJECT</b> 64C: <i>COUNTERMINE DEMONSTRATIONS (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Enhanced Landmine and IED Detection Technology. In FY09, this Congressional Interest Item developed and integrated new land mine detection techniques into operational detection systems. The Enhanced Landmine and Improvised Explosive Device (IED) Detection system (eLIDS) increased the probability of detection and decreased false alarms, allowing potential threats to be more accurately and quickly classified.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
Accomplishments/Planned Programs Subtotals		6.837	4.695	0.000	0.000	0.000
<b>C. Other Program Funding Summary (\$ in Millions)</b>						
N/A						
<b>D. Acquisition Strategy</b>						
N/A						
<b>E. Performance Metrics</b>						
Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603606A: <i>Landmine Warfare and Barrier</i> <i>Advanced Technology</i>				<b>PROJECT</b> 683: <i>Area Denial Sensors</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
683: <i>Area Denial Sensors</i>	3.257	4.861	4.931	0.000	4.931	5.011	5.092	5.184	5.267	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Efforts in this project mature and demonstrate surveillance, command, and control technology components for alternative area protection systems that minimize the risk of injury or loss to non-combatants from exposure to anti-personnel landmines (APLs). The technology includes distributed personnel surveillance systems, and command and control systems to be used with man-in-the-loop overwatch fires. This project uses modeling and simulation to evaluate new concepts and modify doctrine. This project also constructs components, as well as system architectures and conducts evaluations at the system level in field tests. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this project is performed by the Army Research, Development, and Engineering Command (RDECOM)/Communications-Electronics Research, Development, and Engineering Center (CERDEC), Fort Belvoir, VA.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Area Denial Sensors: This effort provides demonstration of surveillance technology components for area protection systems that minimize the risk of injury or loss to non-combatants from exposure to anti-personnel landmines (APLs). In FY09, demonstrated detection and discrimination of combatant/noncombatant targets with testbed Unmanned Ground Sensors (UGS) in the laboratory environment; began development of next generation detection and discrimination target sensor system by conducting trade studies and analysis of candidate sensing approaches with the potential to meet power and bandwidth constraints as well as range and environment requirements. In FY10, continue development of personnel detection sensors and algorithms demonstration in laboratory environment; develop and assess concepts on how to use the sensors with alternative personnel landmine systems; and continue maturation of detection algorithms and sensors. In FY11, will fabricate sensor hardware and integrate algorithms into demonstrators; and will conduct initial laboratory tests in a simulated relevant environment of next generation sensor and discrimination system.	3.257	4.743	4.931	0.000	4.931

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603606A: <i>Landmine Warfare and Barrier</i> <i>Advanced Technology</i>	<b>PROJECT</b> 683: <i>Area Denial Sensors</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #2 Small Business Innovative Research/Small Business Technology Transfer Programs		0.000	0.118	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		3.257	4.861	4.931	0.000	4.931

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>		<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603606A: <i>Landmine Warfare and Barrier</i> <i>Advanced Technology</i>	<b>PROJECT</b> 683: <i>Area Denial Sensors</i>
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A		
<b>D. Acquisition Strategy</b> N/A		
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.		

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**Exhibit R-2, PB 2011 Army RDT&E Budget Item Justification** **DATE:** February 2010

<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603607A: <i>JOINT SERVICE SMALL ARMS PROGRAM</i>
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COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	8.568	8.949	9.151	0.000	9.151	8.436	8.326	8.479	8.616	0	69.676
627: <i>JT SVC SA PROG (JSSAP)</i>	8.568	8.949	9.151	0.000	9.151	8.436	8.326	8.479	8.616	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This program element (PE) matures and demonstrates advanced technologies that integrate into individual and crew served weapons for all Services. This PE supports the maturation and demonstration of Lightweight Small Arms Technologies (LSAT) that offer significantly reduced weight over the currently fielded weapons and ammunition. All efforts are based upon the Joint Service Small Arms Master Plan (JSSAMP), the Joint Capabilities Integration Development System's Small Arms Analysis, and the resulting Capabilities Development Documents for the Services. Work in this PE is related to and fully integrated with the efforts funded in PE 0602623A (Joint Service Small Arms Program) and PE 0602624A (Weapons and Munitions Technology). The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this PE is performed by the US Army Armament Research, Development, and Engineering Center (ARDEC), Picatinny Arsenal, NJ.

**B. Program Change Summary (\$ in Millions)**

	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011 Base</u>	<u>FY 2011 OCO</u>	<u>FY 2011 Total</u>
Previous President's Budget	8.781	8.996	9.195	0.000	9.195
Current President's Budget	8.568	8.949	9.151	0.000	9.151
Total Adjustments	-0.213	-0.047	-0.044	0.000	-0.044
• Congressional General Reductions		-0.047			
• Congressional Directed Reductions					
• Congressional Rescissions			0.000		
• Congressional Adds			0.000		
• Congressional Directed Transfers					
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.213	0.000			
• Adjustments to Budget Years	0.000	0.000	-0.044	0.000	-0.044

**UNCLASSIFIED**

R-1 Line Item #47

Page 1 of 5

1442 of 1536

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603607A: <i>JOINT SERVICE SMALL ARMS PROGRAM</i>				<b>PROJECT</b> 627: <i>JT SVC SA PROG (JSSAP)</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
627: <i>JT SVC SA PROG (JSSAP)</i>	8.568	8.949	9.151	0.000	9.151	8.436	8.326	8.479	8.616	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This project matures and demonstrates advanced technologies that provide greater lethality and range at a significantly reduced weight. These technologies lighten the Soldier's load, provide improved battlefield mobility, and reduce logistics burden while maintaining or improving current levels of performance. Work in this PE is related to and fully integrated with the efforts funded in PE 0602623A (Joint Service Small Arms Program) and PE 0602624A (Weapons and Munitions Technology). The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this PE is performed by the US Army Armament Research, Development, and Engineering Center (ARDEC), Picatinny Arsenal, NJ.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Lightweight Small Arms Systems (LSAS): This effort demonstrates caseless and case telescoped ammunition technologies for specific weapon systems and missions with goals to reduce the weapon and ammo weight, and to reduce training and maintenance costs Cased telescoped ammunition is a 100% polymer cylindrical shaped case, inside of which are the projectile (i.e., telescoped inward) and the propellant, with a standard mechanical primer located at the base. The caseless cartridge also uses a telescoped bullet arrangement. A specialized High Ignition Temperature Propellant (HITP) provides not only the propulsive energy, but also serves as the cartridge structure and exterior surface. In FY09, matured and demonstrated improved caseless ammunition formulation, fabricated small quantities of ammunition and weapons prototypes in order to conduct additional testing of hardware and validate design and analyses; began to assess integration of technologies being developed under PE 0602623A such as graphite foam, improved lethality projectiles, and recoilless components. In FY10, demonstrate TRL 5 for both the new caseless ammunition-firing lightweight machine gun and caseless ammunition, begin fabrication of 8 cased telescoped ammunition-firing lightweight machineguns and 100K rounds of cased telescoped ammo, design and fabricate lightweight carbine and continue integration of successful components tested from PE 0602623A into lightweight machinegun; refine the design of the caseless ammunition formulation and evaluate in existing	7.319	7.206	7.397	0.000	7.397

**UNCLASSIFIED**

R-1 Line Item #47

Page 2 of 5

1443 of 1536



**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603607A: <i>JOINT SERVICE SMALL ARMS PROGRAM</i>	<b>PROJECT</b> 627: <i>JT SVC SA PROG (JSSAP)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #3 Small Business Innovative Research/Small Business Technology Transfer Programs		0.000	0.217	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		8.568	8.949	9.151	0.000	9.151

**UNCLASSIFIED**

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>		<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603607A: <i>JOINT SERVICE SMALL ARMS PROGRAM</i>	<b>PROJECT</b> 627: <i>JT SVC SA PROG (JSSAP)</i>
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A		
<b>D. Acquisition Strategy</b> N/A		
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.		

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**Exhibit R-2, PB 2011 Army RDT&E Budget Item Justification** **DATE:** February 2010

<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603710A: <i>NIGHT VISION ADVANCED TECHNOLOGY</i>
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COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	69.778	72.250	39.912	0.000	39.912	37.378	42.550	47.350	52.084	0	401.214
K70: <i>NIGHT VISION ADV TECH</i>	22.974	24.542	24.491	0.000	24.491	20.731	25.599	28.105	30.570	Continuing	Continuing
K73: <i>NIGHT VISION SENSOR DEMONSTRATIONS (CA)</i>	30.898	32.132	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
K86: <i>NIGHT VISION, ABN SYS</i>	15.906	15.576	15.421	0.000	15.421	16.647	16.951	19.245	21.514	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Efforts in this program element (PE) mature and demonstrate sensor technology that increase Warfighter survivability and lethality by providing sensor capabilities to acquire and engage targets at longer ranges in complex environments and conditions (e.g. day/night, obscured, smoke, adverse weather). This PE pursues technologies that improve the Soldier's ability to see at night, and provide rapid wide area search, multispectral aided target detection (AiTD), and passive long range target identification (ID beyond threat detection) in both an air and ground test-beds (project K70). This PE also matures and evaluates sensors and algorithms designed to detect targets (vehicles, personnel) in camouflage, concealment and deception from airborne platforms, and provides pilotage and situational awareness imagery to multiple pilots/crew members independently for enhanced crew/aircraft operations in day/night/adverse weather conditions (project K86). Project K73 funds congressional special interest items. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this PE is related to and fully coordinated with efforts in PE 0602709A (Night Vision and Electro-Optics Technology), PE 0602270A (Electronic Warfare Technology), PE 0603774A (Night Vision Systems Advanced Development), PE 0604710A (Night Vision Systems Engineering Development), and PE 0603005A (Combat Vehicle and Automotive Advanced Technology). Work in this PE is performed by the Army Research, Development, and Engineering Command (RDECOM)/Communications-Electronics Research, Development, and Engineering Center (CERDEC) /Night Vision and Electronic Sensors Directorate (NVESD), Fort Belvoir, VA.

**UNCLASSIFIED**

**UNCLASSIFIED**

<b>Exhibit R-2, PB 2011 Army RDT&amp;E Budget Item Justification</b>	<b>DATE:</b> February 2010
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603710A: <i>NIGHT VISION ADVANCED TECHNOLOGY</i>
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**B. Program Change Summary (\$ in Millions)**

	<u><b>FY 2009</b></u>	<u><b>FY 2010</b></u>	<u><b>FY 2011 Base</b></u>	<u><b>FY 2011 OCO</b></u>	<u><b>FY 2011 Total</b></u>
Previous President's Budget	70.682	40.329	43.478	0.000	43.478
Current President's Budget	69.778	72.250	39.912	0.000	39.912
Total Adjustments	-0.904	31.921	-3.566	0.000	-3.566
• Congressional General Reductions		-0.379			
• Congressional Directed Reductions					
• Congressional Rescissions		0.000			
• Congressional Adds		32.300			
• Congressional Directed Transfers					
• Reprogrammings	0.866	0.000			
• SBIR/STTR Transfer	-1.770	0.000			
• Adjustments to Budget Years	0.000	0.000	-3.566	0.000	-3.566

**Change Summary Explanation**

FY10 Congressionally directed increases.

**UNCLASSIFIED**

R-1 Line Item #48

Page 2 of 25

1448 of 1536



**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603710A: <i>NIGHT VISION ADVANCED TECHNOLOGY</i>				<b>PROJECT</b> K70: <i>NIGHT VISION ADV TECH</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
K70: <i>NIGHT VISION ADV TECH</i>	22.974	24.542	24.491	0.000	24.491	20.731	25.599	28.105	30.570	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Efforts in this project mature and demonstrate high-performance integrated sensor/multi-sensor technologies to increase target detection range, extend target identification range, and reduce target acquisition (TA) timelines for dismounted Soldiers and tactical vehicles against threats that are beyond today's detection ranges or are partially obscured by terrain, weather or other features. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this project is performed by the Army Research, Development, and Engineering Command (RDECOM)/Communications-Electronics Research, Development, and Engineering Center (CERDEC) /Night Vision and Electronic Sensors Directorate (NVESD), Fort Belvoir, VA.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Soldier Mobility Vision System: This effort matures and demonstrates a low power prototype visible/near infrared (IR) helmet-mounted vision system with full field-of-view (40 degree minimum), digitally-fused uncooled long wave infrared (IR), and image intensified (I2) visible/near IR helmet-mounted vision system to provide mobility, target detection, and situational awareness in complex terrain. In FY09, completed the integration of Soldier vision technologies; conducted technical performance testing, and user evaluations; and transitioned technologies to the PEO Soldier Digital Enhanced Night Vision Goggle program.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010	5.054	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010				
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603710A: <i>NIGHT VISION ADVANCED TECHNOLOGY</i>		<b>PROJECT</b> K70: <i>NIGHT VISION ADV TECH</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>								
<p>Program #2</p> <p>Sensor and Information Fusion for Improved Hostile Fire Situational Awareness: This effort builds on existing distributed aperture system (DAS) architecture and demonstration hardware to demonstrate mature and evaluate automated pop up target detection algorithms and a 360 degree by 90 degree digital video recording capability with enabling gunfire detection and audible sensing on a vehicle platform. In FY09, conducted trade off analyses of sensor and system design approaches; completed modeling and simulation of human factors and operator cognitive loading of information; demonstrated system architecture and planned interfaces; and began hardware development efforts to provide improved situational awareness, reconnaissance, surveillance, and targeting information for the vehicle commander and crew in the urban fight. In FY10, complete hardware development efforts; mature and demonstrate driving and situational awareness (SA) indirect vision / drive-by-wire / driver assist design concepts and guidelines, with a local SA display for dismounted Soldiers.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p>				1.456	1.473	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603710A: <i>NIGHT VISION ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> K70: <i>NIGHT VISION ADV TECH</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<p>Program #3</p> <p>Miniature Target Acquisition, Far Target Locator System: This effort matures and demonstrates a miniature light weight, low- powered, hand held far target locator system, to include real-time adaptive Visible Near Infrared/ Short Wave Infrared/Long Wave Infrared (VNIR/ SWIR/LWIR) sensor fusion, a laser range-finder/marker/ illuminator, embedded gaps, target position determination, image and video transmission/reception/display, and electronic zoom with super-resolution capabilities. In FY09, conducted series of field tests/data collections to demonstrate the required SWIR and laser phenomenology necessary for target detection capability of hard to find targets; and developed and demonstrated an interface with existing/developmental dismounted Soldier communication systems for real time video/image transmission.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>		1.686	0.000	0.000	0.000	0.000
<p>Program #4</p> <p>Laser Designator Technology: This effort leverages US Army investments in low power laser designation technology to provide advanced lightweight target detection and call for fire capability. In FY09, conducted</p>		8.117	6.706	4.344	0.000	4.344

**UNCLASSIFIED**

R-1 Line Item #48

Page 5 of 25

1451 of 1536

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603710A: <i>NIGHT VISION ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> K70: <i>NIGHT VISION ADV TECH</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>trade-off analyses on the range and size, weight and power requirement for Target Location Designation System (TLDS) of small pixel (12m) large format (1280x 720) cooled midwave infrared (MWIR) versus small pixel (17m) medium format (640X480) uncooled longwave infrared (LWIR) thermal sensors; began fabrication of the thermal sensors; conducted testing in an operational field environment, the small pixel, large format cooled MWIR thermal sensor; began fabrication of lightweight, clip-on common designator module (CDM) to provide improvement in North finding and azimuth accuracy; began far target location improvement program development effort to reduce target location error. In FY10, complete fabrication and demonstrate small pixel medium format cooled MWIR and uncooled LWIR thermal sensors for target performance; demonstrate prototype of lightweight clip-on CDM; continue the development of the far target location effort, and assess far target location performance efforts. In FY11, will demonstrate reduced size, weight and power of the TLDS Azimuth &amp; Vertical Angle Module (AVAM) that matures a far target location (FTL) technology; will demonstrate all the TLDS technology capabilities simultaneously in the medium brass-board system; and will evaluate the small pixel, large format uncooled MWIR thermal sensor target acquisition.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
Program #5		6.661	9.784	10.677	0.000	10.677

**UNCLASSIFIED**

**UNCLASSIFIED**

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Urban Sensor Suite: This effort develops and integrates 360 degree closed hatch vision capability with real time acoustic and non -real time on-the-move (OTM) moving target indicator (MTI) threat detection and cueing sensors and algorithms, high resolution interrogation sensors (for slew to cue identification), improved resolution driving sensors, and high bandwidth video capture capabilities in urban operations for improved survivability, lethality. In FY09, completed trade off analyses of sensor and system design approaches; defined system architecture and interfaces; completed modeling and simulation of human factors and operator cognitive work loading; conducted analysis for threat detection sensors, algorithms, high resolution interrogation sensors, and video architectures and capture technologies; began system design/integration and mature hardware concepts. In FY10, evaluate threat detection sensors and baseline acoustic cueing, non -real time OTM MTI and slew to cue algorithm performance; integrate baseline detection sensors and acoustic cueing algorithms into vehicle demonstration platform; conduct demonstration of integrated detection and slew capabilities; demonstrate baseline 360 degrees video capture approach for improved situational awareness while OTM; mature and integrate the acoustic cueing sensor system. In FY11, will complete development of system architecture, hardware, and software for integrated processing of video and multiple threat detection alerts (acoustic/ MTI); will complete integration of improved resolution driving cameras, high resolution slew to cue camera, and weapons fire detection sensors; will complete maturation of software for graphical user interface with camera and sensors to assess threat detection and discrimination of imagery analysis; and will complete integration, maturation, and demonstration of detection systems on vehicle platform.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p>						

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #6</b>  Weapon Sight Technology: This effort develops, integrates, and demonstrates critical components for the next generation of weapon sight systems for mounted and dismounted Soldier use. In FY10, develop and mature optical augmentation (OA) sensor and hardware; begin Phase I weapon sight (WS) as defined in design studies and configuration definition; conduct technical evaluation of included technologies; and evaluate and select the optimum technology demonstrator for system integration. In FY11, will continue OA hardware prototype integration for demonstration and user evaluation; will begin phase II weapon sight prototype hardware integration of down-selected configurations for dismounted and crew served applications; will mature and demonstrate enhancement in Soldier situational awareness through increased target detection and engagement technologies; and will conduct laboratory tests and assess the weapon sight system.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	6.015	9.470	0.000	9.470
<b>Program #7</b>  Small Business Innovative Research/Small Business Technology Transfer Programs		0.000	0.564	0.000	0.000	0.000

**UNCLASSIFIED**

R-1 Line Item #48

Page 8 of 25

1454 of 1536

**UNCLASSIFIED**

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603710A: <i>NIGHT VISION ADVANCED TECHNOLOGY</i>		<b>PROJECT</b> K70: <i>NIGHT VISION ADV TECH</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009								
<i>FY 2010 Plans:</i> FY 2010								
<i>Base FY 2011 Plans:</i> FY 2011 Base								
<i>OCO FY 2011 Plans:</i> FY 2011 OCO								
Accomplishments/Planned Programs Subtotals				22.974	24.542	24.491	0.000	24.491
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A								
<b>D. Acquisition Strategy</b> N/A								
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.								

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Exhibit R-2A, PB 2011 Army RDT&E Project Justification								DATE: February 2010			
APPROPRIATION/BUDGET ACTIVITY			R-1 ITEM NOMENCLATURE					PROJECT			
2040: Research, Development, Test & Evaluation, Army BA 3: Advanced Technology Development (ATD)			PE 0603710A: NIGHT VISION ADVANCED TECHNOLOGY					K73: NIGHT VISION SENSOR DEMONSTRATIONS (CA)			
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
K73: NIGHT VISION SENSOR DEMONSTRATIONS (CA)	30.898	32.132	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>A. Mission Description and Budget Item Justification</b>											
Congressional Interest Item funding for Night Vision advanced technology development.											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
							FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011
Program #1  Enhanced Digital Electronic Night-Vision (EDEN): In FY09, this Congressional Interest Item developed, integrated, and fabricated a brass-board sensor platform consisting of frequency-agile, visible near infrared/short wave infrared (VNIR/SWIR) hyperspectral imaging fused with traditional broadband imagery for lightweight ground vehicle applications.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO							1.595	0.000	0.000	0.000	0.000
Program #2							1.595	1.591	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603710A: <i>NIGHT VISION ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> K73: <i>NIGHT VISION SENSOR DEMONSTRATIONS (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Hyperspectral Sensors for Improved Force Protection (Hyper-IFP): In FY09, this Congressional Interest Item developed the SWIR hyperspectral sensor package that detects changes in human skin, integrated into the CERBERUS (tower mounted force protection system) architecture to investigate the processing of signatures from existing force protection sensors in new and unique ways to pull more/different targets out of the clutter.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #3</p> <p>FCS Short Range Electro Optic (SREO) Sensor for Stryker: In FY09, this Congressional Interest Item demonstrated Future Combat Systems Short Range Electro-Optic (FCS SREO) development and integration of 3rd Generation Forward Looking infrared technology on FCS and Current Force vehicle platforms.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p>		1.595	0.000	0.000	0.000	0.000

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**UNCLASSIFIED**

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #4</b>  Personal Miniature Thermal Viewer (PMTV): In FY09, this Congressional Interest Item built medical imager systems based on PMTV technology and delivered to Deployed Combat Casualty Research Team, 332d EMDG, Joint Base Balad, Iraq for use in a triage screening application.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.595	0.000	0.000	0.000	0.000
<b>Program #5</b>  Smart Data Project: Real-Time Geospatial Video Sensor Intelligence: In FY09, this Congressional Interest Item conducted testing, evaluation, and demonstration of the secure transmission, storage, retrieval, and battlefield exploitation of real-time digital video from Unmanned Aerial Systems (UAS) in a relevant environment.		0.797	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #6  Brownout Situational Awareness Sensor: In FY09, this Congressional Interest Item developed the range and field of view performance of the Brown-out Situational Awareness System (BSAS). Continued to ruggedize, repackag, and reduce the weight, size, and cost of the BSAS brass-board.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.595	2.388	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Program #7</p> <p>Night Vision Advanced Technology Research: In FY09, this Congressional Interest Item developed and demonstrated combined midwave and longwave infrared sensor capabilities for the Q2 airborne turret; developed hyperspectral sensors for tagging, tracking, and locating technologies that supports the concepts to track terrorists over a wide area once they have been identified; developed persistent imaging concepts for unmanned/unattended platforms; developed a thermal imager that can be clipped-on to existing image intensifier goggles to provide dismounted forces an infrared search capability while retaining night vision capability.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>		11.960	8.953	0.000	0.000	0.000
<p>Program #8</p> <p>InfraRed Goggle Upgrade System (IRGUS): In FY09, this Congressional Interest Item developed and demonstrated the miniaturization of the thermal imager electronics and built additional systems for user evaluations.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p>		0.797	0.000	0.000	0.000	0.000

**UNCLASSIFIED**

**UNCLASSIFIED**

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603710A: <i>NIGHT VISION ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> K73: <i>NIGHT VISION SENSOR DEMONSTRATIONS (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #9</b>  Mini-Long-Range Advanced Scout Surveillance System (LRAS3): In FY09, this Congressional Interest Item developed brass-board of Mini- LRAS3 optical sensor.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.594	0.000	0.000	0.000	0.000
<b>Program #10</b>		1.994	0.000	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603710A: <i>NIGHT VISION ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> K73: <i>NIGHT VISION SENSOR DEMONSTRATIONS (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Passive Infrared (IR) Sensor for Persistent Wide Area Surveillance: In FY09, this Congressional Interest Item integrated a Passive Infrared Search and Track (IRST) sensor into the "CERBERUS" architecture/platform and tested the entire platform where the passive IRST sensor replaced the active radar as the search/detection sensor.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #11</p> <p>Smart Sensor Supercomputing Center: In FY09, this Congressional Interest Item matured, tested, and evaluated the algorithms for detecting, classifying, and tracking human and vehicular targets in very high clutter. Demonstrated the smart sensor processing on low cost sensors for high quality performance, on Marine radar used over land.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p>		5.781	7.958	0.000	0.000	0.000

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**UNCLASSIFIED**

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603710A: <i>NIGHT VISION ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> K73: <i>NIGHT VISION SENSOR DEMONSTRATIONS (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #12 Buster Backpack. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	0.795	0.000	0.000	0.000
Program #13 Enhanced Driver Situational Awareness. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009		0.000	0.796	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603710A: <i>NIGHT VISION ADVANCED TECHNOLOGY</i>		<b>PROJECT</b> K73: <i>NIGHT VISION SENSOR DEMONSTRATIONS (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO								
Program #14 Microterrain Persistent Surveillance. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO				0.000	1.592	0.000	0.000	0.000
Program #15 Compact Airborne Multi-Mission Payload (CAMP). This is a Congressional Interest Item.				0.000	1.592	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603710A: <i>NIGHT VISION ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> K73: <i>NIGHT VISION SENSOR DEMONSTRATIONS (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #16 Night Vision and Electronic Sensors Directorate. This is a Congressional Interest Item.		0.000	1.990	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #17		0.000	4.477	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603710A: <i>NIGHT VISION ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> K73: <i>NIGHT VISION SENSOR DEMONSTRATIONS (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Bradley Third Generation FLIR. This is a Congressional Interest Item.						
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		30.898	32.132	0.000	0.000	0.000
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>D. Acquisition Strategy</b> N/A						
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603710A: <i>NIGHT VISION ADVANCED TECHNOLOGY</i>				<b>PROJECT</b> K86: <i>NIGHT VISION, ABN SYS</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
K86: <i>NIGHT VISION, ABN SYS</i>	15.906	15.576	15.421	0.000	15.421	16.647	16.951	19.245	21.514	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Efforts in this project mature and demonstrate intelligence, surveillance, reconnaissance, targeting, and pilotage technologies in support of the Army's aviation and networked systems. This project matures and demonstrates technology efforts that focus on improved reconnaissance, surveillance and target acquisition and night pilotage sensors, high-resolution heads-up displays, sensor fusion, and aided target recognition (AiTR) capabilities for attack, scout, cargo, and utility helicopters and unmanned aerial systems (UASs). UAS payload efforts mature and demonstrate small, lightweight, modular, payloads (electro-optical/infrared, laser radar, designator) to support target detection, identification, location, tracking, and targeting of tactical targets for the Brigade Combat Team. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this project is performed by the Army Research, Development, and Engineering Command (RDECOM)/Communications-Electronics Research, Development, and Engineering Center (CERDEC) /Night Vision and Electronic Sensors Directorate (NVESD), Fort Belvoir, VA.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Objective Pilotage for Utility and Lift (OPUL): This effort develops, integrates, tests, and demonstrates a sensor suite that provides multi-pilot helicopters and crews simultaneous multi-user, wide field of regard imagery of the immediate surroundings. The OPUL system is designed for pilotage and navigation, providing advanced sensors for improved image quality under degraded and brown out conditions. In FY09, integrated sensor suite onto a helicopter testbed; conducted flight evaluation to perform engineering checkout; assessed integration and sensor suite performance; studied human factors aspect of multi-sensor, multi-spectral, eye points and their impact on mission performance; and conducted limited user flight assessment. In FY10, complete human factors performance studies; and conduct extensive flight evaluations and demonstrations with varying mission scenarios and environmental conditions.  <i>FY 2009 Accomplishments:</i> FY 2009	7.025	4.234	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010				
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603710A: <i>NIGHT VISION ADVANCED TECHNOLOGY</i>		<b>PROJECT</b> K86: <i>NIGHT VISION, ABN SYS</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>								
<p>Program #2</p> <p>Advanced Lasers for Unmanned Aerial System (UAS) Payloads: This effort develops, integrates, and demonstrates an advanced target acquisition and designation laser payload to satisfy the reconnaissance, surveillance, and target acquisition (RSTA) mission requirements for the Class I unmanned aerial system (UAS) customized to a 7 lb payload capacity. In FY09, validated performance of the laser designator (LD)/laser range finder components in a relevant environment, and demonstrated proof-of-principle RSTA and LD payload brass-board; finalized RSTA and LD payload system design; and conducted initial demonstrations of the laser, detector, and pointing/stabilization subsystems. In FY10, validate performance of micro-turret payload laser, and imaging and stabilization components, and integrate them into a unified package; complete transition and incorporation into the Advanced Demonstrator Payload of the laser designator/laser rangefinder component into the Advanced Demonstrator Payload; and mature and test compact 2-axis laser/infrared stabilized payload components. In FY11, will complete manufacturing and integration of the advanced demonstrator payload brass-board sensors; will characterize and flight test the payloads in a relevant environment.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p>				8.881	9.029	5.294	0.000	5.294

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010				
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603710A: <i>NIGHT VISION ADVANCED TECHNOLOGY</i>		<b>PROJECT</b> K86: <i>NIGHT VISION, ABN SYS</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO								
<b>Program #3</b>  Airborne Unmanned Persistent Imaging: This effort demonstrates day and night persistent surveillance imaging (PSI) and enhanced reconnaissance, surveillance, and target acquisition (RSTA) capabilities from a single payload on the extended range/multi-purpose (ER/MP) unmanned aerial system (UAS). In FY10, mature step -stare software; and begin intelligent, tiered data processing development and hardware design trade studies. In FY11, will complete step- stare and ground-based processing software; will demonstrate brass-board for tracking, image compression, and scene segmentation software; and will finalize designs for tiered data processing and integrate designs for the 3rd generation focal plane array.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO				0.000	1.981	7.224	0.000	7.224
<b>Program #4</b>				0.000	0.000	2.903	0.000	2.903

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603710A: <i>NIGHT VISION ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> K86: <i>NIGHT VISION, ABN SYS</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Multi-mode system Payloads for Enhanced Targeting: This effort demonstrates improved targeting capabilities, (especially against difficult camouflage, concealment, and defilade targets), by combining the wide area search and identification capabilities of hyperspectral imaging with the three dimensional target identification and through foliage/camouflage capabilities of laser radar (LADAR) for target range interrogation). In FY11, will leverage and mature mono-block laser technology to begin the development of a compact multi-function laser capable of providing standard eye-safe range-finding and LADAR laser functions.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #5 Small Business Innovative Research/Small Business Technology Transfer Programs</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p>		0.000	0.332	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603710A: <i>NIGHT VISION ADVANCED TECHNOLOGY</i>	<b>PROJECT</b> K86: <i>NIGHT VISION, ABN SYS</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		15.906	15.576	15.421	0.000	15.421
<b>C. Other Program Funding Summary (\$ in Millions)</b>						
N/A						
<b>D. Acquisition Strategy</b>						
N/A						
<b>E. Performance Metrics</b>						
Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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**Exhibit R-2, PB 2011 Army RDT&E Budget Item Justification** **DATE:** February 2010

<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603728A: <i>Environmental Quality Technology Demonstrations</i>
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COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	16.782	16.121	15.878	0.000	15.878	18.709	16.569	16.882	17.177	0	133.996
002: <i>ENVIRONMENTAL COMPLIANCE TECHNOLOGY</i>	2.027	2.117	2.131	0.000	2.131	2.194	2.253	2.300	2.345	Continuing	Continuing
025: <i>POLLUTION PREVENTION TECHNOLOGY</i>	3.509	3.621	3.659	0.000	3.659	3.718	3.780	3.847	3.907	Continuing	Continuing
03E: <i>ENVIRONMENTAL RESTORATION TECHNOLOGY</i>	9.650	9.886	10.088	0.000	10.088	12.797	10.536	10.735	10.925	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This program element (PE) matures and demonstrates technologies that assist Army installations in becoming environmentally compatible without compromising the readiness or training critical to the success of the future force. This program includes technology demonstrations for: restoration of sites contaminated with toxic and/or hazardous materials (such as unexploded ordnance [UXO]) resulting from Army operations; pollution prevention to minimize the Army's use and generation of toxic chemicals and hazardous wastes; compliance with environmental laws by control, treatment, and disposal of hazardous waste products; and conservation of natural and cultural resources while providing a realistic environment for mission activities. This program demonstrates technological feasibility, assesses the technology and its producibility, and transitions mature technologies from the laboratory to installations. Technologies developed by this program element improve the Army's ability to achieve environmental restoration and compliance at its installations, at active and inactive ranges and other training lands, and at its rework and production facilities. Technologies demonstrated focus on reducing the cost of treating hazardous effluents and remediating Army sites contaminated by hazardous/toxic material. Technologies demonstrated within this program element are transitioned from PE 0602720A (Environmental Quality Technology). The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, the Army Science and Technology Master Plan, and supports the Army Strategy for the Environment. Work in this PE is performed by the US Army Engineer Research and Development Center (ERDC), Vicksburg, MS, and the US Army Research, Development, and Engineering Command (RDECOM), Aberdeen Proving Ground, MD.

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<b>Exhibit R-2, PB 2011 Army RDT&amp;E Budget Item Justification</b>	<b>DATE:</b> February 2010
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603728A: <i>Environmental Quality Technology Demonstrations</i>
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**B. Program Change Summary (\$ in Millions)**

	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011 Base</u>	<u>FY 2011 OCO</u>	<u>FY 2011 Total</u>
Previous President's Budget	15.468	15.706	16.023	0.000	16.023
Current President's Budget	16.782	16.121	15.878	0.000	15.878
Total Adjustments	1.314	0.415	-0.145	0.000	-0.145
• Congressional General Reductions		-0.085			
• Congressional Directed Reductions					
• Congressional Rescissions		0.000			
• Congressional Adds		0.500			
• Congressional Directed Transfers					
• Reprogrammings	1.595	0.000			
• SBIR/STTR Transfer	-0.281	0.000			
• Adjustments to Budget Years	0.000	0.000	-0.145	0.000	-0.145

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603728A: <i>Environmental Quality Technology Demonstrations</i>				<b>PROJECT</b> 002: <i>ENVIRONMENTAL COMPLIANCE TECHNOLOGY</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
002: <i>ENVIRONMENTAL COMPLIANCE TECHNOLOGY</i>	2.027	2.117	2.131	0.000	2.131	2.194	2.253	2.300	2.345	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This project matures and demonstrates technologies transitioned from PE 0602720A (Environmental Quality Technology), projects 048 and 896 that assist Army installations in achieving environmental compliance. These technologies reduce the cost of treating hazardous effluents from Army installations, including forward operating bases, to satisfy increasingly stringent waste, wastewater and air pollutant discharge requirements. Army facilities are subject to fines and facility shutdowns for violation of federal, state, and local environmental regulations. This technology is essential to control and reduce the generation of waste to satisfy hazardous waste reduction goals, and to avoid future environmental costs and liabilities to the Army. Efforts under this project enable the Army to reduce environmental constraints at installations while complying with the myriad of federal, state, and host country environmental regulations and policy. Technologies demonstrated also reduce the cost of resolving training noise compliance issues for the Army, avoid reductions in availability of training facilities, and sustain the viability of testing and training ranges as well as protect the critical resources, i.e. land, air, and waters of the Army. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, the Army Science and Technology Master Plan, and supports the Army Strategy for the Environment. Work in this project is performed by the US Army Engineer Research and Development Center (ERDC), Vicksburg, MS.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Installation Operations: Demonstrate environmentally safe and cost-effective technologies to manage and reduce the increase in noise and pollution concerns associated with training ranges. In FY09, completed complaint risk guidelines and a new noise modeling calculation engine for peak noise events based on statistical data and numerical analysis propagation algorithms. Developed new noise complaint criteria to provide defensible guidelines regarding appropriate installation action in response to noise complaints, to maintain both amicable community relations and mission accomplishment. Completed large-scale propagation demonstration to provide foundational weather and blast noise data to enable improved understanding and prediction algorithms for blast noise from training and testing. In FY10, develop and utilize a cell-based sensor for detecting toxins with on-board reactive oxygen species electrode. Develop a portable device to measure low frequency characteristics of	2.027	2.100	2.131	0.000	2.131

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603728A: <i>Environmental Quality Technology Demonstrations</i>	<b>PROJECT</b> 002: <i>ENVIRONMENTAL COMPLIANCE TECHNOLOGY</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>ground surfaces to provide accurate single event noise assessments for managing the training noise environment. In FY11, will complete integration of cell-based sensor components and will initiate a test phase for field evaluation of perchlorate and lead. Will initiate demonstration of noise mapping software utilizing real-time meteorology to enable the Army's Operational Noise Program and Sustainable Range Program.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #2 Small Business Innovative Research/Small Business Technology Transfer Programs</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p>		0.000	0.017	0.000	0.000	0.000

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**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603728A: <i>Environmental Quality Technology Demonstrations</i>	<b>PROJECT</b> 002: <i>ENVIRONMENTAL COMPLIANCE TECHNOLOGY</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		2.027	2.117	2.131	0.000	2.131
<b>C. Other Program Funding Summary (\$ in Millions)</b>						
N/A						
<b>D. Acquisition Strategy</b>						
N/A						
<b>E. Performance Metrics</b>						
Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603728A: <i>Environmental Quality Technology Demonstrations</i>				<b>PROJECT</b> 025: <i>POLLUTION PREVENTION TECHNOLOGY</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
025: <i>POLLUTION PREVENTION TECHNOLOGY</i>	3.509	3.621	3.659	0.000	3.659	3.718	3.780	3.847	3.907	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This project matures and demonstrates pollution prevention advanced technologies required for sustainable operation of Army weapon systems, to include compliance with regulations mandated by federal, state, and local environmental and health laws. Technology thrusts under this project include: demonstration of new coating materials, systems, and processes to exceed all existing, new and projected national laws and local regulations and demonstration of advanced technologies to enable sustainment of propellant, explosive and pyrotechnic production and maintenance facilities and training ranges through elimination or significant reduction of environmental impacts. These technologies will ensure that advanced energetic materials required for future force's high performance munitions are developed that meet weapons lethality and survivability goals and that are compliant with environmental and health laws. The project transitions technologies from PE 0602720A, project 895. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, the Army Science and Technology Master Plan, and supports the Army Strategy for the Environment. Work in this project is performed by the Research, Development, and Engineering Command's (RDECOM) Army Research Laboratory (ARL), Aberdeen, MD, Armaments Research, Development, and Engineering Center (ARDEC), Picatinny Arsenal, NJ, Aviation and Missile Research, Development, and Engineering Center (AMRDEC), Huntsville, AL, and Edgewood Chemical Biological Center (ECBC), Edgewood, MD.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Sustainable Painting Operations: In FY09, matured advanced hazardous air pollutant (HAP)-free primer and topcoat formulations for all applications of the chemical agent resistant coating system. Efforts in this area transition to PE 0603804A, project K42. Conventional Ammunition: In FY09, scaled up synthesis to kilogram quantities of environmentally benign Royal Demolition Explosive (RDX) replacement candidates, to include high nitrogen compounds, for demonstration in munitions. In FY10, assess performance of potential RDX replacements in representative compositions. In FY11, will perform material qualification testing and assess performance of representative compositions for eventual transition into an end-item. Pyrotechnics: In FY09, refined processing techniques. In FY10, evaluate low-toxicity colored smoke formulations in a relevant	3.509	3.519	3.659	0.000	3.659

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R-1 Line Item #49

Page 6 of 14

1477 of 1536

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603728A: <i>Environmental Quality Technology Demonstrations</i>	<b>PROJECT</b> 025: <i>POLLUTION PREVENTION TECHNOLOGY</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>environment. In FY11, will demonstrate a perchlorate-free countermeasure in a relevant end-item. Rocket and Missile Propellants: In FY09, demonstrated gelled hydrazine monopropellant replacement. In FY10, demonstrate hypergolic propulsion system as potential alternative to ammonium perchlorate. In FY11, will develop flight-scale hardware for hydrazine and ammonium perchlorate replacement rocket motors.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #2 Small Business Innovative Research/Small Business Technology Transfer Programs</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p>		0.000	0.102	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603728A: <i>Environmental Quality Technology Demonstrations</i>	<b>PROJECT</b> 025: <i>POLLUTION PREVENTION TECHNOLOGY</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		3.509	3.621	3.659	0.000	3.659
<b>C. Other Program Funding Summary (\$ in Millions)</b>						
N/A						
<b>D. Acquisition Strategy</b>						
N/A						
<b>E. Performance Metrics</b>						
Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603728A: <i>Environmental Quality Technology Demonstrations</i>				<b>PROJECT</b> 03E: <i>ENVIRONMENTAL RESTORATION TECHNOLOGY</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
03E: <i>ENVIRONMENTAL RESTORATION TECHNOLOGY</i>	9.650	9.886	10.088	0.000	10.088	12.797	10.536	10.735	10.925	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

This project will mature and demonstrate technologies transitioned from PE 0602720A (Environmental Quality Technology), project 835 that improve the Army's ability to achieve cost-effective environmental restoration and management of contamination resulting from Army training or operations at its installations, active and inactive ranges, its rework and production facilities, and on the battlefield. Advanced development activities address the management/mitigation of materials released to the natural environment and residual environmental effects of military training and operations. The emphasis of this effort includes restoration of legacy materials, e.g. traditional explosives and energetic; management of new materials, e.g., nanomaterials and emerging contaminants; and mitigation of residual impacts from implementation of sustainable technologies and processes. Technologies matured within this project enable the Army to cost effectively address current and future environmental liabilities resulting from the use of militarily relevant materials in the environment and implementation of the new family of sustainable technologies for energy production. Current and planned efforts enable the Army to efficiently characterize, evaluate, assess, and remediate soil and groundwater at installations, ranges, facilities, and during battlefield operations. Efforts also identify ways to economically comply with the myriad of federal, state, and host country regulations dealing with contaminated soil and groundwater. A key aspect of this work is the enhancement of risk assessment and life cycle analysis techniques that can more accurately display the environmental liabilities associated with fielding new systems and technologies. This program includes pilot scale field studies to establish technological feasibility and assess performance and productivity of the risk assessment techniques. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, the Army Science and Technology Master Plan, and supports the Army Strategy for the Environment. Work in this project is performed by the US Army Engineer Research and Development Center (ERDC), Vicksburg, MS.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Unexploded Ordnance (UXO): In FY09, conducted field evaluations of specialized instrumentation for targets, berms, and bunkers for monitoring impacts and condition assessment. Investigated innovative technologies for range unexploded ordnances (UXO) maintenance and for mitigation of unique and emerging UXO. In FY10, identify range monitoring and maintenance systems for sustainable range operations. Retain identification and characterization of unique and emerging UXO and initiate development of protocols for adaptive detection. In	1.728	2.068	3.077	0.000	3.077

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010				
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603728A: <i>Environmental Quality Technology Demonstrations</i>		<b>PROJECT</b> 03E: <i>ENVIRONMENTAL RESTORATION TECHNOLOGY</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>breakdown by soil microbes. In FY11, will complete construction of a computational biology tool for predictive toxicology. Will define hydraulic, biological, geophysical, and chemical models for integration into a training range environmental evaluation and characterization system. Will identify approaches for environmental life-cycle assessment of nanomaterials to support advanced Warfighter technologies development.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>								
<p>Program #3</p> <p>In Situ Remediation Technologies for Contaminated Groundwater and Soils: In FY09, finalized and validated remediation/management of inorganic residues on small arms firing ranges (SAFRs) with process guidance, specifications, and protocols.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p>				0.149	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603728A: <i>Environmental Quality Technology Demonstrations</i>	<b>PROJECT</b> 03E: <i>ENVIRONMENTAL RESTORATION TECHNOLOGY</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #4</b>  Characterization, Evaluation and Remediation of Distributed Source Contamination on Army Ranges: In FY09, conducted field evaluations of advanced spatial components for range risk assessment in range assessment modeling system (ARAMS). Continued to quantify the effects of wildfire control practices on active ranges. Performed field evaluation of on-site, topical alkaline hydrolysis of impact area explosives. In FY10, provide the capability to rapidly and accurately quantify MC sources, distribution, and transport in soil and surface water and to cost-effectively manage residual MCs on active Army training ranges.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		2.275	0.517	0.000	0.000	0.000
<b>Program #5</b>		1.145	0.293	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603728A: <i>Environmental Quality Technology Demonstrations</i>	<b>PROJECT</b> 03E: <i>ENVIRONMENTAL RESTORATION TECHNOLOGY</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Long Term Monitoring Applications: In FY09, completed advanced development of in situ biosensor technologies implemented in direct push wells. Conducted final field evaluation of a novel analytical instrument (negative ion miniature mass spectrometer) for monitoring multiple contaminants under a wide range of site conditions. In FY10, complete the development of a rapid, sensitive, near real time on-site assessment of Army-related contamination.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #6 Small Business Innovative Research/Small Business Technology Transfer Programs</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p>		0.000	0.157	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010				
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603728A: <i>Environmental Quality Technology Demonstrations</i>		<b>PROJECT</b> 03E: <i>ENVIRONMENTAL RESTORATION TECHNOLOGY</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base								
<i>OCO FY 2011 Plans:</i> FY 2011 OCO								
Accomplishments/Planned Programs Subtotals				9.650	9.886	10.088	0.000	10.088
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A								
<b>D. Acquisition Strategy</b> N/A								
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.								

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**Exhibit R-2, PB 2011 Army RDT&E Budget Item Justification** **DATE:** February 2010

<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603734A: <i>Military Engineering Advanced Technology</i>
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COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	34.935	45.394	27.393	0.000	27.393	35.016	29.208	25.359	22.494	0	247.192
T08: <i>COMBAT ENG SYSTEMS</i>	7.505	5.880	27.393	0.000	27.393	35.016	29.208	25.359	22.494	Continuing	Continuing
T13: <i>Stationary Power &amp; Energy Tech Demonstrations (CA)</i>	16.187	24.871	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
T15: <i>MILITARY ENGINEERING TECHNOLOGY DEMONSTRATION (CA)</i>	11.243	14.643	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

The objective of this program element (PE) is to mature and demonstrate advanced military engineering and geospatial research and engineering technologies. Military engineering technologies demonstrated include adaptive protection technologies that provide the Warfighter with protective systems to combat highly adaptive and increasingly severe threats. Geospatial research and engineering technologies demonstrated include Battlespace Terrain Reasoning and Awareness (BTRA) and Joint-Geospatial Enterprise Services (J-GES) technologies. BTRA enables the Warfighter to understand the impact of the terrain and weather effects during planning and execution of military operations. The J-GES program matures and demonstrates technology that supports network centric delivery and update of geospatial data and services to all echelons for battle command planning and mission rehearsal. Technologies demonstrated within this PE are transitioned from PE 0602784A (Military Engineering Technology). The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this PE is performed by the US Army Engineer Research and Development Center (ERDC), Vicksburg, MS.

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<b>Exhibit R-2, PB 2011 Army RDT&amp;E Budget Item Justification</b>	<b>DATE:</b> February 2010
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603734A: <i>Military Engineering Advanced Technology</i>
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**B. Program Change Summary (\$ in Millions)**

	<u><b>FY 2009</b></u>	<u><b>FY 2010</b></u>	<u><b>FY 2011 Base</b></u>	<u><b>FY 2011 OCO</b></u>	<u><b>FY 2011 Total</b></u>
Previous President's Budget	35.855	5.911	6.999	0.000	6.999
Current President's Budget	34.935	45.394	27.393	0.000	27.393
Total Adjustments	-0.920	39.483	20.394	0.000	20.394
• Congressional General Reductions		-0.237			
• Congressional Directed Reductions					
• Congressional Rescissions		0.000			
• Congressional Adds		39.720			
• Congressional Directed Transfers					
• Reprogrammings	-0.006	0.000			
• SBIR/STTR Transfer	-0.914	0.000			
• Adjustments to Budget Years	0.000	0.000	20.394	0.000	20.394

**Change Summary Explanation**

FY10 Congressionally directed increases.FY11 funding increase for Deployable Force Protection.

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603734A: <i>Military Engineering Advanced Technology</i>				<b>PROJECT</b> T08: <i>COMBAT ENG SYSTEMS</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
T08: <i>COMBAT ENG SYSTEMS</i>	7.505	5.880	27.393	0.000	27.393	35.016	29.208	25.359	22.494	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

The objective of this program element (PE) is to mature and demonstrate advanced military engineering and geospatial research and engineering technologies. Military engineering technologies demonstrated include adaptive protection technologies that provide the Warfighter with protective systems to combat highly adaptive and increasingly severe threats. Geospatial research and engineering technologies demonstrated include Battlespace Terrain Reasoning and Awareness (BTRA) and Collaborative Battlespace Reasoning and Awareness (COBRA), which was titled Joint-Geospatial Enterprise Services (J-GES) in FY09 and FY10, technologies. BTRA enables the Warfighter to understand the impact of the terrain and weather effects during planning and execution of military operations. The COBRA/ J-GES program matures and demonstrates technology that supports network centric delivery and update of geospatial data and services to all echelons for battle command planning and mission rehearsal. Future objectives include novel detection methods for persistent surveillance and applying Civil Military Operations (CMO) algorithms addressing interrelationship between human and physical terrain. Technologies demonstrated within this PE are transitioned from PE 0602784A (Military Engineering Technology). The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this PE is performed by the US Army Engineer Research and Development Center (ERDC), Vicksburg, MS. The work in deployable force protection is coordinated with US Army Research Development and Engineering Command, the Defense Advanced Research Projects Agency (DARPA), and the Services.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Collaborative Battlespace Reasoning and Awareness (COBRA): Was titled Joint-Geospatial Enterprise Services in FY09 and FY10 and is renamed to better reflect activities. In FY09, transitioned urban-focused geospatial research and technologies for demonstration and validation. In FY10, conduct evaluations to assess geospatial data and information requirements for users and evaluate trade-offs with regard to force structure, location and storage of geospatial data and information, available bandwidth, and computation resources across the network. In FY11, will develop Multi-platform, cross-community applications and services, collaboration services, decision support tools, and Commercial/Joint Mapping Tool Kit (C/JMTK) enhancements.	1.262	1.107	1.201	0.000	1.201

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603734A: <i>Military Engineering Advanced Technology</i>	<b>PROJECT</b> T08: <i>COMBAT ENG SYSTEMS</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #2</b>  Battlespace Terrain Reasoning and Awareness - Battle Command (BTRA-BC): In FY09, demonstrated and evaluated tools designed for urban data and urban routing structures within Joint-Geospatial Enterprise Services (J-GES). In FY10, demonstrate unified net-centric data strategies within common architecture and framework across Intelligence, Operations, and Geospatial communities.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base		6.243	4.743	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603734A: <i>Military Engineering Advanced Technology</i>	<b>PROJECT</b> T08: <i>COMBAT ENG SYSTEMS</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #3</b> Common Ground JCTD: In FY11, will create a doctrinally based Coalition Operation Management Language for precision indexing to the Joint Command Control and Communications Information Exchange Data Model and geospatial products, creating commonality between command and control and simulations.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	0.000	3.064	0.000	3.064
<b>Program #4</b> Defeat of Emerging Adaptive Threats: In FY11, will test, evaluate, and validate novel layered protective systems incorporating multiple defeat mechanisms for the mitigation of blast, ballistic, and debris impact effects.  <i>FY 2009 Accomplishments:</i> FY 2009		0.000	0.000	2.628	0.000	2.628

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R-1 Line Item #50

Page 5 of 24

1490 of 1536

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603734A: <i>Military Engineering Advanced Technology</i>	<b>PROJECT</b> T08: <i>COMBAT ENG SYSTEMS</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #5</p> <p>Deployable Force Protection Technology Integration Demonstrations and Red Teaming: In FY11, will begin to integrate select technologies to test force protection as a system of systems for detect, assess, and defend capabilities and provide feedback to evolve the plan for integrated overarching design. Will develop necessary software architectures in compliance with standards or recommend such where none currently exist. Will propose and test modular capability sets for initial select base types. Will develop concept of operations and stand up phase I of a red teaming capability to challenge effectiveness of existing and future force protection technologies in the asymmetric environment. Phase I will include a live simulation of a scenario incorporating the use of an identified emerging technology by a blue team conducting a mission against an insurgent, or threat, team. Will collect lessons learned and observations to improve design of technologies and increase robustness to enemy tactics, techniques, and procedures, thus increasing the effectiveness in operations.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p>		0.000	0.000	20.500	0.000	20.500

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010				
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603734A: <i>Military Engineering Advanced Technology</i>		<b>PROJECT</b> T08: <i>COMBAT ENG SYSTEMS</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO								
Program #6 Small Business Innovative Research/Small Business Technology Transfer Programs  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO				0.000	0.030	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals				7.505	5.880	27.393	0.000	27.393
<b>C. Other Program Funding Summary (\$ in Millions)</b>								
N/A								
<b>D. Acquisition Strategy</b>								
N/A								

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>		<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603734A: <i>Military Engineering Advanced Technology</i>	<b>PROJECT</b> T08: <i>COMBAT ENG SYSTEMS</i>

**E. Performance Metrics**

Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b>			<b>R-1 ITEM NOMENCLATURE</b>					<b>PROJECT</b>			
2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>			PE 0603734A: <i>Military Engineering Advanced Technology</i>					T13: <i>Stationary Power &amp; Energy Tech Demonstrations (CA)</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
T13: <i>Stationary Power &amp; Energy Tech Demonstrations (CA)</i>	16.187	24.871	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>A. Mission Description and Budget Item Justification</b>											
Congressional special interest projects to mature and demonstrate advanced military engineering and geospatial research and engineering technologies.											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
							<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Defense Applications of Carbonate Fuel Cells: In FY09, this Congressional Interest Item demonstrated a high-efficiency, electrochemical hydrogen separator (EHS) system for separating hydrogen from anode exhaust of high temperature fuel cells.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO							1.595	0.000	0.000	0.000	0.000
Program #2							2.392	2.387	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603734A: <i>Military Engineering Advanced Technology</i>	<b>PROJECT</b> T13: <i>Stationary Power &amp; Energy Tech Demonstrations (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Gas Engine Driven Air Conditioning Demonstration (GEDAC): In FY09, this Congressional Interest Item developed and demonstrated gas engine driven heat pump system for improved energy efficiency in space heating and cooling applications.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #3</p> <p>Advanced Tactical Fuels for the Military: In FY09, this Congressional Interest Item developed technologies for hydrogen and hydrocarbon fuel production for use at U.S. military installations using biomass, municipal waste, or coal resources.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p>		3.987	3.183	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603734A: <i>Military Engineering Advanced Technology</i>	<b>PROJECT</b> T13: <i>Stationary Power &amp; Energy Tech Demonstrations (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #4  Army Applications of Direct Carbon Fuel Cells: In FY09, this Congressional Interest Item developed a prototype power generator consisting of a thermocatalytic fuel processor and direct carbon fuel cell (DCFC) capable of operating on JP8 fuel.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.797	0.000	0.000	0.000	0.000
Program #5  Direct Methanol Fuel Cell Development. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009		0.000	3.183	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603734A: <i>Military Engineering Advanced Technology</i>	<b>PROJECT</b> T13: <i>Stationary Power &amp; Energy Tech Demonstrations (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<b>Program #6</b>  Complete Molten Carbonate Fuel Cell Demonstrator-Parks Reserve Forces Training Area: In FY09, this Congressional Interest Item demonstrated a molten carbonate fuel cell (MCFC) at Parks Reserve Forces Training Area, CA.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.595	0.000	0.000	0.000	0.000
<b>Program #7</b>		2.232	1.990	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603734A: <i>Military Engineering Advanced Technology</i>	<b>PROJECT</b> T13: <i>Stationary Power &amp; Energy Tech Demonstrations (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Quiet, Low-Impact Alternative Energy Technology: In FY09, this Congressional Interest Item designed and optimized an integrated system for ammonia and urea electrolysis for the production of hydrogen for military applications.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #8</p> <p>Natural Gas Firetube Boiler Demonstration. This is a Congressional Interest Item.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p>		0.000	0.796	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603734A: <i>Military Engineering Advanced Technology</i>	<b>PROJECT</b> T13: <i>Stationary Power &amp; Energy Tech Demonstrations (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #9 Demonstration of Thin Film Solar Modules as a Renewable Energy Source. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	0.796	0.000	0.000	0.000
Program #10 Amorphous Si Flexible Photovoltaics for Grid Parity. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010		0.000	1.592	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603734A: <i>Military Engineering Advanced Technology</i>	<b>PROJECT</b> T13: <i>Stationary Power &amp; Energy Tech Demonstrations (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #11 Hybrid Energy Systems Design and Testing. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.990	0.000	0.000	0.000
Program #12 Zinc Flow Electrical Energy Storage. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009		0.000	1.990	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010				
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603734A: <i>Military Engineering Advanced Technology</i>		<b>PROJECT</b> T13: <i>Stationary Power &amp; Energy Tech Demonstrations (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO								
Program #13 Integrated Alternative Power Systems. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO				0.000	2.069	0.000	0.000	0.000
Program #14 Pacific Command Renewable Energy Security System. This is a Congressional Interest Item.				0.000	2.388	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603734A: <i>Military Engineering Advanced Technology</i>	<b>PROJECT</b> T13: <i>Stationary Power &amp; Energy Tech Demonstrations (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #15  Conversion of Municipal Solid Waste to Renewable Diesel Fuel. In FY09, this Congressional Interest Item developed and demonstrated processes and equipment to convert up to 50 tons per day of municipal solid waste (MSW) into 500 liters per hour of diesel fuel.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.595	2.507	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603734A: <i>Military Engineering Advanced Technology</i>	<b>PROJECT</b> T13: <i>Stationary Power &amp; Energy Tech Demonstrations (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #16  Biomass-to-Liquid Using Synthetic Enzymes. In FY09, this Congressional Interest Item developed a portable self-contained biomass to liquid fuel (BTL) system using synthetic enzymes and catalysts.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.994	0.000	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals		16.187	24.871	0.000	0.000	0.000
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>D. Acquisition Strategy</b> N/A						
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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Exhibit R-2A, PB 2011 Army RDT&E Project Justification								DATE: February 2010			
APPROPRIATION/BUDGET ACTIVITY			R-1 ITEM NOMENCLATURE					PROJECT			
2040: Research, Development, Test & Evaluation, Army BA 3: Advanced Technology Development (ATD)			PE 0603734A: Military Engineering Advanced Technology					T15: MILITARY ENGINEERING TECHNOLOGY DEMONSTRATION (CA)			
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
T15: MILITARY ENGINEERING TECHNOLOGY DEMONSTRATION (CA)	11.243	14.643	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>A. Mission Description and Budget Item Justification</b>											
These are Congressional Interest Items for Military Engineering Technology Demonstrations.											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
							FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011
Program #1  Counter Rocket, Artillery, Mortar (C-RAM) Armor Development: In FY09, this Congressional Interest Item developed composite roofing members capable of withstanding rocket, artillery, and mortar blast/fragments with advanced cement technology and intelligent composite design. Developed modular composite structures capable of withstanding significant blast overpressures.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO							0.797	1.193	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603734A: <i>Military Engineering Advanced Technology</i>	<b>PROJECT</b> T15: <i>MILITARY ENGINEERING TECHNOLOGY DEMONSTRATION (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #2  Synthetic Auto Virtual Environment (SAVE): In FY09, this Congressional Interest Item accelerated the development and demonstration of several systems for synthetic driver skills training, semi- autonomous ground combat systems, and vehicle active safety systems. In FY09, developed a simulator to teach vehicle control for accident avoidance.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		2.392	0.000	0.000	0.000	0.000
Program #3  Enhanced Holographic Imager: In FY09, this Congressional Interest Item developed the next generation Holographic Imaging System, improving the current technology by making it faster, smaller, lighter, easier to use and deployable.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010		2.472	3.820	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603734A: <i>Military Engineering Advanced Technology</i>	<b>PROJECT</b> T15: <i>MILITARY ENGINEERING TECHNOLOGY DEMONSTRATION (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #4  Nanotechnology for Potable Water and Waste Treatment: In FY09, this Congressional Interest Item leveraged nanotechnology to develop low-cost, multifunctional materials to effectively purify water for potable supply and produce wastewater meeting EPA discharge standards.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.997	1.592	0.000	0.000	0.000
Program #5  Human Terrain Geographic Decision Support. In FY09, this Congressional Interest Item supported research in incorporating the human terrain/cultural aspects into geospatial analysis.		2.990	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603734A: <i>Military Engineering Advanced Technology</i>	<b>PROJECT</b> T15: <i>MILITARY ENGINEERING TECHNOLOGY DEMONSTRATION (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #6  University Center for Disaster Preparedness and Emergency Response. In FY09, this Congressional Interest Item supported center at Rutgers University.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		1.595	1.194	0.000	0.000	0.000
Program #7		0.000	1.592	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603734A: <i>Military Engineering Advanced Technology</i>	<b>PROJECT</b> T15: <i>MILITARY ENGINEERING TECHNOLOGY DEMONSTRATION (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Defense Support to Civil Authorities Automated Support System. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #8  Optimization of the U.S. Army Topographic Data Management Enterprise. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	2.069	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603734A: <i>Military Engineering Advanced Technology</i>	<b>PROJECT</b> T15: <i>MILITARY ENGINEERING TECHNOLOGY DEMONSTRATION (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #9  Enhancing the Commercial Joint Mapping Toolkit to Support Tactical Military Operations. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	3.183	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals		11.243	14.643	0.000	0.000	0.000
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>D. Acquisition Strategy</b> N/A						
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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**Exhibit R-2, PB 2011 Army RDT&E Budget Item Justification** **DATE:** February 2010

<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603772A: <i>Advanced Tactical Computer Science and Sensor Technology</i>
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COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	91.726	57.062	24.873	0.000	24.873	29.566	31.802	35.399	41.934	0	337.235
101: <i>Tactical Command and Control</i>	16.138	13.621	14.702	0.000	14.702	16.955	17.230	19.540	21.840	Continuing	Continuing
1AA: <i>Tactical Computer Science Demonstrations (CA)</i>	3.587	4.974	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
1AB: <i>SENSOR DEMONSTRATIONS (CA)</i>	10.366	10.744	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
243: <i>Sensors and Signals Processing</i>	30.929	27.723	10.171	0.000	10.171	12.611	14.572	15.859	20.094	Continuing	Continuing
VR2: <i>VADER-GMTI</i>	30.706	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Efforts in this program element (PE) mature and demonstrate technologies that allow the Warfighter to effectively collect, analyze, transfer, and display situational awareness information in a network-centric battlefield environment. It matures and demonstrates architectures and provides technologies that enable synchronized Command and Control (C2) during rapid, mobile, dispersed, and Joint operations. It matures and develops software applications to more effectively integrate battle command across all echelons and to enable more effective utilization of resources (project D101). This PE also matures signal processing and fusion technologies for Army sensors; matures and demonstrates radio frequency (RF) systems to track and identify enemy forces and personnel; matures and demonstrates multi-sensor control and correlation for improving reconnaissance, surveillance, tracking, and target acquisition, (Project 243). Projects 1AA and 1AB fund congressional special interest items. Project VR2, (VADER-GMTI), funds the development and demonstration of the vehicle and dismount exploitation radar (VADER) Ground Moving Target Indicator (GMTI) radar demonstration on a manned platform. Work in this PE is fully coordinated with PE 0602270A (EW Technology), PE 0602782A (Command, Control, Communications Technology), PE 0603008A (Electronic Warfare Advanced Technology), PE 0602120A (Sensors and Electronic Survivability), and PE 0603270A (EW Technology). The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this PE is performed by the Army Research, Development, and Engineering Command (RDECOM), Communications-Electronics Research, Development, and Engineering, Center (CERDEC), Fort Monmouth, NJ and Aberdeen Proving Ground, MD.

**UNCLASSIFIED**

**UNCLASSIFIED**

<b>Exhibit R-2, PB 2011 Army RDT&amp;E Budget Item Justification</b>	<b>DATE:</b> February 2010
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603772A: <i>Advanced Tactical Computer Science and Sensor Technology</i>
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**B. Program Change Summary (\$ in Millions)**

	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011 Base</u>	<u>FY 2011 OCO</u>	<u>FY 2011 Total</u>
Previous President's Budget	62.031	41.561	29.119	0.000	29.119
Current President's Budget	91.726	57.062	24.873	0.000	24.873
Total Adjustments	29.695	15.501	-4.246	0.000	-4.246
• Congressional General Reductions		-0.299			
• Congressional Directed Reductions					
• Congressional Rescissions		0.000			
• Congressional Adds		15.800			
• Congressional Directed Transfers					
• Reprogrammings	31.096	0.000			
• SBIR/STTR Transfer	-1.401	0.000			
• Adjustments to Budget Years	0.000	0.000	-4.246	0.000	-4.246

**Change Summary Explanation**

FY09 funding increase for VADER.FY10 Congressionally directed increases.FY11 Reduction in funding to support higher priority Army initiatives.

**UNCLASSIFIED**

R-1 Line Item #51

Page 2 of 27

1511 of 1536

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603772A: <i>Advanced Tactical Computer Science and Sensor Technology</i>				<b>PROJECT</b> 101: <i>Tactical Command and Control</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
101: <i>Tactical Command and Control</i>	16.138	13.621	14.702	0.000	14.702	16.955	17.230	19.540	21.840	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Efforts in this project mature and demonstrate technologies to move and display timely and relevant information across the battlefield to provide commanders at all echelons the situational awareness (SA) that allows them to understand, decide, and act faster than their adversaries, resulting in increased operating tempo (OPTEMPO), improved force synchronization, and reduced fratricide. This project matures and demonstrates technology solutions addressing: information storage and retrieval; digital transfer and display of battlefield SA and position/location information; synchronization of combined and Joint force operations; software services optimized for Command and Control (C2) of unmanned air and ground robotic systems; and C2 On-the-Move (OTM). The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this project is performed by the Army Research, Development, and Engineering Command, Communications-Electronics Research, Development, and Engineering, Center (CERDEC), Fort Monmouth, NJ and Aberdeen Proving Ground, MD.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Integrated Battle Command (BC): This effort matures and demonstrates technologies that allow forces to effectively collect, analyze, transfer, and display information in a net-centric battlefield environment. Technology areas include intelligent software agents, server virtualization, knowledge management, and automated query technologies. In FY09, matured network monitoring service for application in dynamic control of the Global Information Grid, from tactical through enterprise level network architectures, matured and demonstrated network monitoring services that allow other systems to monitor their own throughput and packet loss to enable dynamic adjustment and optimization of network utilization; demonstrated how quality of service metrics can be utilized to help intelligently manage the resources of distributed C2 service providers; developed digital mission representation to share/understand data between intelligence and operations functions. In FY10, mature and demonstrate intelligent agent based BC services for compliance in a Service Oriented Architecture; mature services for generation of warnings and alerts relevant to the commanders critical information requirements; mature and evaluate methods and software to train and improve information sharing and collaboration in network-	5.687	7.928	0.000	0.000	0.000

**UNCLASSIFIED**



**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603772A: <i>Advanced Tactical Computer Science and Sensor Technology</i>	<b>PROJECT</b> 101: <i>Tactical Command and Control</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>enabled operations; demonstrate/validate data aggregation and alert capabilities based on mission context; develop architecture for Warfighter-composable web-based and web-delivered applications; develop framework for the execution of composed applications. Related work is also accomplished under PE 0602782A/project 779.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #2</p> <p>Integrated Battle Command (BC)(continued): In FY11, will demonstrate dynamic agent based service orchestration to provide workflow adaptation for unexpected events; will mature smart filtering services to enable extraction of structured data (graphics, numeric) from free text and will finalize and test in an operational environment all software for transition to PM BC; will mature additional functionality in data aggregation and alert capabilities and provide lessons learned; will enhance methods and software to improve info sharing and collaboration in network-enabled operations; will enhance Microsoft office products to support composability; will develop web-based gallery to support collaboration of Warfighter-developed applications. Related work is also accomplished under PE 0602782A/project 779.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p>		0.000	0.000	8.875	0.000	8.875

**UNCLASSIFIED**

R-1 Line Item #51

Page 4 of 27

1513 of 1536

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603772A: <i>Advanced Tactical Computer Science and Sensor Technology</i>	<b>PROJECT</b> 101: <i>Tactical Command and Control</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #3</p> <p>Command and Control (C2) for Unmanned Systems: This effort develops and demonstrates software services that provide coordinated dynamic battle command tactical control of unmanned systems and software tool sets that enable the commander to manage teams of manned and multiple unmanned air and ground platform assets. In FY09, matured tactical battle command services and air/ground collaboration services to include unmanned ground sensors (UGSs), unmanned aerial systems (UASs), and unmanned ground vehicles (UGVs) and demonstrated all in a relevant environment; executed a Command and Control of Robotic Entities capstone demonstration exercising the final set of software that provided effective positioning and placement in battlefield scenarios of up to five UGS clusters, five UGVs, and three UASs; analyzed data and provided evaluation and analysis report detailing lessons learned and metrics evaluated. In FY10, develop and mature software services for unmanned collaboration and coordination, UGV/UAS platform behaviors and C2 information knowledge management of unmanned systems to provide the capability to manage large numbers of air and ground robots over extended urban areas at scales beyond current robot inventories due to the expansion of unmanned assets in the battlespace. In FY11, will mature mission planning, execution, and monitoring software services to support collaborative, teamed UAS/UGV operations as well as provide greater battlefield awareness and situational understanding for operations in urban terrain; will enhance software algorithms for UAS/UGV perception and control technologies which will facilitate increased autonomy and more complex missions; will incorporate models for terrain and weather effects into planning software to enable more effective planning in complex</p>		9.132	3.546	3.759	0.000	3.759

**UNCLASSIFIED**

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603772A: <i>Advanced Tactical Computer Science and Sensor Technology</i>	<b>PROJECT</b> 101: <i>Tactical Command and Control</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>environments; will conduct experiments in modeling and simulation environments to evaluate effectiveness and establish a performance base line.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #4</p> <p>Battle Space Awareness and Positioning: This effort demonstrates positioning and navigation tools to mitigate the impacts of jamming, terrain features, and buildings that limit the performance of Global Positioning System (GPS) only navigation systems. In FY09, built on the munitions-focused Common Guidance Common Sense Micro-Electro Mechanical System (MEMS) Inertial Measurement Units (IMUs) effort and matured the MEMS IMUs for suitable precision and accuracy for dismounted Soldier and tactical vehicle applications; evaluated MEMS preliminary design models of gyroscopes in a laboratory environment and developed prototype gyroscopes suitable for integration into a MEMS IMU. In FY10, begin the integration of position/navigation sensors with technologies that exploit the synergy between position/navigation and communications, such as radio frequency (RF) ranging and network-assisted navigation. In FY11, will mature an integrated position/navigation suite combining advanced small inertial sensors, advanced GPS technology and algorithms and radio technologies to provide position/location information in all terrains and environments. Related work is also accomplished under PE 0602782A/project 779.</p>		1.319	2.000	2.068	0.000	2.068

**UNCLASSIFIED**

R-1 Line Item #51

Page 6 of 27

1515 of 1536

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>			<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603772A: <i>Advanced Tactical Computer Science and Sensor Technology</i>	<b>PROJECT</b> 101: <i>Tactical Command and Control</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #5 Small Business Innovative Research/Small Business Technology Transfer Programs		0.000	0.147	0.000	0.000	0.000
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		16.138	13.621	14.702	0.000	14.702

**UNCLASSIFIED**

R-1 Line Item #51

Page 7 of 27

1516 of 1536

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>		<b>DATE:</b> February 2010
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603772A: <i>Advanced Tactical Computer Science and Sensor Technology</i>	<b>PROJECT</b> 101: <i>Tactical Command and Control</i>
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A		
<b>D. Acquisition Strategy</b> N/A		
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.		

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b>			<b>R-1 ITEM NOMENCLATURE</b>					<b>PROJECT</b>			
2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>			PE 0603772A: <i>Advanced Tactical Computer Science and Sensor Technology</i>					1AA: <i>Tactical Computer Science Demonstrations (CA)</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
1AA: <i>Tactical Computer Science Demonstrations (CA)</i>	3.587	4.974	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>A. Mission Description and Budget Item Justification</b>											
Congressional Interest Item funding for Tactical Computer Science advanced technology development.											
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>											
							<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1							0.797	0.000	0.000	0.000	0.000
Software Lifecycle Affordability Management Phase II (SLAM II): In FY09, this Congressional Interest Item improved the software acquisition process while adhering to DoD initiatives to develop enterprise architectures that are capable of meeting changing and growing customer demands.											
<i>FY 2009 Accomplishments:</i> FY 2009											
<i>FY 2010 Plans:</i> FY 2010											
<i>Base FY 2011 Plans:</i> FY 2011 Base											
<i>OCO FY 2011 Plans:</i> FY 2011 OCO											
Program #2							1.993	1.393	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603772A: <i>Advanced Tactical Computer Science and Sensor Technology</i>	<b>PROJECT</b> 1AA: <i>Tactical Computer Science Demonstrations (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>VideoArgus: In FY09, this Congressional Interest Item developed and optimized salience based compression techniques to support warfighter requirements to more efficiently manage bandwidth utilization and provide actionable intelligence products at the same time.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #3</p> <p>Embedding Iris Recognition Technology On-board Warfighter Personal Equipment: In FY09, this Congressional Interest Item conducted testing and performed evaluations to assess the feasibility of IRIS Recognition Technology embedded in soldier equipment.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p>		0.797	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603772A: <i>Advanced Tactical Computer Science and Sensor Technology</i>	<b>PROJECT</b> 1AA: <i>Tactical Computer Science Demonstrations (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #4 Optimizing Natural Language Processing of Open Source Intelligence. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.194	0.000	0.000	0.000
Program #5 SharedVision. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009		0.000	2.387	0.000	0.000	0.000

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603772A: <i>Advanced Tactical Computer Science and Sensor Technology</i>	<b>PROJECT</b> 1AA: <i>Tactical Computer Science Demonstrations (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		3.587	4.974	0.000	0.000	0.000
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>D. Acquisition Strategy</b> N/A						
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>								<b>DATE:</b> February 2010			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>			<b>R-1 ITEM NOMENCLATURE</b> PE 0603772A: <i>Advanced Tactical Computer Science and Sensor Technology</i>					<b>PROJECT</b> 1AB: <i>SENSOR DEMONSTRATIONS (CA)</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
1AB: <i>SENSOR DEMONSTRATIONS (CA)</i>	10.366	10.744	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Congressional Interest Item funding for Sensor advanced technology development.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  HYPERSAR Radar: In FY09, this Congressional Interest Item integrated HYPERSAR and synthetic aperture radar (SAR) on a manned aircraft; conducted flight testing; demonstrated onboard processing in all radar modes; modified and improved the HYPERSAR software; performed data analysis and data reduction on the collected data.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO	2.392	0.000	0.000	0.000	0.000
Program #2	0.797	0.795	0.000	0.000	0.000

**UNCLASSIFIED**

**UNCLASSIFIED**

<b>Exhibit R-2A, PB 2011 Army RDT&amp;E Project Justification</b>				<b>DATE:</b> February 2010		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603772A: <i>Advanced Tactical Computer Science and Sensor Technology</i>	<b>PROJECT</b> 1AB: <i>SENSOR DEMONSTRATIONS (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>Advanced Radar Transceiver Integrated Circuits Development: In FY09, this Congressional Interest Item developed architecture for bandpass analog to digital converter for use in a direct radio frequency sampling radar receiver in support of an innovative digital array architecture.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>						
<p>Program #3</p> <p>Radar Tag Emitters: In FY09, this Congressional Interest Item developed radar software to improve probability of detection and identification; developed software for radar tags to verify and respond only to authorized interrogators; developed software for APG 66 radar to improve pilot utility for radar responsive tags; demonstrated tags capability in different scenarios and obtained user feedback.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p>		2.392	0.000	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>		<b>R-1 ITEM NOMENCLATURE</b> PE 0603772A: <i>Advanced Tactical Computer Science and Sensor Technology</i>		<b>PROJECT</b> 1AB: <i>SENSOR DEMONSTRATIONS (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO								
Program #4  Foliage Penetrating Reconnaissance, Surveillance, Tracking and Engagement Radar (FORESTER): In FY09, this Congressional Interest Item performed a trade study for design; developed radar upgrades/improvements and selected upgrades to be integrated into three FORESTER systems; improved detection performance, geolocation performance, mode flexibility, system usability and reduced weight.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO				3.190	1.592	0.000	0.000	0.000
Program #5  CERDEC Airborne and Ground Wideband Digital Communications and Antenna Testbed: In FY09, this Congressional Interest Item developed program plan; identified architecture for a test and evaluation laboratory; conducted preliminary investigation of user antenna requirements.				1.595	0.000	0.000	0.000	0.000

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603772A: <i>Advanced Tactical Computer Science and Sensor Technology</i>	<b>PROJECT</b> 1AB: <i>SENSOR DEMONSTRATIONS (CA)</i>				
<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #6 Mobile Localization. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.194	0.000	0.000	0.000
Program #7		0.000	1.592	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Intelligence, Surveillance and Reconnaissance (ISR) Simulation Integration Laboratory. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Program #8 CERDEC Integrated Tool Control System. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	1.592	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #9 Reduced Manning Situational Awareness. This is a Congressional Interest Item.  <i>FY 2009 Accomplishments:</i> FY 2009  <i>FY 2010 Plans:</i> FY 2010  <i>Base FY 2011 Plans:</i> FY 2011 Base  <i>OCO FY 2011 Plans:</i> FY 2011 OCO		0.000	3.979	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals		10.366	10.744	0.000	0.000	0.000
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>D. Acquisition Strategy</b> N/A						
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
243: <i>Sensors and Signals Processing</i>	30.929	27.723	10.171	0.000	10.171	12.611	14.572	15.859	20.094	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Efforts in this project mature and demonstrate improved radar, sensor fusion, and correlation technologies for wide area reconnaissance, surveillance, tracking, and targeting of platforms and individuals in all terrain including complex and urban environments. Sensor fusion efforts mature and demonstrate sensor management and data correlation, and relationship discovery services of a multi-INT fusion system. Sensor and simulated sensor candidates may include moving-target-indicator (MTI)/synthetic aperture radar (SAR), electro-optical/infrared (EO/IR), signals intelligence (SIGINT), measurements and signatures intelligence (MASINT), Human Intelligence (HUMINT), and biometrics technologies. Technologies are matured with significant leveraging of achievements from industry, Defense Advanced Research Projects Agency (DARPA), and other Services. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this project is performed by the Army Research, Development, and Engineering Command, Communications - Electronics Research, Development, and Engineering Center (CERDEC), Fort Monmouth NJ and Aberdeen Proving Ground, MD.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Foliage Penetrating (FOPEN) Radar for Unmanned Aerial Systems (UASs): This effort matures and demonstrates a FOPEN radar capability to meet the size, weight, and power requirements for a Class IV UAS. Advancements in both radar and exploitation processing technology enable increased radar performance to include ground and non-metallic building penetration for detection of hidden roadside target/weapons caches. In FY09, completed development of second system; completed air worthiness release documentation and flight testing of second system on manned surrogate UAS platform; matured algorithms for increased detection of targets of interest, developed specifications and performed required analysis for testing on target UAS platform; began radar integration on target UAS. In FY10, obtain UAS test bed platform; complete development of second system; continue integration data link with radar for remote operation and data dissemination; continue conduction of environmental and ground end-to-end acceptance tests; conduct and complete radar performance flight testing on a manned surrogate UAS platform; complete first system radar integration on target UAS; conduct UAS flight	19.340	16.230	2.963	0.000	2.963

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>testing on first system; and begin second system radar integration on target UAS. In FY11, will complete second system radar integration on target UAS and conduct UAS flight testing on second system.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>								
<p>Program #2</p> <p>Ground Moving Target Indicator (GMTI) and Imaging Surveillance Radar: This effort demonstrates an all-weather GMTI and Synthetic Aperture Radar (SAR) for all-terrain (foliated and open) detection and tracking of mounted and dismounted threats in a package form-fit-function compatible with a Class IV rotary wing UAS. This effort is maturing DARPA investments in GMTI and synthetic aperture radar and applying lessons learned to build a multi-function radar system that will satisfy Class IV UAS size, weight and power requirements. In FY09, completed radar development and tower testing; integrated system onto a manned surrogate platform and initiated flight testing; collected tower and flight test data to support development of adaptive MTI processing algorithms, advanced motion compensation techniques and advanced exploitation and evaluation tools. In FY10, complete development and demonstrate advanced tracking and exploitation algorithms, techniques and tools; demonstrate payload on a manned surrogate platform (UH-60 Blackhawk).</p>				4.816	4.920	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>								
<p>Program #3</p> <p>Measurement and Signature Intelligence Technologies (MASINT) for clandestine tagging, tracking, and locating (TTL): This effort matures and demonstrates MASINT technologies capable of detecting, tracking, and/or identifying human activities and/or infrastructures. The emphasis is to identify appropriate technical approaches, demonstrate embedded processing, and mature algorithms for multi-mode fusion of sensor data. Candidate technologies include: fiber optic seismic/magnetic technologies (highly sensitive for detection of walking personnel with/without weapons and/or tunneling detection); air deployable (air droppable) networked sensor system for a jungle environment (integration of seismic/acoustic sensor with jungle canopy relay); human infrastructure detection technologies (algorithms, sensors, etc); radio frequency MASINT detector, ultra-light multi-target indicator radar for unattended ground sensors and unmanned air vehicles. In FY09, enhanced demonstrators and evaluated new candidate technologies for near-term development; integrated selected Electronic Support technologies for a modern communication emitter geo-location capability to direct, identify and precisely locate for targeting, emitters of interest into a system demonstrator; demonstrated/tested selected technologies for potential spiral transition to the user community. In FY10, mature and down-select candidate technologies for TTL based on updated guidance from user community and conduct demonstrator integration. In FY11, will demonstrate/test brassboard for potential spiral transition to the user community; will investigate</p>				3.372	1.908	1.955	0.000	1.955

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p>new TTL technologies to address emerging TTL user requirements. Related work is also accomplished under PE 0602120A/project H16.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>								
<p>Program #4</p> <p>Weapon-Locating (Ground) radar technologies: This effort matures and demonstrates medium-range sensor technologies for locating indirect fire weapons and extending traditional counter-fire target acquisition to shooters operating into or from within natural and urban canyons and firing in improvised fashions (tracks rocket, artillery and mortar targets). In FY10, mature radar beam forming technologies and multi-aperture/multi-spectral unconventional signal processing (non-Fourier frequency transforms and non-Gaussian clutter estimates) techniques. In FY11, will develop improved clutter mitigation and discrimination algorithms to accommodate increased occurrence of ground clutter expected with additional radar coverage area.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p>				0.000	1.982	2.628	0.000	2.628

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>								
<p>Program #5</p> <p>Omni-directional Situational Awareness (SA) (Airborne) radar technologies: This effort matures and demonstrates coupled radar-Electro-Optical (EO)/Infrared (IR) SA technologies for small unmanned aerial systems (UAS) to improve sensing and detection capabilities in support of wide-area persistence surveillance. In FY10, develop and mature a Ground Moving Target Indicator (GMTI) radar sensor weighing less than one pound with 360-degree field-of-view and investigate integration with an existing EO/IR payload including control and display software integration techniques necessary to facilitate efficient cueing and complementary usage of GMTI and EO/IR sensors. In FY11, will mature sensor payload to reduce size weight and power requirements; will mature antenna design and processing techniques to support multi-sensor capability.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p>				0.000	1.985	2.625	0.000	2.625

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
<p>Program #6</p> <p>Sensor Fusion: This effort matures and demonstrates automated tools to mitigate the fusion, exploitation, and sensor management/cross-cueing problems associated with prosecuting and tracking individuals, recognizing their patterns of association, and thereby, being able to track the organizations they form. This effort allows the commander to target significant individuals and to understand the organizations exerting influence in his area of operation sufficiently to disrupt or attack the organizational infrastructure. In FY09, finalized services development and integration and tested in the integration lab; demonstrated mature software services in Army or Joint experiments; conducted final high fidelity lab experiments and demonstrations of fusion automation and answering capabilities, and transitioned to PM Distributed Common Ground System Army (DCGS-A). Related work is also accomplished under PE 0602120A/project H15, PE 0602270A/project 442, and PE 0602270A/project 906.</p> <p><i>FY 2009 Accomplishments:</i> FY 2009</p> <p><i>FY 2010 Plans:</i> FY 2010</p> <p><i>Base FY 2011 Plans:</i> FY 2011 Base</p> <p><i>OCO FY 2011 Plans:</i> FY 2011 OCO</p>		3.401	0.000	0.000	0.000	0.000
Program #7		0.000	0.698	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>						
		<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Small Business Innovative Research/Small Business Technology Transfer Programs						
<i>FY 2009 Accomplishments:</i> FY 2009						
<i>FY 2010 Plans:</i> FY 2010						
<i>Base FY 2011 Plans:</i> FY 2011 Base						
<i>OCO FY 2011 Plans:</i> FY 2011 OCO						
Accomplishments/Planned Programs Subtotals		30.929	27.723	10.171	0.000	10.171
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>D. Acquisition Strategy</b> N/A						
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.						

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<b>COST (\$ in Millions)</b>	<b>FY 2009 Actual</b>	<b>FY 2010 Estimate</b>	<b>Base FY 2011 Estimate</b>	<b>OCO FY 2011 Estimate</b>	<b>Total FY 2011 Estimate</b>	<b>FY 2012 Estimate</b>	<b>FY 2013 Estimate</b>	<b>FY 2014 Estimate</b>	<b>FY 2015 Estimate</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
VR2: <i>VADER-GMTI</i>	30.706	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Efforts in this project mature, demonstrate and evaluate an advanced Ground Moving Target Indicator (GMTI) and Synthetic Aperture Radar (SAR) that detects dismounts and vehicles from manned and Unmanned Aerial Systems (UASs). Efforts are being coordinated with the Joint Intelligence Surveillance Reconnaissance Task Force and significantly leverage efforts from the DARPA/JIEDDO Vehicle and Dismount Exploitation Radar (VADER) program. The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this project is performed by the Army Research, Development, and Engineering Command, Communications - Electronics Research, Development, and Engineering Center (CERDEC), Fort Monmouth NJ.

**B. Accomplishments/Planned Program (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
Program #1  Vehicle and Dismount Exploitation Radar (VADER) demonstration on a manned aircraft: This effort matures, demonstrates and performs an in-theater demonstration and evaluation of an advanced Ground Moving Target Indicator (GMTI) and Synthetic Aperture Radar (SAR) that detects and tracks dismounts and vehicles from slow flying manned aircraft or UASs. In the fourth quarter fiscal year 2009 these VADER funds were reprogrammed into 0603772A via prior approval reprogramming. In FY10, integrate and test an existing VADER system, with the tactical communications, Tactical Common Data link, and other theater required hardware and software systems; demonstrate system operation (includes test of mode parameters, mission planning, data link functions, detection/false alarm performance, calibration, built-in-test, perform DOD Information Assurance Certification and Accreditation Process, and complete air worthiness release documentation and testing for Twin Otter platform including integrated operation with the exploitation system; conduct radar performance flight testing on manned platform; quantify, document, and assess system performance in an operationally relevant location in April; develop tactics, processing, exploitation and dissemination techniques for this new sensor.	30.706	0.000	0.000	0.000	0.000

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<b>B. Accomplishments/Planned Program (\$ in Millions)</b>								
				<b>FY 2009</b>	<b>FY 2010</b>	<b>Base FY 2011</b>	<b>OCO FY 2011</b>	<b>Total FY 2011</b>
<i>FY 2009 Accomplishments:</i> FY 2009								
<i>FY 2010 Plans:</i> FY 2010								
<i>Base FY 2011 Plans:</i> FY 2011 Base								
<i>OCO FY 2011 Plans:</i> FY 2011 OCO								
Accomplishments/Planned Programs Subtotals				30.706	0.000	0.000	0.000	0.000
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A								
<b>D. Acquisition Strategy</b> N/A								
<b>E. Performance Metrics</b> Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.								

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