

TITLE II—RESEARCH, DEVELOPMENT, TEST, AND  
EVALUATION

OVERVIEW

The budget request contained \$78.6 billion for research, development, test, and evaluation (RDT&E).

The committee recommends \$79.6 billion, an increase of \$1.0 billion to the budget request.

**Title II - Research, Development, Test, and Evaluation**

(Dollars in Thousands)

<u>Program Title</u>	<u>FY 2010</u>	<u>House</u>	<u>House</u>
	<u>Request</u>	<u>Change</u>	<u>Authorized</u>
<b><u>TITLE II -- RESEARCH, DEVELOPMENT, TEST &amp; EVALUATION</u></b>			
Research, Development, Test & Evaluation, Army	10,438,218	68,513	10,506,731
Research, Development, Test & Evaluation, Navy	19,270,932	351,596	19,622,528
Research, Development, Test & Evaluation, Air Force	27,992,827	515,734	28,508,561
Research, Development, Test & Evaluation, Defense-wide	20,741,542	84,360	20,825,902
Operational Test & Evaluation	190,770	0	190,770
<b>TOTAL RDT&amp;E AUTHORIZATIONS</b>	<b>78,634,289</b>	<b>1,020,203</b>	<b>79,654,492</b>

ARMY RESEARCH, DEVELOPMENT, TEST, AND EVALUATION

Overview

The budget request contained \$10.4 billion for Army research, development, test, and evaluation (RDT&E).

The committee recommends \$10.5 billion, an increase of \$100.0 million to the budget request.

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<u>Line</u>	<u>Program Element</u>	<u>Program Title</u>	<u>FY 2010 Request</u>	<u>House Change</u>	<u>House Authorized</u>
		<b>RESEARCH, DEVELOPMENT, TEST &amp; EVALUATION, ARMY</b>			
		<b>BASIC RESEARCH</b>			
001	0601101A	IN-HOUSE LABORATORY INDEPENDENT RESEARCH	19,671		19,671
002	0601102A	DEFENSE RESEARCH SCIENCES	173,024		173,024
003	0601103A	UNIVERSITY RESEARCH INITIATIVES Smart Wound Dressing for MRSA-infected Battle Wounds	88,421	4,000	92,421
		UNIVERSITY AND INDUSTRY RESEARCH CENTERS	96,144	5,000	101,144
004	0601104A	Performance Steel Castings for Improved Weapons Systems Reliability AEOP eCybermission		[4,000]	
				[1,000]	
		<b>SUBTOTAL, BASIC RESEARCH, ARMY</b>	<b>377,260</b>	<b>9,000</b>	<b>386,260</b>
		<b>APPLIED RESEARCH</b>			
005	0602105A	MATERIALS TECHNOLOGY Multi-Scale Modeling of 3-D Damage Tolerant Composite Materials Dual Stage Variable Energy Absorber Hardmetal Epidemiology Investigation Next Generation High Strength Glass Fibers for Ballistic Armor Applications Ultra Lightweight Metallic Armor Advanced Nanoscale Tungsten Kinetic Energy Composites Nanomanufacturing of Multifunctional Sensors	27,206	23,370	50,576
				[1,000]	
				[4,070]	
				[7,000]	
				[3,300]	
				[3,000]	
				[2,000]	
				[3,000]	
006	0602120A	SENSORS AND ELECTRONIC SURVIVABILITY Electromagnetic Geolocation	50,641	2,000	52,641
				[2,000]	

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007	0602122A	TRACTOR HIP	14,324		14,324
008	0602211A	AVIATION TECHNOLOGY	41,332		41,332
009	0602270A	ELECTRONIC WARFARE TECHNOLOGY	16,119		16,119
010	0602303A	MISSILE TECHNOLOGY	50,716	3,750	54,466
		Anti-Material Explosive Round for Javelin		[3,000]	
		CoE in Integrated Sensor Systems		[750]	
011	0602307A	ADVANCED WEAPONS TECHNOLOGY/HEL	19,678		19,678
012	0602308A	MODELING AND SIMULATION	17,473		17,473
013	0602601A	COMBAT VEHICLE AND AUTOMOTIVE TECHNOLOGY	55,937	9,550	65,487
		Tactical Metal Fabrication Technology		[4,800]	
		Advanced Lightweight Opaque Ceramic Armor		[1,250]	
		Digital Engine/Hydraulic Valve Actuation Technology		[3,500]	
014	0602618A	BALLISTICS TECHNOLOGY	61,843	2,000	63,843
		Beneficial Infrastructure for Rotorcraft Risk Reduction		[2,000]	
015	0602622A	CHEMICAL, SMOKE AND EQUIPMENT DEFEATING TECHNOLOGY	5,293		5,293
016	0602623A	JOINT SERVICE SMALL ARMS PROGRAM	7,674		7,674
017	0602624A	WEAPONS AND MUNITIONS TECHNOLOGY	41,085	27,200	68,285
		Highly Integrated Production for Expediting RESET		[8,200]	
		Hybrid Projectile Program		[3,000]	
		High Power Electrolytic Conducting Polymer Super-Capacitors		[9,000]	
		Specialized Compact Automated Mechanical Clearance Platform		[4,000]	
		Defense Support for Civil Authorities (DSCA) for Key Resource Protection - South Central, PA		[3,000]	
018	0602705A	ELECTRONICS AND ELECTRONIC DEVICES	61,404	7,500	68,904

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		Recon Scout Robot		[3,500]	
		Novel Zinc Air Power Sources for Military		[4,000]	
019	0602709A	NIGHT VISION TECHNOLOGY	26,893		26,893
020	0602712A	COUNTERMINE SYSTEMS	18,945		18,945
021	0602716A	HUMAN FACTORS ENGINEERING TECHNOLOGY	18,605	15,000	33,605
		LWI Training-Based Collaborative Research		[15,000]	
022	0602720A	ENVIRONMENTAL QUALITY TECHNOLOGY	15,902	13,850	29,752
		Cluster Bomb Unit & Combined Effects Munitions Demil System		[1,000]	
		Self-Inerting Munitions		[4,500]	
		SUNY Cobleskill Biowaste-to-Bioenergy Center		[4,650]	
		Range Scrap Demil System		[1,500]	
		Renewable Energy Testing Center		[2,200]	
023	0602782A	COMMAND, CONTROL, COMMUNICATIONS TECHNOLOGY	24,833	2,000	26,833
		Portable Non-Magnetic Compass Positioning and Timing Device		[2,000]	
024	0602783A	COMPUTER AND SOFTWARE TECHNOLOGY	5,639	4,000	9,639
		SIDEP Supporting Project National Shield		[4,000]	
025	0602784A	MILITARY ENGINEERING TECHNOLOGY	54,818	14,500	69,318
		Cellulose Nanocomposite Panels for Ballistic Protection		[5,000]	
		Encapsulated Ballistic Protection System		[5,000]	
		Geosciences Atmospheric Research		[3,000]	
		Photovoltaic Rooftop Systems		[1,500]	
026	0602785A	MANPOWER/PERSONNEL/TRAINING TECHNOLOGY	18,701		18,701
027	0602786A	WARFIGHTER TECHNOLOGY	27,109		27,109
028	0602787A	MEDICAL TECHNOLOGY	99,027	39,050	138,077

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		Plasma Technologies		[1,000]	
		Prevention of Compartment Syndrome with Ultrafiltration Catheters		[1,900]	
		Advanced Functional Nanomaterials for Biological Processes		[2,500]	
		Post Traumatic Stress Disorder Attention Modification		[1,250]	
		Locally Delivered Treatments for Noise Induced Hearing Loss		[1,500]	
		Improving Soldier Recovery from Catastrophic Bone Injuries		[5,000]	
		Developing Interventions to Repress Viral Replication		[2,500]	
		Advanced Bio-Engineering for Enhancement of Soldier Survivability		[3,000]	
		Self-Powered Prosthetic Limb Technology		[2,000]	
		Center for Vaccine Scale-Up/Process Research		[1,700]	
		Human Organ and Tissue Preservation Technology		[3,000]	
		Optical Neural Techniques for Combat and Post Trauma Care		[4,700]	
		Brain Injury Recovery Clinic		[6,000]	
		Military Photomedicine Program		[3,000]	
		<b>SUBTOTAL, APPLIED RESEARCH, ARMY</b>	<b>781,197</b>	<b>163,770</b>	<b>944,967</b>
		<b>ADVANCED TECHNOLOGY DEVELOPMENT</b>			
		<b>WARFIGHTER ADVANCED TECHNOLOGY</b>			
		High Pressure Pasteurization & Pressure Assisted Thermal Sterilization	37,574	11,190	48,764
		Next Generation Precision Airdrop System		[4,300]	
		Onyx System Precision Guided Airdropped Equipment		[3,000]	
		Onyx System Precision Guided Airdropped Equipment		[3,890]	
		<b>MEDICAL ADVANCED TECHNOLOGY</b>			
		Nightengale	72,940	37,550	110,490
				[5,000]	

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031	0603003A	Proton Treatment and Research Center - Northern Illinois Pediatric Adolescent Trauma and Resuscitation Wounded Service Member Bioelectronics Research Malaria Vaccine Development Regenerative Medicine to Address Astute Hearing Loss Multi-Dose Closed Loop pH Monitoring System for Platelets Carbide-Derived Carbon for Treatment of Combat Related Sepsis Clinical Technology Integration for Military Health Institute for Simulation and Interprofessional Studies AVIATION ADVANCED TECHNOLOGY Robust Composite Structural Core for Army Helicopters Mission Equipment Technology Implementation Universal Control Program UH-60 Transmission/Gearbox Galvanic Corrosion Reduction Advanced Affordable Turbine Engine Advanced Performance for Military Helicopters Drive System Composite Structural Component Risk Reduction Program WEAPONS AND MUNITIONS ADVANCED TECHNOLOGY Dual Mode Mortar SAL Integration Remote Sighting System COMBAT VEHICLE AND AUTOMOTIVE ADVANCED TECHNOLOGY Unmanned Robotic System Utilizing Hydrocarbon Fueled Solid Oxide Fuel Cell	60,097	[2,000] [2,900] [2,000] [5,000] [3,000] [1,000] [2,750] [8,100] [5,800] 35,000 [4,000] [5,300] [9,000] [3,800] [6,000] [1,900] [5,000] 9,500 [7,500] [2,000] 32,400 [6,000]	95,097
032	0603004A		66,410		75,910
033	0603005A		89,586		121,986

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		Advanced Composites for Light Weight, Low Cost Transportation Systems Using a 3+ Ring Extruder		[4,000]	
		Advanced Lithium Iron Phosphate Battery		[3,000]	
		Protective 3-D Armor Structure to Safeguard Military Vehicles and Troops		[2,000]	
		Automatic Data Organization for Vehicle and Diagnostic Systems		[1,500]	
		Industry Innovation for Defense Sustainment Program		[5,000]	
		Fire Shield		[2,000]	
		Hydraulic Hybrid Vehicle (HHV) for the Tactical Wheeled Fleet		[3,500]	
		Heavy Duty Hybrid Electric Vehicle		[3,000]	
		Vehicle Electronics SWaP2-C2 Optimization		[2,400]	
034	0603006A	COMMAND, CONTROL, COMMUNICATIONS ADVANCED TECHNOLOGY	8,667	7,000	15,667
		Applied Communications and Information Networking (ACIN)		[7,000]	
035	0603007A	MANPOWER, PERSONNEL AND TRAINING ADVANCED TECHNOLOGY	7,410		7,410
036	0603008A	ELECTRONIC WARFARE ADVANCED TECHNOLOGY	50,458		50,458
037	0603009A	TRACTOR HIKE	11,328		11,328
038	0603015A	NEXT GENERATION TRAINING & SIMULATION SYSTEMS	19,415	3,500	22,915
		Joint Fires and Effects Trainer System Enhancements		[2,500]	
		HapMed Combat Medic Trainer		[1,000]	
039	0603020A	TRACTOR ROSE	14,569		14,569
040	0603103A	EXPLOSIVES DEMILITARIZATION TECHNOLOGY	0	8,400	8,400
		Propellant Conversion to Fertilizer Program for Tooele Army Depot		[3,400]	
		Development of Demilitarized Equipment for Cluster Ammunition - MCAAP		[5,000]	
041	0603105A	MILITARY HIV RESEARCH	6,657		6,657
042	0603125A	COMBATING TERRORISM, TECHNOLOGY DEVELOPMENT	11,989		11,989

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043	0603270A	ELECTRONIC WARFARE TECHNOLOGY Advanced Ground Electronic Warfare & Signals Intelligence System	19,192	7,000 [7,000]	26,192
044	0603313A	MISSILE AND ROCKET ADVANCED TECHNOLOGY/NLOS-LS Scenario Generation for Integrated Air and Missile Defense Evaluation	63,951	800 [800]	64,751
045	0603322A	TRACTOR CAGE	12,154		12,154
046	0603606A	LANDMINE WARFARE AND BARRIER ADVANCED TECHNOLOGY	30,317		30,317
047	0603607A	JOINT SERVICE SMALL ARMS PROGRAM	8,996		8,996
048	0603710A	NIGHT VISION ADVANCED TECHNOLOGY Buster/Blacklight UAV Development	40,329	18,800 [5,000]	59,129
		Hyper Spectral Sensor for Improved Force Protection System		[5,400]	
		Brownout Situational Awareness		[3,000]	
		Infrared Goggle Upgrade System		[3,200]	
		High Resolution Personal Miniature Thermal Viewer		[2,200]	
049	0603728A	ENVIRONMENTAL QUALITY TECHNOLOGY DEMONSTRATIONS	15,706		15,706
050	0603734A	MILITARY ENGINEERING ADVANCED TECHNOLOGY PacCom Renewable Energy Security System	5,911	17,350 [3,500]	23,261
		Electric Vehicle Charging Network		[2,500]	
		Field Deployable Hologram Production System		[4,800]	
		Demonstration of Thin Film Solar Modules as a Renewable Energy Source		[1,000]	
		Renewable Energy Project - Fort Jackson		[3,550]	
		Nanotechnology for Potable Water and Waste Treatment		[2,000]	
051	0603772A	ADVANCED TACTICAL COMPUTER SCIENCE AND SENSOR TECHNOLOGY	41,561	16,500	58,061

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		Foliage Penetrating, Reconnaissance, Surveillance, Tracking, and Engagement Radar		[5,000]	
		X Band Interferometric Radar		[5,000]	
		Optimizing Natural Language Processing of Open Source Intelligence (OSINT)		[1,500]	
		Software Lifecycle Affordability Management (SLAM)		[5,000]	
		<b>SUBTOTAL, ADVANCED TECHNOLOGY DEVELOPMENT, ARMY</b>	<b>695,217</b>	<b>204,990</b>	<b>900,207</b>
		<b>ADVANCED COMPONENT DEVELOPMENT &amp; PROTOTYPES</b>			
052	0603024A	UNIQUE ITEM IDENTIFICATION (UID)	0		0
053	0603305A	ARMY MISSILE DEFENSE SYSTEMS INTEGRATION Biological Air Filtering System Technology Compact Pulsed Power for Military Applications	14,683	12,500 [4,000]	27,183
054	0603308A	ARMY SPACE SYSTEMS INTEGRATION	117,471	[8,500]	117,471
055	0603327A	AIR AND MISSILE DEFENSE SYSTEMS ENGINEERING Center for Defense Systems Research	209,531	-177,474 [1,000]	32,057
056	0603460A	Excessive Project Cost Growth - Integrated Air and Missile Defense	0	[-178,474]	0
057	0603619A	JOINT AIR-TO-GROUND MISSILE (JAGM)	17,536		17,536
058	0603627A	LANDMINE WARFARE AND BARRIER - ADV DEV	4,920		4,920
059	0603639A	SMOKE, OBSCURANT AND TARGET DEFEATING SYS-ADV DEV TANK AND MEDIUM CALIBER AMMUNITION Funding Ahead of Need for Advanced Kinetic Energy Cartridge	33,934	-10,800 [-10,800]	23,134
060	0603653A	FAMILY OF STRYKER VEHICLES	90,299		90,299

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061	0603747A	SOLDIER SUPPORT AND SURVIVABILITY	31,752		31,752
062	0603766A	TACTICAL ELECTRONIC SURVEILLANCE SYSTEM - ADV DEV	18,228		18,228
063	0603774A	NIGHT VISION SYSTEMS ADVANCED DEVELOPMENT Enhanced Threat Imaging	0	10,000	10,000
				[10,000]	
064	0603779A	ENVIRONMENTAL QUALITY TECHNOLOGY Cadmium Emissions Reduction - Letterkenny Army Depot Vanadium Technology Program	4,770	6,200	10,970
				[1,000]	
				[4,000]	
				[1,200]	
065	0603782A	WARFIGHTER INFORMATION NETWORK-TACTICAL Program Reduction Zero Waste to Landfill Demonstration - Washington State	180,673	-15,000	165,673
				[-15,000]	
066	0603790A	NATO RESEARCH AND DEVELOPMENT	5,048		5,048
067	0603801A	AVIATION - ADV DEV	8,537		8,537
068	0603804A	LOGISTICS AND ENGINEER EQUIPMENT - ADV DEV	24,238		24,238
068a	0603804A	JOINT LIGHT TACTICAL VEHICLE Unjustified Cost Growth	32,135	-10,000	22,135
				[-10,000]	
069	0603805A	COMBAT SERVICE SUPPORT CONTROL SYSTEM EVALUATION AND ANALYSIS	9,868		9,868
070	0603807A	MEDICAL SYSTEMS - ADV DEV Leishmaniasis Skin Test	31,275	2,200	33,475
				[1,000]	
				[1,200]	
071	0603827A	SOLDIER SYSTEMS - ADVANCED DEVELOPMENT Rapid Bone Fracture Reduction and Fixation Acid Alkaline Direct Methanol Fuel Cell	71,832	5,000	76,832
				[5,000]	
072	0603850A	INTEGRATED BROADCAST SERVICE	1,476		1,476
072A	XXXXXXXXA	JOINT IMPROVISED EXPLOSIVE DEVICE	0	327,100	327,100

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		Transfer from Title I		[327,100]	
		<b>SUBTOTAL, ADVANCED COMPONENT DEVELOPMENT &amp; PROTOTYPES, ARMY</b>	<b>908,206</b>	<b>149,726</b>	<b>1,057,932</b>
		<b>SYSTEM DEVELOPMENT &amp; DEMONSTRATION</b>			
073	0604201A	AIRCRAFT AVIONICS	92,977		92,977
074	0604220A	ARMED, DEPLOYABLE HELOS	65,515		65,515
075	0604270A	ELECTRONIC WARFARE DEVELOPMENT	34,710		34,710
075a	0604270A	COMMON INFRARED COUTNERMEASURES SYSTEM	213,753		213,753
076	0604321A	ALL SOURCE ANALYSIS SYSTEM	13,107		13,107
077	0604328A	TRACTOR CAGE	16,286		16,286
078	0604601A	INFANTRY SUPPORT WEAPONS	74,814		74,814
079	0604604A	MEDIUM TACTICAL VEHICLES	5,683		5,683
080	0604609A	SMOKE, OBSCURANT AND TARGET DEFEATING SYS-SDD	978		978
081	0604622A	FAMILY OF HEAVY TACTICAL VEHICLES	7,477		7,477
082	0604633A	AIR TRAFFIC CONTROL	7,578		7,578
083	0604646A	NON-LINE OF SIGHT LAUNCH SYSTEM	88,660		88,660
084	0604647A	NON-LINE OF SIGHT CANNON	58,216	-58,216	0
		Unjustified Termination Costs		[-58,216]	
085	0604660A	FCS MANNED GRD VEHICLES & COMMON GRD VEHICLE	368,557	-268,557	100,000
		Unjustified Termination Costs		[-268,557]	
086	0604661A	FCS SYSTEMS OF SYSTEMS ENGR & PROGRAM MGMT	1,067,191		1,067,191
087	0604662A	FCS RECONNAISSANCE (UAV) PLATFORMS	68,701		68,701

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088	0604663A	FCS UNMANNED GROUND VEHICLES	125,616		125,616
089	0604664A	FCS UNATTENDED GROUND SENSORS	26,919		26,919
090	0604665A	FCS SUSTAINMENT & TRAINING R&D	749,182		749,182
091	0604666A	SPIN OUT TECHNOLOGY/CAPABILITY INSERTION	0		0
092	0604710A	NIGHT VISION SYSTEMS - SDD	55,410		55,410
093	0604713A	COMBAT FEEDING, CLOTHING, AND EQUIPMENT	2,092		2,092
094	0604715A	NON-SYSTEM TRAINING DEVICES - SDD	30,209		30,209
095	0604741A	AIR DEFENSE C2I/C - RAM	28,936		28,936
096	0604742A	CONSTRUCTIVE SIMULATION SYSTEMS DEVELOPMENT (MIP)	33,213		33,213
097	0604746A	AUTOMATIC TEST EQUIPMENT DEVELOPMENT	15,320		15,320
098	0604760A	DISTRIBUTIVE INTERACTIVE SIMULATIONS (DIS) - SDD	15,727		15,727
099	0604778A	POSITIONING SYSTEMS DEVELOPMENT (SPACE)/GPS	9,446		9,446
100	0604780A	COMBINED ARMS TACTICAL TRAINER (CATT) CORE	26,243		26,243
101	0604783A	JOINT NETWORK MANAGEMENT SYSTEM	0		0
102	0604802A	WEAPONS AND MUNITIONS - SDD	34,878		34,878
103	0604804A	LOGISTICS AND ENGINEER EQUIPMENT - SDD Autonomous Sustainment Cargo Container Sea Truck	36,018	7,500 [7,500]	43,518
104	0604805A	COMMAND, CONTROL, COMMUNICATIONS SYSTEMS - SDD	88,995		88,995
105	0604807A	MEDICAL MATERIEL/MEDICAL BIOLOGICAL DEFENSE EQUIPMENT - SDD Rotary Valve Pressure Swing Absorption Oxygen Generator Plasma Sterilizer	33,893	3,300 [2,500] [800]	37,193
106	0604808A	LANDMINE WARFARE/BARRIER - SDD Program Reduction	82,260	-21,300 [-21,300]	60,960

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107	0604814A	XM982 PROJECTILE	42,452		42,452
108	0604817A	COMBAT IDENTIFICATION	20,070		20,070
109	0604818A	ARMY TACTICAL COMMAND & CONTROL HARDWARE & SOFTWARE	90,864		90,864
110	0604820A	RADAR DEVELOPMENT	0		0
111	0604822A	GENERAL FUND ENTERPRISE BUSINESS SYSTEM (GFEB)	6,002		6,002
112	0604823A	FIREFINDER	20,333		20,333
113	0604827A	SOLDIER SYSTEMS - WARRIOR DEM/VAL	19,786		19,786
114	0604854A	ARTILLERY SYSTEMS	23,318	9,000	32,318
		Paladin Integrated Management, M109A6		[9,000]	
115	0604869A	PATRIOT/MEADS COMBINED AGGREGATE PROGRAM (CAP)	569,182	-1,000	568,182
		Program Reduction		[-5,000]	
		Ultra Low Phase Noise Oscillator		[4,000]	
116	0604870A	NUCLEAR ARMS CONTROL MONITORING SENSOR NETWORK	7,140		7,140
117	0605013A	INFORMATION TECHNOLOGY DEVELOPMENT	35,309		35,309
118	0605450A	JOINT AIR-TO-GROUND MISSILE (JAGM)	127,439		127,439
119	0605625A	MANNED GROUND VEHICLE	100,000	-50,000	50,000
		Program Reduction		[-50,000]	
119A	XXXXXXXXA	AERIAL COMMON SENSOR	0	210,035	210,035
		Transfer from RDA 170		[210,035]	
		<b>SUBTOTAL, SYSTEM DEVELOPMENT &amp; DEMONSTRATION, ARMY</b>	<b>4,640,455</b>	<b>-169,238</b>	<b>4,471,217</b>
120	0604256A	<b>RDT&amp;E MANAGEMENT SUPPORT</b>	22,222		22,222
		THREAT SIMULATOR DEVELOPMENT			

**Title II - Research, Development, Test, and Evaluation**

(Dollars in Thousands)

<u>Line</u>	<u>Program Element</u>	<u>Program Title</u>	<u>FY 2010 Request</u>	<u>House Change</u>	<u>House Authorized</u>
121	0604258A	TARGET SYSTEMS DEVELOPMENT	13,615		13,615
122	0604759A	MAJOR T&E INVESTMENT	51,846		51,846
123	0605103A	RAND ARROYO CENTER	16,305	4,000	20,305
		Program Increase		[4,000]	
124	0605301A	ARMY KWAJALEIN ATOLL	163,514		163,514
125	0605326A	CONCEPTS EXPERIMENTATION PROGRAM	23,445		23,445
126	0605502A	SMALL BUSINESS INNOVATIVE RESEARCH	0		0
127	0605601A	ARMY TEST RANGES AND FACILITIES	354,693		354,693
128	0605602A	ARMY TECHNICAL TEST INSTRUMENTATION AND TARGETS	72,911	1,200	74,111
		MOTS All Sky Imager		[1,200]	
129	0605604A	SURVIVABILITY/LETHALITY ANALYSIS	45,016		45,016
130	0605605A	DOD HIGH ENERGY LASER TEST FACILITY	2,891		2,891
131	0605606A	AIRCRAFT CERTIFICATION	3,766		3,766
132	0605702A	METEOROLOGICAL SUPPORT TO RDT&E ACTIVITIES	8,391		8,391
133	0605706A	MATERIEL SYSTEMS ANALYSIS	19,969		19,969
134	0605709A	EXPLOITATION OF FOREIGN ITEMS (MIP)	5,432		5,432
135	0605712A	SUPPORT OF OPERATIONAL TESTING	77,877		77,877
136	0605716A	ARMY EVALUATION CENTER	66,309		66,309
137	0605718A	ARMY MODELING & SIM X-CMD COLLABORATION & INTEG	5,357		5,357
138	0605801A	PROGRAMWIDE ACTIVITIES	77,823		77,823
139	0605803A	TECHNICAL INFORMATION ACTIVITIES	51,620		51,620
140	0605805A	MUNITIONS STANDARDIZATION, EFFECTIVENESS AND SAFETY	45,053		45,053
141	0605857A	ENVIRONMENTAL QUALITY TECHNOLOGY MGMT SUPPORT	5,191		5,191
142	0605898A	MANAGEMENT HQ - R&D	15,866		15,866

**Title II - Research, Development, Test, and Evaluation**

(Dollars in Thousands)

<u>Line</u>	<u>Program Element</u>	<u>Program Title</u>	<u>FY 2010 Request</u>	<u>House Change</u>	<u>House Authorized</u>
143	0909999A	FINANCING FOR CANCELLED ACCOUNT ADJUSTMENTS	0		0
		<b>SUBTOTAL, RDT&amp;E MANAGEMENT SUPPORT, ARMY</b>	<b>1,149,112</b>	<b>5,200</b>	<b>1,154,312</b>
		<b>OPERATIONAL SYSTEMS DEVELOPMENT</b>			
144	0603778A	MLRS PRODUCT IMPROVEMENT PROGRAM	27,693		27,693
145	0603820A	WEAPONS CAPABILITY MODIFICATIONS UAV	0		0
146	0102419A	AEROSTAT JOINT PROJECT OFFICE	360,076	-122,000	238,076
		JLENS Program Reduction		[-122,000]	
147	0203726A	ADV FIELD ARTILLERY TACTICAL DATA SYSTEM	23,727	2,500	26,227
		AFATDS Voice Recognition and Cross Platform Speech Interface System		[2,500]	
148	0203735A	COMBAT VEHICLE IMPROVEMENT PROGRAMS	190,301		190,301
149	0203740A	MANEUVER CONTROL SYSTEM	21,394		21,394
150	0203744A	AIRCRAFT MODIFICATIONS/PRODUCT IMPROVEMENT PROGRAMS	209,401	3,600	213,001
		Boned Cellular Aluminum Tail Rotor Blades		[3,600]	
151	0203752A	AIRCRAFT ENGINE COMPONENT IMPROVEMENT PROGRAM	792		792
152	0203758A	DIGITIZATION	10,692		10,692
153	0203759A	FORCE XXI BATTLE COMMAND, BRIGADE AND BELOW (FBCB2)	0		0
154	0203801A	MISSILE/AIR DEFENSE PRODUCT IMPROVEMENT PROGRAM	39,273		39,273
155	0203802A	OTHER MISSILE PRODUCT IMPROVEMENT PROGRAMS	0	10,000	10,000
		Javelin Warhead Improvement Plan		[10,000]	
156	0203808A	TRACTOR CARD	20,035		20,035
157	0208010A	JOINT TACTICAL COMMUNICATIONS PROGRAM (TRI-TAC)	0		0
158	0208053A	JOINT TACTICAL GROUND SYSTEM	13,258		13,258

**Title II - Research, Development, Test, and Evaluation**  
(Dollars in Thousands)

<u>Line</u>	<u>Program Element</u>	<u>Program Title</u>	<u>FY 2010 Request</u>	<u>House Change</u>	<u>House Authorized</u>
159	0208058A	JOINT HIGH SPEED VESSEL (JHSV)	3,082		3,082
160	0301359A	SPECIAL ARMY PROGRAM	0		0
161	0303028A	SECURITY AND INTELLIGENCE ACTIVITIES	2,144		2,144
162	0303140A	INFORMATION SYSTEMS SECURITY PROGRAM	74,355		74,355
163	0303141A	GLOBAL COMBAT SUPPORT SYSTEM	144,733		144,733
164	0303142A	SATCOM GROUND ENVIRONMENT (SPACE)	40,097		40,097
165	0303150A	WWMCCS/GLOBAL COMMAND AND CONTROL SYSTEM	12,034		12,034
166	0303158A	JOINT COMMAND AND CONTROL PROGRAM (JC2)	20,365		20,365
167	0305204A	TACTICAL UNMANNED AERIAL VEHICLES	202,521		202,521
168	0305208A	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	188,414	16,000	204,414
		Joint STARS Surveillance and Control Data Link (SCDL) Technology Refresh		[5,000]	
		Adaptive Defense High-Speed IP Packet Inspection Engine on a Chip		[6,000]	
		Asymmetric Threat Response and Analysis		[5,000]	
169	0305287A	BASE EXPED TARGETING SURVEILLANCE SYS-COMBINED	0		0
170	0307207A	AERIAL COMMON SENSOR (ACS)	210,035	-210,035	0
		Transfer to RDA 119A		[-210,035]	
171	0702239A	AVIONICS COMPONENT IMPROVEMENT PROGRAM	0		0
172	0708045A	END ITEM INDUSTRIAL PREPAREDNESS ACTIVITIES	68,466	5,000	73,466
		Lightweight Armored Windows for Airborne Vehicles		[3,000]	
		Moldable Ceramic Composite for Tactical Vehicle Protection		[2,000]	
999	99999999	OTHER PROGRAMS	3,883		3,883
		<b>SUBTOTAL, OPERATIONAL SYSTEMS DEVELOPMENT, ARMY</b>	<b>1,886,771</b>	<b>-294,935</b>	<b>1,591,836</b>

**Title II - Research, Development, Test, and Evaluation**

(Dollars in Thousands)

<u>Line</u>	<u>Program Element</u>	<u>Program Title</u>	<u>FY 2010 Request</u>	<u>House Change</u>	<u>House Authorized</u>
			10,438,218	68,513	10,506,731
		<b>TOTAL, RDT&amp;E ARMY</b>			

## Items of Special Interest

*Advanced lightweight opaque ceramic armor*

The budget request contained \$55.9 million in PE 62601A for combat vehicle and automotive technology, but included no funds to develop advanced lightweight opaque ceramic armor solutions.

The committee is aware that current opaque armor systems used on tactical and combat vehicles for protection against large improvised explosive devices and explosively formed penetrators are extremely heavy and impact vehicle performance and decrease vehicle lifecycle. The committee notes that improvements in weight reduction without sacrificing survivability could benefit vehicle platforms that require improvements with balancing critical key performance parameters of payload, protection, and performance.

The committee recommends an increase of \$1.25 million in PE 62601A for advanced opaque glass ceramic armor systems.

*Advanced nanoscale tungsten kinetic energy composites*

The budget request contained \$27.2 million in PE 62105A for materials technology, but included no funds for advanced nanoscale tungsten kinetic energy composites.

The committee understands the objective of this project would be to develop partnerships with academia to further research in advanced tungsten kinetic energy munitions. The committee notes these munitions would enable the warfighter to have increased stand-off protection while simultaneously maintaining and enhancing the effectiveness of lethal, kinetic engagements against an enemy in a defilade position. The committee is aware this technology could be used to accelerate the replacement of depleted uranium materials which could be considered a hazardous material.

The committee recommends an increase of \$2.0 million in PE 62105A for research in advanced nanoscale tungsten kinetic energy composites.

*Army vehicle modernization plans*

In the committee report (H. Rept. 110–652) accompanying the Duncan Hunter National Defense Authorization Act for Fiscal Year 2009, the committee expressed its concern that the Army's mid-term and long-term vehicle modernization plans were unrealistic and unaffordable given the Army's many other funding needs. The committee noted that a critical element of this unaffordable plan was the Army's desire to add an entirely new additional fleet of Future Combat Systems (FCS) vehicles to the Army, while also planning to indefinitely upgrade and maintain current force vehicles.

The committee, as a result, supports the Department of Defense's decision to terminate the manned ground vehicle portion of the FCS program, conduct further analysis of the Army's ground combat vehicle needs, and begin a separate Army ground combat vehicle development program in fiscal year 2010. The committee believes that the termination of the FCS vehicles provides the Army with an opportunity to reconcile its desires with available resources and create a vehicle modernization plan that is affordable while also meeting the needs of today and tomorrow. The committee also views the 2009 Quadrennial Defense Review as an opportunity for the Army to modify, if necessary, its current mix of brigad combat

teams, which could significantly impact ground combat vehicle requirements.

Last year, the committee also voiced its preference for the Army to pursue low-risk approaches to increasing the capability of ground combat systems in the inventory today, instead of pursuing high-risk, high-cost efforts to prematurely replace the current fleet of ground combat vehicles. The committee still holds this view, and believes that the current fleet of M1 Abrams tanks, M2 Bradley fighting vehicles, M109A6 Paladin artillery systems, M113 personnel carriers, and Stryker vehicles remain effective due to the many billions of dollars spent to upgrade and recapitalize these vehicles since 2003. However, the committee recognizes that continued upgrades for all of these platforms are essential if they are to maintain their battlefield effectiveness against all possible threats.

Of the current fleet of vehicles, the committee believes that the Army should prioritize upgrades to M1 Abrams tanks, M109A6 Paladins, and the Stryker family of vehicles. The committee believes that replacing the M1 Abrams tank with a system that provides equal protection and firepower is too technically challenging in the near- to mid-term. As a result, the committee would support an aggressive program to upgrade the M1 Abrams tank, with a more fuel-efficient engine, an improved digital communications suite, the ability to fire beyond line-of-sight munitions, an active protection system, and other improvements. The committee believes that, given the termination of the non-line of sight cannon element of the FCS program, the Army must accelerate the existing Paladin Integrated Management program in order to ensure that Army indirect fire systems remain fully capable across the full spectrum of conflict. In the case of the Stryker fleet, the committee would support a plan to conduct a fleet-wide upgrade program that integrates, as priority elements, new digital communications, improved vehicle automotive performance, survivability enhancements, and an active protection system.

With regard to the M2 Bradley and M113 fleets, the committee believes that these vehicles are the most appropriate candidates for replacement by the new Army ground combat vehicle program, based on technical feasibility and current capability, and that the M2 Bradley program's current funding for upgrades is adequate to meet requirements in the near-term. However, the committee urges the Army to also consider, in its analysis of alternatives, domestic production of any currently available vehicle that, with selected modifications, provides a significant upgrade in comparison to the M2 Bradley or M113. The committee notes that this approach enabled the Army to rapidly field the Stryker family of vehicles. This approach could save significant time and funds in comparison to embarking upon an entirely new vehicle design, while also expanding the defense industrial base for ground combat vehicle manufacture. The committee also urges the Army to consider, as part of the analysis of alternatives, a mix of modernized Stryker and M2 vehicles as possible replacements for the M113 fleet.

While the committee understands that the Army must conduct significant analysis to make these decisions, the committee requires an understanding of where the Army is heading in order to complete the National Defense Authorization Act for Fiscal Year 2010. Therefore, the committee directs the Secretary of the Army

to provide a report to the congressional defense committees by September 1, 2009, that defines the Army's new ground combat vehicle program, explains all alternatives considered during the analysis of alternatives process, and provides initial cost and schedule estimates.

*Autonomous sustainment cargo container*

The budget request contained \$36.0 million in PE 64804A for logistics and engineer equipment, but contained no funds for the development of autonomous sustainment cargo containers (ASCC).

The ASCC system consists of a propulsion module and an optional bow module that would attach to commercial cargo containers that would provide for cargo container self-propulsion, as well as deployment of cargo containers from offshore logistics and commercial vessels. The committee understands the ASCC system would be comprised of 90 percent commercial-off-the-shelf and non-developmental technology that would be compatible with current commercial and military supply sustainment systems. The committee notes this technology could improve and streamline joint logistics over-the-shore operations.

The committee recommends an increase of \$7.5 million in PE 64804A for the development and demonstration of ASCC systems in joint logistics over-the-shore operations.

*Body armor requirements and test and evaluation*

The committee believes body armor requirements for the military services should be coordinated through the Joint Capabilities Integration and Development System process. The committee encourages the Joint Requirements Oversight Council to review and, if required, update the current body armor requirements document through capabilities based assessments that would clearly define current and future force requirements, particularly in the area of weight reduction versus protection. The tradeoff between protection capabilities and weight is a major cost driver in body armor procurements. It has become a major source of contention related to the measures of protection body armor must provide. The committee notes available technology has not been able to keep the system within the users' desired weight without sacrificing performance.

The committee understands the Vice Chief of Staff of the Army and the Assistant Commandant of the Marine Corps have publicly acknowledged the critical importance of lightening the warfighter's load for current operations, specifically in Operation Enduring Freedom, and considers this a high priority issue. The committee believes there should be urgency in tailoring equipment to meet the operational demands in the Islamic Republic of Afghanistan. The committee is aware most operations in Afghanistan are dismounted operations. The committee encourages the Secretary of Defense to consider establishing and resourcing a temporary Department-wide task force to help accelerate advancements and efforts in weight reduction initiatives for body armor systems that could be readily fielded to the warfighter. The committee notes previous, similar task forces such as the Mine Resistant Ambush Protected Vehicle Task Force and the Intelligence, Surveillance and Reconnaissance Task Force were established to address high priority joint urgent

operational requirements for Operation Enduring Freedom and Operation Iraqi Freedom, and have had great success.

The committee also concurs with the Department of Defense Inspector General's recommendation that the Department standardize testing and evaluation of body armor components. The use of common test and evaluation standards by all military departments and functional commands will improve the Department's ability to rapidly procure body armor and increase the Department's confidence in the level of protection provided to the warfighter. The committee believes the use of common test and evaluation standards would also allow commercial ballistic test facilities and body armor component producers to more quickly and more effectively respond to the Department's current, and future, requirements for body armor.

The committee notes that the Director, Operational Test and Evaluation (DOT&E) has authority for oversight of body armor testing and is aware that the DOT&E is leading an effort to develop and standardize body armor test procedures for use across the Department. The committee believes it is critical these test procedures ensure that all procured body armor components consistently meet the warfighters' requirements since body armor is the last line of defense for the warfighter. Therefore, the committee recommends DOT&E to seek peer review of the proposed standardized test and evaluation procedures from ballistics experts in other federal agencies and departments before finalizing these procedures. The committee is aware that such expertise resides in the Department of Commerce, the National Institute of Standards and Technology, and in the National Institute of Justice. The committee also recommends that representatives from commercial ballistics test facilities be given an opportunity to comment on the draft test and evaluation standards before final versions are issued.

The committee is also aware of the Secretary of the Army's recent policy decision that directs the Army Test and Evaluation Command to conduct all body armor Lot Acceptance Testing (LAT) at the Army's Aberdeen Test Center. The committee believes that this policy decision may be too restrictive and could be discounting validated, cost-effective, and proven surge-capable LAT services. The committee believes that this policy decision should consider the demonstrated capability and proven capacity of both government and commercial ballistic test facilities against rigorous, standardized, comprehensive test protocols and procedures for body armor systems, that guarantees this critical, life saving equipment performs to required specifications and would be delivered in a timely and urgent manner to the warfighter. The committee encourages the Army to allow for DOT&E to finalize its standardized test procedures for the military services before implementing any unilateral policy decisions regarding body armor test and evaluation.

#### *Cellulose nanocomposite panels for ballistic protection*

The budget request contained \$54.8 million in PE 62784A for military engineering technology, but included no funds for the development of cellulose nanocomposite panels for ballistic protection.

The committee understands the purpose of this project would enhance ballistic properties of lightweight, rapidly erectable field structures, as well as class IV construction materials, through the

development of low-cost, high-performance nanocomposites. The committee notes this technology could accelerate the Army's capability in addressing immediate requirements for blast and ballistic modular protective structures to meet different threat levels in overseas contingency operations.

The committee recommends an increase of \$5.0 million in PE 62784A for the development of cellulose nanocomposite panels for ballistic protection.

#### *Dual mode mortar semi-active laser integration*

The budget request contained \$66.4 million in PE 63004A for weapons and munitions advanced technology, but included no funds for dual mode mortar semi-active laser (SAL) integration.

Dual mode mortar SAL integration is an initiative to develop and produce global position system (GPS)-guided precision mortar rounds, with an integrated semi-active laser technology for increased accuracy and lethality. The committee is aware of an urgent operational needs statement (ONS) from the XVIII Airborne Corps seeking a material solution for a lack of precision indirect fire support in Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF).

The committee notes that the Army, in response to this ONS, has initiated the accelerated precision mortar initiative with the objective to expedite a GPS precision-guided mortar capability to the warfighter in OIF and OEF. The committee supports this initiative, and encourages the Army to rapidly field a solution that fully satisfies the requirement specified in the ONS. The committee believes a SAL could provide increased accuracy and even greater precision than a GPS-only solution.

The committee recommends an increase of \$7.5 million in PE 63004A to further the development of SAL capability for precision-guided mortars.

#### *Electric vehicle charging network*

The budget request contained \$5.9 million in PE 63734A for military engineering advanced technology but contained no funds for the electric vehicle charging network.

The committee is aware that Executive Order 13423 requires federal agencies to use plug in hybrid vehicles when commercially available at a comparable cost and to reduce annual petroleum consumption. The committee supports development of an electric vehicle charging network in Hawaii to help the Department of Defense meet its petroleum reduction goals.

The committee recommends an increase of \$2.5 million in PE 63734A for the electric vehicle charging network.

#### *Future Combat Systems*

The budget request contained \$2.9 billion for the Future Combat Systems (FCS) program. Of this total, approximately \$426.8 million was requested to cover contract termination costs related to the pending cancellation of the eight FCS manned ground vehicles (MGV), with the remaining funds requested to continue work on the software, network, and spin-out equipment elements of the program.

In the committee report (H. Rept. 108–106) accompanying the National Defense Authorization Act for Fiscal Year 2004, the committee first expressed its support for the overall goal of the Future Combat Systems (FCS) program, stating that “the committee supports the Army’s transformational objectives of achieving a more agile, light, and lethal objective force.” In the same report, the committee also, for the first time, noted a series of concerns regarding the budget, structure, and schedule for the program, pointing out that “the Army is embarking on a System Development and Demonstration program of major technical complexity, which to date is largely undefined with regard to architecture, requirements, schedule and cost . . . the key performance parameters are of such a general nature, lacking any metrics, that many current Army systems meet the key performance parameters, precluding a need for a new program . . . [and that] layered management overly insulates senior Army management from FCS program managers.”

Over the following five years, in authorizing legislation covering fiscal years 2005 through 2009, the committee, while supporting the fundamental ideas behind the FCS program, expressed ever more acute concerns with the specific budget, technology, and schedule of the program. As a result, the committee initiated a series of oversight measures, including an annual review by Government Accountability Office (GAO) experts, independent cost estimates, and other outside analysis, in an effort to encourage the Army to fundamentally reshape the program into a more realistic and affordable effort. The committee also reduced funding for the program by a total of approximately \$1.0 billion, which was just six percent of the total \$18.0 billion requested over the same time period.

Six years later, the committee believes that the fundamental problems faced by the FCS program in 2003 were, for the most part, never resolved, and have now led the Army into a position where key program elements will be delayed or terminated despite the FCS program consuming more than \$18.0 billion in research and development funding between 2003 and 2009. The committee acknowledges that a small number of prototype ground and air robotic platforms have been fielded from the FCS program. However, the committee believes, that overall, the FCS program fell victim to faults common to many troubled Department of Defense (DOD) acquisition programs, including unclear and changing requirements, immature technology, unrealistic cost estimates, and an inability to deliver promised capabilities on time. While the committee commends the many thousands of individual soldiers, Army civilians, and contractors who worked tirelessly to make the FCS program a success, it believes that these efforts were ultimately not properly managed.

Public statements and testimony from Department and Army leaders indicate that before the end of fiscal year 2009, the Army will terminate the FCS brigade combat team program, and what was once the FCS program will devolve into three separate major defense acquisition programs. The committee supports this overall approach to harvesting the work done to date on the FCS program while also placing its derivative elements on realistic schedules, with solid cost estimates, and achievable requirements. However, the committee continues to have specific concerns with how these

three new programs move forward, due in a large degree to the lack of detailed information provided to the committee, in the 2010 budget request, on how the new programs will evolve. The committee's views on the evolution of the terminated FCS manned ground vehicle are specified elsewhere in this report.

With regard to future spin-outs of FCS equipment, the committee continues to support providing any equipment that is ready for combat to troops in the field as soon as possible. The committee understands that the first such spin-out effort will be seven brigade sets of equipment under the early infantry brigade combat team (E-IBCT) program, and that there are initial plans to continue to field FCS equipment to all Army infantry brigade combat teams (IBCT), but that beyond the spin-outs to IBCTs, the Army has yet to develop a plan for fielding FCS equipment to the Army's more than 200 other brigades. The committee encourages the Army to focus the next set of spin-out equipment on Army heavy brigade combat teams or Stryker brigade combat teams. In particular, the committee believes that the active protection system (APS), mast mounted sight (MMS), and platform soldier mission-readiness system (PS-MRS) elements of the FCS program should be prioritized for the next FCS spin-out, or transferred to other vehicle modernization programs that require them, such as the M1E3 Abrams, and Stryker-Mod programs. The committee encourages the Army to protect the work done to date, through reprogrammings or other budget adjustments, on these elements of the FCS program in fiscal year 2009 as the Army restructures the FCS program.

With regard to the network and software elements of the FCS program, the committee believes that this aspect of the program carries both the highest potential payoff in terms of new military capability, and the greatest risk of additional cost overruns if not properly scoped and managed. Since the program's inception, the committee has supported the program's goal of developing a ubiquitous, secure, flexible, and high-capacity wireless battlefield network. The committee continues to believe that, if achieved, this network capability could lead to dramatic increases in the combat capability of all Army forces. However, committee concerns regarding the budget and schedule for this element of the program remain severe, primarily due to the Department's history of software program cost overruns, and the halting progress of critical enabling Army programs such as the joint tactical radio system and the warfighter information network—tactical programs. For example, the committee notes with concern that the network hardware and software element of the FCS request for fiscal year 2010 includes a \$415.0 million cost increase. As the Army converts the FCS network and software program into a separate program of record, the committee urges the Army to create a program that fields new network capability in detailed increments, each of which have realistic schedules, cost estimates, and requirements. In addition, the committee believes that the Army must integrate upgrades to its current battlefield network capability into these new increments, to ensure that at the end of the process the Army has one network program, not two or more.

Finally, the committee notes that the completion of the FCS preliminary design review on May 15, 2009, begins the 120-day period at the end of which the Secretary of Defense must provide the con-

gressional defense committees with the milestone review report on the FCS program, as required by section 214 of the John Warner National Defense Authorization Act for Fiscal Year 2007 (Public Law 109-354). Absent the termination of the entire FCS program, the committee directs that this report should be delivered by September 13, 2009, and provide, in addition to the content required by statute, a detailed update on the status of the program. This update should include a description of the specific contract actions taken since submission of the fiscal year 2010 budget request, any reprogrammings impacting what remains of the FCS program, and the plan for allocation of unexecuted fiscal year 2009 FCS funding, and the specific requirements, updated cost estimates, and schedules for future spin outs or network increments for which fiscal year 2010 FCS funding may be allocated.

*Future Combat Systems autonomous navigation system*

The budget request contained \$125.6 million in PE 64663A for autonomous navigation system (ANS) development.

The committee notes that the Army is developing an onboard ANS for Future Combat Systems (FCS) unmanned platforms. The committee believes robotic systems using ANS could provide soldiers enhanced force protection and combat effectiveness. Beyond their role in the FCS program, the committee believes that ANS technologies could also have a direct application to current force operations. Therefore, the committee directs the Secretary of the Army to submit a report, by March 15, 2010, to the congressional defense committees laying out the cost, schedule, and feasibility of implementing ANS technologies and capabilities on existing Army manned and unmanned platforms.

The committee recommends \$125.6 million, the full amount requested, in PE 64663A for FCS autonomous vehicle navigation system development.

*Future Combat Systems manned ground vehicles*

The budget request contained \$368.6 million in PE 64660A for Future Combat Systems (FCS) manned ground vehicle (MGV) contract termination costs.

The committee notes that \$744.6 million in fiscal year 2009 funds for FCS MGVs had not been executed as of April 30, 2009, and that the Secretary of Defense has directed termination of the MGV portion of the FCS program. Therefore, the committee believes that unexecuted fiscal year 2009 funds will be more than adequate to cover any possible termination costs to the government, and that the fiscal year 2010 request for additional termination funds is not justified.

The committee recommends \$100.0 million, a decrease of \$268.6 million, in PE 64660A for FCS manned ground vehicle development.

*Future Combat Systems unattended ground sensors*

The budget request contained \$26.9 million in PE 64664A for Future Combat Systems (FCS) unattended ground sensor (UGS) development.

The committee understands that units will employ UGS to provide remote perimeter defense, surveillance, target acquisition, and

situational awareness. Prototype versions of UGS sensors are currently fielded to the Army Evaluation Task Force, where soldiers are exploring optimizing applications for the sensors in an expanding variety of tactical scenarios. The committee notes that the Army plans to field the UGS capability as rapidly as possible as part of the FCS first “spin-out” effort. The committee continues to support any effort that puts mature enhanced capabilities into our combat units as soon as possible. The committee understands that the current approved acquisition strategy allows for direct procurement of the UGS system outside of the current prime contract. The committee believes the Army should pursue the most cost-effective solution prior to making a full-rate production decision. Therefore, the committee directs the Secretary of the Army to provide a report to the congressional defense committees, by March 15, 2010, that addresses the potential business case analysis for or against multi-source procurement of FCS UGS prior to making a full-rate production decision. The report should include the viability of integrating existing current force UGS systems into the FCS UGS development program.

The committee recommends \$26.9 million, the full amount requested, in PE 64664A for FCS unattended ground sensors development.

#### *Heavy duty hybrid electric vehicle demonstration*

The budget request contained \$89.5 million in PE 63005A for combat vehicle and automotive advanced technology, but included no funds for the demonstration of low-emission and fuel-efficient hybrid electric engine propulsion systems for heavy tactical wheeled vehicles (TWV).

The committee understands low emission and fuel efficient hybrid electric engine propulsion systems could be used to develop and demonstrate next generation hybrid electric powertrains on up to five heavy tactical wheeled vehicles. The committee is aware that prior year funds have been appropriated for and Air Force first-generation hybrid electric heavy tactical wheeled vehicle program and the committee expects the Army to leverage results from the Air Force Program.

The committee recommends an increase of \$3.0 million in PE 63005A for the continued refinement of system development and demonstration of a low emission and fuel efficient hybrid electric engine propulsion system for the Army’s heavy tactical wheeled vehicle fleet.

#### *Independent assessment of the Human Terrain System*

The committee continues to support the concept behind the Human Terrain Teams (HTT) and the overall Human Terrain System (HTS). In the committee report (H. Rept. 110–652) accompanying the Duncan Hunter National Defense Authorization Act for Fiscal Year 2009, the committee expressed support for expansion of the HTT concept, including to other combatant command areas of responsibility.

The committee is aware of anecdotal evidence indicating the benefits of the program supporting operations in the Republic of Iraq and the Islamic Republic of Afghanistan. The committee also notes that a number of press accounts provide anecdotal evidence indi-

cating problems with management and resourcing. The committee finds it difficult to evaluate either set of information in the absence of reliable, empirical data.

Therefore, the committee directs the Secretary of Defense to conduct an independent assessment of the Human Terrain System, and submit to the congressional defense committees a report detailing that assessment by March 1, 2010. The independent assessment should consider the following elements:

- (1) An overview of all of the components of HTS, including related technology development efforts;
- (2) The adequacy of the management structure for HTS;
- (3) The metrics used to evaluate each of the components of HTS;
- (4) The adequacy of human resourcing and recruiting efforts, including the implications of converting some contractor positions to government positions;
- (5) An identification of skills that are not resident in government or military positions, and how the Army can leverage academic networks or contracting opportunities to fill those gaps;
- (6) An identification of policy or regulatory issues hindering program execution; and
- (7) The potential to integrate HTS capabilities into existing exercises.

*Joint fires and effects trainer system enhancements*

The budget request contained \$19.4 million in PE 63015A for next generation training and simulation systems, but included no funds for joint fires and effects training system (JFETS) enhancements.

The JFETS call for fire training capability would improve the warfighter's ability to synchronize fires and effects across joint service platforms, to include close air support, precision artillery support, and support from air and missile defense units. The committee is aware the JFETS program has trained over 5,000 soldiers; however, currently only one soldier can be trained at a time. The committee understands the JFETS program could be improved to allow for a single instructor to manage nine concurrent sessions.

The committee recommends an increase of \$2.5 million in PE 63015A, to further the development of training enhancements for the JFETS program to create efficiencies in training.

*Joint land attack cruise missile defense elevated netted sensor system*

The budget request contained \$360.1 million in PE 12419A for development of the joint land attack cruise missile defense elevated netted sensor system (JLENS).

The committee notes that the JLENS program recently experienced a schedule and cost breach of its acquisition program baseline due to an Army decision to withhold procurement funding in fiscal year 2011. Therefore, the committee does not believe the program will require the full amount requested for continued system development and demonstration.

The committee recommends \$238.1 million, a decrease of \$122.0 million, in PE 12419A for the JLENS program.

*Landmine warfare/barrier program*

The budget request contained \$82.3 million in PE 64808A for landmine warfare/barrier development. Of this amount, \$42.6 million was requested for development of the airborne surveillance, target acquisition, and minefield detection system and the ground standoff mine detection system.

The committee understands that these two sensor packages are primarily designed for use on the Future Combat Systems (FCS) class IV unmanned aerial system and the FCS multi-function utility/equipment logistics unmanned vehicle. The committee notes that the FCS brigade combat team program will soon be terminated, and that these two FCS elements are not part of any planned FCS spin-out. Therefore, the committee does not believe that funding requested for the sensor packages for these FCS elements is properly aligned with what remains of the FCS program.

The committee recommends \$61.0 million, a decrease of \$21.3 million, in PE 64808A for landmine warfare/barrier development. Of the funds authorized, the committee expects the Army to fully fund the Scorpion—intelligent munitions system, which also has funding in this program element.

*Manned ground vehicle program*

The budget request contained \$100.0 million in PE 65625A for a new Army manned ground vehicle (MGV) program.

The committee understands that the funds requested in this line will be used to conduct analysis of alternatives, requirements development, technology assessments, and cost-estimating activities related to a new major defense acquisition program for Army manned ground vehicles. The committee further understands that the Army does not intend to complete the initial conceptual work on this program until September 2009, and that the number, class, and type of vehicles this program will develop have yet to be determined. Therefore, the committee does not believe that the full amount requested is justified or necessary to conduct early, pre-milestone A work on this program.

The committee recommends \$50.0 million, a decrease of \$50.0 million, in PE 65625A for Army manned ground vehicle development.

*Mid-range munition program*

The budget request contained \$33.9 million in PE 63639A for tank and medium-caliber ammunition research and development. Of this amount, no funds were requested for the mid-range munition (MRM) program.

The committee notes that, although tied to the Future Combat Systems (FCS) manned ground vehicle development program, the MRM round could be integrated into an improved M1 Abrams tank design, and could provide significant beyond-line-of-sight capability the M1 Abrams currently lacks. The committee believes that the MRM program requires funding from the Army in fiscal year 2010 to preserve the work done to date on this program and, if possible, to keep it on its current schedule. The committee directs the Secretary of the Army to deliver a report to the congressional defense committees, by March 15, 2010, explaining the Army's future plans for the MRM program.

*Non-line of sight cannon*

The budget request contained \$58.2 million in PE 64647A for non-line of sight cannon (NLOS-C) contract termination costs.

The committee notes that \$236.5 million in fiscal year 2009 funds for NLOS-C development, procurement, and advanced procurement had not been executed as of April 30, 2009, and that the Secretary of Defense has directed termination of the NLOS-C program. Therefore, the committee believes that unexecuted fiscal year 2009 funds for the NLOS-C program will be more than adequate to cover any possible termination costs to the government, and that the fiscal year 2010 request for additional termination funds is not justified.

The committee recommends no funds, a decrease of \$58.2 million, in PE 64647A for NLOS-C development.

*Optimizing Natural Language Processing of Open Source Intelligence*

The budget request contained \$41.6 million in PE 63772A for advanced tactical computer science and sensor technology, but contained no funding for the Optimizing Natural Language Processing of Open Source Intelligence (OSINT) project.

The OSINT project would support a cooperative effort between the State University of New York at Buffalo and its partners to design and build a prototype text analytics and extraction tool for use by the Army for more effective intelligence analysis and decision-making in asymmetric warfare situations.

The committee recommends an increase of \$1.5 million in PE 63772A for the Optimizing Natural Language Processing of Open Source Intelligence project.

*PacCom renewable energy security system*

The budget request contained \$5.9 million in PE 63734A for military engineering advanced technology but included no funds for the PacCom renewable energy security system.

The committee recognizes that over 90 percent of the energy consumed in Hawaii is imported from out of state and that this creates an inherent energy security risk. The committee supports the PacCom renewable energy security system's collaborative demonstration project to produce renewable fuel and enhance energy security in Hawaii.

The committee recommends an increase of \$3.5 million in PE 63734A for the PacCom renewable energy security system.

*RAND Arroyo Center*

The budget request contained \$16.3 million in PE 65103A for the RAND Arroyo Center.

In the committee report (H. Rept. 110-652) accompanying the Duncan Hunter National Defense Authorization Act for Fiscal Year 2009, the committee expressed its concern about reductions in the Army's budget request for the RAND Arroyo Center, and urged the Army to provide stable funding for the RAND Arroyo Center in future budget requests. Unfortunately, the budget request for fiscal year 2010 reduced funding for this program. The committee recognizes the value of rigorous, objective research and analysis produced by the Arroyo Center for the senior leadership of the Army.

Further, the committee believes that the core program of the Arroyo Center must be effectively and efficiently funded, prioritized, and managed.

The committee recommends \$20.3 million, an increase of \$4.0 million, in PE 65103A for the RAND Arroyo Center.

#### *Review of condition-based maintenance architecture*

The committee is concerned that as individual condition-based maintenance solutions are being developed for systems, subsystems, and components, the adherence to Department of Defense Instruction 4151.22 for open architectural design has not been consistently implemented. The committee encourages the Department to adopt an industry standard for open system architecture to ensure the implementation of condition-based maintenance programs interfaces to military services, original equipment manufacturers, and third party systems to meet the performance, safety, reliability, availability, and cost-reduction goals. The committee directs the Secretary of Defense to conduct a review of the Department's condition-based maintenance architecture, and also report the results of the review to the congressional defense committees by September 30, 2010. The review should include the following:

- (1) A determination if the condition-based maintenance open system architecture requirement stated in the Department of Defense Instruction 4151.22 has been implemented by military services;
- (2) The viability of open, standard software architecture to provide diagnostic and prognostic reasoning for systems, subsystems or components;
- (3) A process for including open architecture for the system, subsystem and component structures, diagnostics tools, reference models, maintenance and diagnostics reasoner electronic libraries, and user interfaces across the military services; and
- (4) An evaluation of industrial open architecture standards for use by the Department.

Further, the committee also encourages the Secretary of Defense to seek a peer review from the International Organization for Standardization and S1000D Organization to ensure the proposed standards would leverage commercial approaches for an open architecture condition-based maintenance programs.

#### *Tactical metal fabrication*

The budget request contained \$55.9 million in PE 62601A for combat vehicle and automotive technology, but included no funds for tactical metal fabrication (TacFab) system.

The TacFab system would demonstrate a tactically-mobile rapid metal fabrication capability that would complement the Army's mobile parts hospital program, as well as provide a unique, stand-alone capability as a metal casting resource for Army depots and arsenals in support of equipment reset activities. The committee understands this would address a theater requirement for a mobile foundry and could potentially reduce the time required to produce parts by 90 percent.

The committee recommends an increase of \$4.8 million in PE 62601A for tactical metal fabrication technology.

*Warfighter information network—tactical*

The budget request contained \$180.7 million in PE 63782A for warfighter information network—tactical (WIN-T) development. Of this amount, \$161.6 million was requested for WIN-T increment 3 development.

The committee understands that a portion of the requirements for the WIN-T increment 3 program are directly related to the manned ground vehicle element of the Future Combat Systems (FCS) program, which will be terminated in 2009. The committee notes that until May 18, 2009, 50 percent of fiscal year 2009 funding for WIN-T increment 3 was not available for obligation pending Department of Defense actions outlined in section 215 of the Duncan Hunter National Defense Authorization Act for Fiscal Year 2009 (Public Law 110-417). The committee also notes that of the \$154.7 million available for obligation on May 18, 2009, the Under Secretary of Defense for Acquisition, Technology and Logistics authorized only \$99.0 million for obligation, pending an Army review of WIN-T increment 3 requirements and cost estimates. Therefore, the committee believes that the resulting program delays will reduce funding needed in fiscal year 2010 for WIN-T increment 3 development efforts.

The committee recommends \$165.7 million, a decrease of \$15.0 million, in PE 63782A for the WIN-T program. The committee expects the Army to prioritize the funding authorized for WIN-T increment 2 development.

*Zero waste to landfill demonstration*

The budget request contained \$4.8 million in PE 63779A for environmental quality technology but contained no funds for the Washington State zero waste to landfill demonstration.

The committee believes that the Washington State zero waste to landfill demonstration will further enable the military services to meet their sustainability goals. The demonstration will: perform a waste stream analysis at Fort Lewis to identify materials currently dumped in landfills, which could be used by the military or released to other users for less than the cost of landfill; initiate the reuse of post-consumer materials saved from landfill for use in concrete, asphalt, gypsum, and other green materials; provide a report on data gained from the demonstration to facilitate similar projects at other military installations in Washington State; and validate the viability and technology requirements achieve zero waste to landfill by 2025.

The committee recommends an increase of \$1.2 million in PE 63779A for the Washington State zero waste to landfill demonstration.

## NAVY RESEARCH, DEVELOPMENT, TEST, AND EVALUATION

## Overview

The budget request contained \$19.3 billion for Navy research, development, test, and evaluation (RDT&E).

The committee recommends \$19.6 billion, an increase of \$351.6 million to the budget request.

**Title II - Research, Development, Test, and Evaluation**  
(Dollars in Thousands)

<u>Line</u>	<u>Program Element</u>	<u>Program Title</u>	<u>FY 2010 Request</u>	<u>House Change</u>	<u>House Authorized</u>
		<b>RESEARCH, DEVELOPMENT, TEST &amp; EVALUATION, NAVY</b>			
		<b>BASIC RESEARCH</b>			
001	0601103N	UNIVERSITY RESEARCH INITIATIVES Gulf of Mexico Geoid Model	99,472	5,500 [3,500]	104,972
002	0601152N	Study of Renewable and Alternative Energy Options for Military Build-Up	18,076	[2,000]	18,076
003	0601153N	IN-HOUSE LABORATORY INDEPENDENT RESEARCH DEFENSE RESEARCH SCIENCES Nanoelectronics, Nanometrology, and Nanobiology Initiative Development of Cyber Security K-12 Outreach Program	413,743	4,000 [2,000] [2,000]	417,743
		<b>SUBTOTAL, BASIC RESEARCH, NAVY</b>	<b>531,291</b>	<b>9,500</b>	<b>540,791</b>
		<b>APPLIED RESEARCH</b>			
004	0602114N	POWER PROJECTION APPLIED RESEARCH Multifunctional Materials, their Applications and Devices Whale and Dolphin Hearing and Echolocation	59,787	7,550 [5,000] [2,550]	67,337
005	0602123N	FORCE PROTECTION APPLIED RESEARCH Standoff Explosive Detection System Advanced Energy Storage Technologies for UUVs Design Optimization of Composite High-Speed Boats Using Advanced Composite and Manufacturing and Non-destructive Evaluation Lithium Ion Storage Advancement for Aircraft Applications Non-Traditional Weaving Applications for Aramid Ballistic Fibers and Fabrics	91,400	14,786 [2,000] [3,000] [2,000] [4,200] [3,586]	106,186

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<u>Line</u>	<u>Program Element</u>	<u>Program Title</u>	<u>FY 2010 Request</u>	<u>House Change</u>	<u>House Authorized</u>
006	0602131M	MARINE CORPS LANDING FORCE TECHNOLOGY	39,308		39,308
007	0602234N	MATERIALS, ELECTRONICS AND COMPUTER TECHNOLOGY	0		0
008	0602235N	COMMON PICTURE APPLIED RESEARCH	83,163	2,000	85,163
		Coordinated Operation of Unmanned Vehicles for Littoral Defense		[2,000]	
009	0602236N	WARFIGHTER SUSTAINMENT APPLIED RESEARCH	104,169	5,000	109,169
		Remote Fuel Assessment System		[2,000]	
		Managing and Extending DOD Asset Lifecycles (MEDAL)		[3,000]	
010	0602271N	ELECTROMAGNETIC SYSTEMS APPLIED RESEARCH	64,816	5,500	70,316
		Photonic Digital Radar for the Next Generation of Electronic Warfare Systems		[5,500]	
011	0602435N	OCEAN WARFIGHTING ENVIRONMENT APPLIED RESEARCH	48,750		48,750
012	0602651M	JOINT NON-LETHAL WEAPONS APPLIED RESEARCH	6,008		6,008
013	0602747N	UNDERSEA WARFARE APPLIED RESEARCH	55,694		55,694
014	0602782N	MINE AND EXPEDITIONARY WARFARE APPLIED RESEARCH	40,880		40,880
		<b>SUBTOTAL, APPLIED RESEARCH, NAVY</b>	<b>593,975</b>	<b>34,836</b>	<b>628,811</b>
015	0603114N	<b>ADVANCED TECHNOLOGY DEVELOPMENT</b>			
		POWER PROJECTION ADVANCED TECHNOLOGY	107,969	10,000	117,969
		Countermine Lidar UAV-Based System (CLUBS)		[2,600]	
		Detection, Tracking, and Identification for ISRTE of Mobile Asymmetric Targets		[3,500]	
		Quiet Drive Advanced Rotary Actuator		[2,000]	
		Tactical High Speed Anti-Radiation Missile Demonstration		[1,900]	

**Title II - Research, Development, Test, and Evaluation**

(Dollars in Thousands)

<u>Line</u>	<u>Program Element</u>	<u>Program Title</u>	<u>FY 2010 Request</u>	<u>House Change</u>	<u>House Authorized</u>
016	0603123N	FORCE PROTECTION ADVANCED TECHNOLOGY Euler Turbine for Fuel Cell Energy Recovery High Speed Power Node Switching and Power Node Control Centers High-Temperature Radar Dome Materials ASC-1187 ADV Countermeasures Pure Hydrogen Supply from Logistic Fuels Strategic Mobility 21	66,035	16,500 [2,000] [5,000] [2,250] [1,250] [4,000] [2,000]	82,535
017	0603235N	COMMON PICTURE ADVANCED TECHNOLOGY High-Integrity Global Positioning System	108,394	-59,110 [-59,110]	49,284
018	0603236N	WARFIGHTER SUSTAINMENT ADVANCED TECHNOLOGY Active Acoustic Analysis and Mitigation System	86,239	4,000 [4,000]	90,239
019	0603271N	ELECTROMAGNETIC SYSTEMS ADVANCED TECHNOLOGY	65,827		65,827
020	0603640M	USMC ADVANCED TECHNOLOGY DEMONSTRATION (ATD)	107,363		107,363
021	0603651M	JOINT NON-LETHAL WEAPONS TECHNOLOGY DEVELOPMENT	10,998		10,998
022	0603729N	WARFIGHTER PROTECTION ADVANCED TECHNOLOGY Navy Special Warfare Performance and Injury Prevention Program for SBT 22 at Stennis Space Center	18,609	2,500 [2,500]	21,109
023	0603747N	UNDERSEA WARFARE ADVANCED TECHNOLOGY Navy Use of UNOLS Fleet	68,037	3,500 [3,500]	71,537
024	0603758N	NAVY WARFIGHTING EXPERIMENTS AND DEMONSTRATIONS	52,643		52,643
025	0603782N	MINE AND EXPEDITIONARY WARFARE ADVANCED TECHNOLOGY	28,782		28,782
		<b>SUBTOTAL, ADVANCED TECHNOLOGY DEVELOPMENT, NAVY</b>	<b>720,896</b>	<b>-22,610</b>	<b>698,286</b>

**Title II - Research, Development, Test, and Evaluation**

(Dollars in Thousands)

<u>Line</u>	<u>Program Element</u>	<u>Program Title</u>	<u>FY 2010 Request</u>	<u>House Change</u>	<u>House Authorized</u>
		<b>ADVANCED COMPONENT DEVELOPMENT &amp; PROTOTYPES</b>			
026	0603207N	AIR/OCEAN TACTICAL APPLICATIONS	116,082		116,082
027	0603216N	AVIATION SURVIVABILITY Lighter Than Air Stratospheric UAV for Persistent Communications Relay and Surveillance	6,505	6,000 [6,000]	12,505
028	0603237N	DEPLOYABLE JOINT COMMAND AND CONTROL	6,032		6,032
029	0603254N	ASW SYSTEMS DEVELOPMENT Marine Mammal Awareness, Alert, and Response Systems Trigger and Alert Sonobuoy System Project Air Deployable ASW Cluster Sensors for Non-Acoustic Detection Airborne Aquatic Detection Sensor System NIR Sight (Near-Infra-Red Ranging)	16,585	12,200 [3,500] [1,500] [2,000] [1,200] [4,000]	28,785
030	0603261N	TACTICAL AIRBORNE RECONNAISSANCE	7,713		7,713
031	0603382N	ADVANCED COMBAT SYSTEMS TECHNOLOGY	1,677		1,677
032	0603502N	SURFACE AND SHALLOW WATER MINE COUNTERMEASURES	76,739		76,739
033	0603506N	SURFACE SHIP TORPEDO DEFENSE Continuous Active Sonar for Torpedo Systems	57,538	5,000 [5,000]	62,538
034	0603512N	CARRIER SYSTEMS DEVELOPMENT	173,594		173,594
035	0603513N	SHIPBOARD SYSTEM COMPONENT DEVELOPMENT Advanced Steam Turbine Mobile Valve and Flex Hose Maintenance (MVFM) Next Generation Shipboard Intergrated Power: Fuel Efficiency and Advanced Capability Enhancer	1,691	13,500 [7,500] [1,000] [5,000]	15,191
036	0603525N	PILOT FISH	79,194		79,194

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<u>Line</u>	<u>Program Element</u>	<u>Program Title</u>	<u>FY 2010 Request</u>	<u>House Change</u>	<u>House Authorized</u>
037	0603527N	RETRACT LARCH	99,757		99,757
038	0603536N	RETRACT JUNIPER	120,752		120,752
039	0603542N	RADIOLOGICAL CONTROL	1,372		1,372
040	0603553N	SURFACE ASW	21,995		21,995
041	0603561N	ADVANCED SUBMARINE SYSTEM DEVELOPMENT	551,836	9,400	561,236
		Future Generation Thinline Towed Array		[4,700]	
		Submarine Fatline Vector Sensor Towed Array		[3,200]	
		Low-Cost Laser Module Assembly for Navy's Acoustic Sensors (LC-LMA)		[1,500]	
042	0603562N	SUBMARINE TACTICAL WARFARE SYSTEMS	10,172		10,172
043	0603563N	SHIP CONCEPT ADVANCED DESIGN	22,541		22,541
044	0603564N	SHIP PRELIMINARY DESIGN & FEASIBILITY STUDIES	28,135	10,000	38,135
		Support for Naval Ship Hydrodynamics Test Facilities		[10,000]	
045	0603570N	ADVANCED NUCLEAR POWER SYSTEMS	259,887		259,887
046	0603573N	ADVANCED SURFACE MACHINERY SYSTEMS	5,599	8,400	13,999
		High Density Power Conversion and Distribution Equipment		[3,400]	
		Hybrid Electric Drive		[5,000]	
047	0603576N	CHALK EAGLE	443,555		443,555
048	0603581N	LITTORAL COMBAT SHIP (LCS)	360,518		360,518
049	0603582N	COMBAT SYSTEM INTEGRATION	22,558		22,558
050	0603609N	CONVENTIONAL MUNITIONS	3,458		3,458
051	0603611M	MARINE CORPS ASSAULT VEHICLES	293,466		293,466
052	0603612M	USMC MINE COUNTERMEASURES SYSTEMS - ADV DEV	0		0
053	0603635M	MARINE CORPS GROUND COMBAT/SUPPORT SYSTEM	73,798		73,798
054	0603654N	JOINT SERVICE EXPLOSIVE ORDNANCE DEVELOPMENT	21,054		21,054

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055	0603658N	COOPERATIVE ENGAGEMENT	56,586		56,586
056	0603713N	OCEAN ENGINEERING TECHNOLOGY DEVELOPMENT	17,328		17,328
057	0603721N	ENVIRONMENTAL PROTECTION	20,661		20,661
058	0603724N	NAVY ENERGY PROGRAM	8,476		8,476
059	0603725N	FACILITIES IMPROVEMENT	4,002	10,000	14,002
		Wave Energy Powerbuoy Generating System		[3,000]	
		Photovoltaic Rooftop Systems -Navy		[1,500]	
		Regenerative Fuel Cell Back-Up Power		[1,700]	
		Testing of Critical Components for Ocean Alternate Energy Options		[3,800]	
060	0603734N	CHALK CORAL	70,772		70,772
061	0603739N	NAVY LOGISTIC PRODUCTIVITY	4,301	1,200	5,501
		In Transit Visibility System		[1,200]	
062	0603746N	RETRACT MAPLE	210,237		210,237
063	0603748N	LINK PLUMERIA	69,313		69,313
064	0603751N	RETRACT ELM	152,151		152,151
065	0603755N	SHIP SELF DEFENSE	6,960		6,960
066	0603764N	LINK EVERGREEN	123,660		123,660
067	0603787N	SPECIAL PROCESSES	54,115		54,115
068	0603790N	NATO RESEARCH AND DEVELOPMENT	10,194		10,194
069	0603795N	LAND ATTACK TECHNOLOGY	1,238	5,000	6,238
		Land Attack Technology		[5,000]	
070	0603851M	NONLETHAL WEAPONS	46,971		46,971
071	0603860N	JOINT PRECISION APPROACH AND LANDING SYSTEMS	150,304		150,304
072	0603879N	SINGLE INTEGRATED AIR PICTURE (SIAP) SYSTEM ENGINEER (SE)	52,716		52,716

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073	0603889N	COUNTERDRUG RDT&E PROJECTS	0		0
074	0603925N	DIRECTED ENERGY AND ELECTRIC WEAPON SYSTEMS High Energy Density Capacitors for Military Applications Joint Technology Insertion & Accelerated System Intergration Capability for Electronic Warfare	5,003	7,000 [3,000] [4,000]	12,003
075	0604272N	TACTICAL AIR DIRECTIONAL INFRARED COUNTERMEASURES (TADIRCM)	63,702		63,702
076	0604450N	JOINT AIR-TO-GROUND MISSILE (JAGM)	0		0
077	0604653N	JOINT COUNTER RADIO CONTROLLED IED ELECTRONIC WARFARE (JCREW)	67,843		67,843
078	0604659N	PRECISION STRIKE WEAPONS DEVELOPMENT PROGRAM	40,926		40,926
079	0604707N	SPACE AND ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT	42,533		42,533
		<b>SUBTOTAL, ADVANCED COMPONENT DEVELOPMENT &amp; PROTOTYPES, NAVY</b>	<b>4,163,795</b>	<b>87,700</b>	<b>4,251,495</b>
080	0604212N	<b>SYSTEM DEVELOPMENT &amp; DEMONSTRATION</b> OTHER HELO DEVELOPMENT	54,092		54,092
081	0604214N	AV-8B AIRCRAFT - ENG DEV	20,886		20,886
082	0604215N	STANDARDS DEVELOPMENT Measurement Standards Research and Development	53,540	2,000 [2,000]	55,540
083	0604216N	MULTI-MISSION HELICOPTER UPGRADE DEVELOPMENT USN MH-60S "Close the Lethality Gap" M230 Pylon Qualification	81,953	4,700 [4,700]	86,653

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<u>Line</u>	<u>Program Element</u>	<u>Program Title</u>	<u>FY 2010 Request</u>	<u>House Change</u>	<u>House Authorized</u>
084	0604218N	AIR/OCEAN EQUIPMENT ENGINEERING	7,485		7,485
085	0604221N	P-3 MODERNIZATION PROGRAM	3,659		3,659
086	0604230N	WARFARE SUPPORT SYSTEM	6,307		6,307
087	0604231N	TACTICAL COMMAND SYSTEM	86,462		86,462
088	0604234N	ADVANCED HAWKEYE	364,557		364,557
089	0604245N	H-1 UPGRADES	32,830		32,830
090	0604261N	ACOUSTIC SEARCH SENSORS	56,369		56,369
091	0604262N	V-22A	89,512	3,000	92,512
		MV-22 Satellite Weather Systems Development		[3,000]	
092	0604264N	AIR CREW SYSTEMS DEVELOPMENT	14,265		14,265
093	0604269N	EA-18	55,446		55,446
094	0604270N	ELECTRONIC WARFARE DEVELOPMENT	97,635	4,000	101,635
		Electronic Warfare Technology, Doctrine, and Tactics Development		[4,000]	
095	0604273N	VH-71A EXECUTIVE HELO DEVELOPMENT	85,240		85,240
096	0604274N	NEXT GENERATION JAMMER (NGJ)	127,970		127,970
097	0604280N	JOINT TACTICAL RADIO SYSTEM - NAVY (JTRS-NAVY)	876,374		876,374
098	0604300N	SC-21 TOTAL SHIP SYSTEM ENGINEERING	0		0
099	0604307N	SURFACE COMBATANT COMBAT SYSTEM ENGINEERING	178,459	5,000	183,459
		Surface Ship Advanced Capability Build		[5,000]	
100	0604311N	LPD-17 CLASS SYSTEMS INTEGRATION	5,304		5,304
101	0604329N	SMALL DIAMETER BOMB (SDB)	43,902		43,902
102	0604366N	STANDARD MISSILE IMPROVEMENTS	182,197		182,197
103	0604373N	AIRBORNE MCM	48,712		48,712

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(Dollars in Thousands)

<u>Line</u>	<u>Program Element</u>	<u>Program Title</u>	<u>FY 2010 Request</u>	<u>House Change</u>	<u>House Authorized</u>
104	0604378N	NAVAL INTEGRATED FIRE CONTROL - COUNTER AIR SYSTEMS ENGINEERING	11,727		11,727
105	0604501N	ADVANCED ABOVE WATER SENSORS	236,078		236,078
106	0604503N	SSN-688 AND TRIDENT MODERNIZATION	122,733		122,733
107	0604504N	AIR CONTROL	6,533		6,533
108	0604512N	SHIPBOARD AVIATION SYSTEMS	80,623		80,623
109	0604518N	COMBAT INFORMATION CENTER CONVERSION	13,305		13,305
110	0604558N	NEW DESIGN SSN Common Command and Control System Module	154,756	11,000	165,756
		Mold-in-Place Coating for Development of U.S. Submarine Fleet	0	[9,000]	
111	0604561N	SSN-21 DEVELOPMENTS	0	[2,000]	
112	0604562N	SUBMARINE TACTICAL WARFARE SYSTEM	59,703		59,703
113	0604567N	SHIP CONTRACT DESIGN/LIVE FIRE T&E Automated Fiber Optic Manufacturing Initiative for Navy Ships	89,988	5,200	95,188
114	0604574N	NAVY TACTICAL COMPUTER RESOURCES	4,620	[5,200]	4,620
115	0604601N	MINE DEVELOPMENT	2,249		2,249
116	0604610N	LIGHTWEIGHT TORPEDO DEVELOPMENT	21,105		21,105
117	0604654N	JOINT SERVICE EXPLOSIVE ORDNANCE DEVELOPMENT	10,327		10,327
118	0604703N	PERSONNEL, TRAINING, SIMULATION, AND HUMAN FACTORS	5,898		5,898
119	0604727N	JOINT STANDOFF WEAPON SYSTEMS Extended Range Joint Stand-Off Weapon	10,022	6,500	16,522
120	0604755N	SHIP SELF DEFENSE (DETECT & CONTROL)	35,459	[6,500]	35,459
121	0604756N	SHIP SELF DEFENSE (ENGAGE: HARD KILL)	34,236		34,236
122	0604757N	SHIP SELF DEFENSE (ENGAGE: SOFT KILL/EW)	88,895		88,895

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123	0604761N	INTELLIGENCE ENGINEERING	14,438		14,438
124	0604771N	MEDICAL DEVELOPMENT Flexible Medical Solutions FlexMedPatch Program HI-CA Biorepository Consortium for DOD Research Neurogenesis Therapeutics for PTSD Strategies to Reduce Post Traumatic Stress Disorder (PTSD) & Traumatic Brain Injury (TBI) Burden U.S. Navy Vaccine Program U.S. Navy Pandemic Influenza Vaccine Program: Enhancement of Influenza Vaccine Efficacy	9,888	23,500 [2,000] [2,500] [3,000] [4,000] [4,000] [8,000]	33,388
125	0604777N	NAVIGATION/ID SYSTEM	63,184		63,184
126	0604784N	DISTRIBUTED SURVEILLANCE SYSTEM	0		0
127	0604800N	JOINT STRIKE FIGHTER (JSF) F136 Development Program Excess	1,741,296	153,500 [231,500] [-78,000]	1,894,796
128	0605013M	INFORMATION TECHNOLOGY DEVELOPMENT	9,868		9,868
129	0605013N	INFORMATION TECHNOLOGY DEVELOPMENT Maintenance Planning and Assessment Technology (MPAT) Insertion	69,026	3,600 [3,000]	72,626
130	0605212N	Advanced Maintenance and Environmental Monitoring Technologies for Public Shipyards		[600]	
131	0605430N	CH-53K RDTE	554,827		554,827
132	0605450N	C/KC-130 AVIONICS MODERNIZATION PROGRAM (AMP) JOINT AIR-TO-GROUND MISSILE (JAGM)	0 81,434		0 81,434

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133	0605500N	MULTI-MISSION MARITIME AIRCRAFT (MMA)	1,162,417		1,162,417
134	0204201N	CG(X)	150,022		150,022
135	0204202N	DDG-1000	539,053		539,053
136	0304785N	TACTICAL CRYPTOLOGIC SYSTEMS	19,016		19,016
		<b>SUBTOTAL SYSTEM DEVELOPMENT &amp; DEMONSTRATION, NAVY</b>	<b>7,975,882</b>	<b>222,000</b>	<b>8,197,882</b>
<b>RDT&amp;E MANAGEMENT SUPPORT</b>					
137	0604256N	THREAT SIMULATOR DEVELOPMENT	25,534		25,534
138	0604258N	TARGET SYSTEMS DEVELOPMENT	79,603		79,603
139	0604759N	MAJOR T&E INVESTMENT	44,844		44,844
140	0605152N	STUDIES AND ANALYSIS SUPPORT - NAVY	11,422		11,422
141	0605154N	CENTER FOR NAVAL ANALYSES	49,821		49,821
142	0605502N	SMALL BUSINESS INNOVATIVE RESEARCH	0		0
143	0605804N	TECHNICAL INFORMATION SERVICES	735	3,000	3,735
		Center for Commercialization of Advanced Technology		[3,000]	
144	0605853N	MANAGEMENT, TECHNICAL & INTERNATIONAL SUPPORT	60,590		60,590
145	0605856N	STRATEGIC TECHNICAL SUPPORT	3,633		3,633
146	0605861N	RDT&E SCIENCE AND TECHNOLOGY MANAGEMENT	70,942		70,942
147	0605862N	RDT&E INSTRUMENTATION MODERNIZATION	0		0
148	0605863N	RDT&E SHIP AND AIRCRAFT SUPPORT	193,353		193,353
149	0605864N	TEST AND EVALUATION SUPPORT	380,733		380,733
150	0605865N	OPERATIONAL TEST AND EVALUATION CAPABILITY	12,010		12,010
151	0605866N	NAVY SPACE AND ELECTRONIC WARFARE (SEW) SUPPORT	2,703		2,703

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152	0605867N	SEW SURVEILLANCE/RECONNAISSANCE SUPPORT	20,921		20,921
153	0605873M	MARINE CORPS PROGRAM WIDE SUPPORT	19,004		19,004
154	0305885N	TACTICAL CRYPTOLOGIC ACTIVITIES	2,464		2,464
155	0804758N	SERVICE SUPPORT TO JFCOM, JNTC	4,197		4,197
156	0909999N	FINANCING FOR CANCELLED ACCOUNT ADJUSTMENTS	0		0
		<b>SUBTOTAL, RDT&amp;E MANAGEMENT SUPPORT, NAVY</b>	<b>982,509</b>	<b>3,000</b>	<b>985,509</b>
		<b>OPERATIONAL SYSTEMS DEVELOPMENT</b>			
158	0604227N	HARPOON MODIFICATIONS	0		0
159	0604402N	UNMANNED COMBAT AIR VEHICLE (UCAV) ADVANCED COMPONENT AND PROTOTYPE DEVELOPMENT	311,204		311,204
160	0101221N	STRATEGIC SUB & WEAPONS SYSTEM SUPPORT Advanced LINAC Facility	74,939	1,170 [1,170]	76,109
161	0101224N	SSBN SECURITY TECHNOLOGY PROGRAM	34,479		34,479
162	0101226N	SUBMARINE ACOUSTIC WARFARE DEVELOPMENT	7,211		7,211
163	0101402N	NAVY STRATEGIC COMMUNICATIONS E-6B Strategic Communications Upgrade Block 1A (VLF-TX & HPTS)	43,982	4,000 [4,000]	47,982
164	0203761N	RAPID TECHNOLOGY TRANSITION (RTT)	39,125		39,125
165	0204136N	F/A-18 SQUADRONS	127,733		127,733
166	0204152N	E-2 SQUADRONS	63,058		63,058
167	0204163N	FLEET TELECOMMUNICATIONS (TACTICAL)	37,431		37,431
168	0204229N	TOMAHAWK AND TOMAHAWK MISSION PLANNING CENTER (TMPC)	13,238		13,238
169	0204311N	INTEGRATED SURVEILLANCE SYSTEM	24,835	3,600	28,435

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170	0204413N	Deployable Autonomous Distributed System	2,324	[3,600]	2,324
171	0204571N	AMPHIBIOUS TACTICAL SUPPORT UNITS (DISPLACEMENT CRAFT)	49,293		49,293
172	0204574N	CONSOLIDATED TRAINING SYSTEMS DEVELOPMENT	1,609		1,609
173	0204575N	CRYPTOLOGIC DIRECT SUPPORT	37,524		37,524
174	0205601N	ELECTRONIC WARFARE (EW) READINESS SUPPORT	30,045	1,900	31,945
		HARM IMPROVEMENT		[1,900]	
		AARGM Derivative Program			
175	0205604N	TACTICAL DATA LINKS	25,003		25,003
176	0205620N	SURFACE ASW COMBAT SYSTEM INTEGRATION	41,803		41,803
177	0205632N	MK-48 ADCAP	28,438		28,438
178	0205633N	AVIATION IMPROVEMENTS	135,840	4,000	139,840
		Reduction of Weapon System Downtime Rapid Repair Structural Adhesives		[4,000]	
179	0205658N	NAVY SCIENCE ASSISTANCE PROGRAM	3,716		3,716
180	0205675N	OPERATIONAL NUCLEAR POWER SYSTEMS	72,031		72,031
181	0206313M	MARINE CORPS COMMUNICATIONS SYSTEMS	287,348		287,348
182	0206623M	MARINE CORPS GROUND COMBAT/SUPPORTING ARMS SYSTEMS	120,379		120,379
183	0206624M	MARINE CORPS COMBAT SERVICES SUPPORT	17,057		17,057
184	0206625M	USMC INTELLIGENCE/ELECTRONIC WARFARE SYSTEMS (MIP)	30,167		30,167
185	0207161N	TACTICAL AIM MISSILES	2,298		2,298
186	0207163N	ADVANCED MEDIUM RANGE AIR-TO-AIR MISSILE (AMRAAM)	3,604		3,604
187	0208058N	JOINT HIGH SPEED VESSEL (JHSV)	8,431		8,431
188	0301303N	MARITIME INTELLIGENCE	0		0
189	0301323N	COLLECTION MANAGEMENT	0		0

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190	0301327N	TECHNICAL RECONNAISSANCE AND SURVEILLANCE	0		0
191	0301372N	CYBER SECURITY INITIATIVE - GDIP	0		0
	0301555N	CLASSIFIED PROGRAMS	0		0
	0301556N	SPECIAL PROGRAMS	0		0
192	0303109N	SATELLITE COMMUNICATIONS (SPACE)	474,009		474,009
193	0303138N	CONSOLIDATED AFLOAT NETWORK ENTERPRISE SERVICES (CANES)	45,513		45,513
194	0303140N	INFORMATION SYSTEMS SECURITY PROGRAM	24,226		24,226
195	0303158M	JOINT COMMAND AND CONTROL PROGRAM (JC2)	2,453		2,453
196	0303158N	JOINT COMMAND AND CONTROL PROGRAM (JC2)	4,139		4,139
197	0305149N	COBRA JUDY	62,061		62,061
198	0305160N	NAVY METEOROLOGICAL AND OCEAN SENSORS-SPACE (METOC)	28,094		28,094
199	0305192N	MILITARY INTELLIGENCE PROGRAM (MIP) ACTIVITIES	4,600		4,600
200	0305204N	TACTICAL UNMANNED AERIAL VEHICLES	8,971		8,971
201	0305205N	ENDURANCE UNMANNED AERIAL VEHICLES	0		0
202	0305206N	AIRBORNE RECONNAISSANCE SYSTEMS	46,208		46,208
203	0305207N	MANNED RECONNAISSANCE SYSTEMS ( C )	22,599		22,599
204	0305208N	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	18,079		18,079
205	0305220N	RQ-4 UAV	465,839		465,839
206	0305231N	MQ-8 UAV	25,639		25,639
207	0305232M	RQ-11 UAV	553		553
208	0305233N	RQ-7 UAV	986		986
209	0305234M	SMALL (LEVEL 0) TACTICAL UAS (STUASL0)	18,763		18,763
210	0305234N	SMALL (LEVEL 0) TACTICAL UAS (STUASL0)	23,594		23,594

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211	0307207N	AERIAL COMMON SENSOR (ACS)	0		
212	0307217N	EP-3E REPLACEMENT (EPX)	11,976		11,976
213	0308601N	MODELING AND SIMULATION SUPPORT	8,028		8,028
214	0702207N	DEPOT MAINTENANCE (NON-IF)	14,675		14,675
215	0702239N	AVIONICS COMPONENT IMPROVEMENT PROGRAM	2,725		2,725
216	0708011N	INDUSTRIAL PREPAREDNESS	56,691	2,500	59,191
		Laser Optimization Remote Lighting Systems		[2,500]	
217	0708730N	MARITIME TECHNOLOGY (MARITECH)	0		0
999	99999999	OTHER PROGRAMS	1,258,018		1,258,018
		<b>SUBTOTAL, OPERATIONAL SYSTEMS DEVELOPMENT, RDT&amp;E</b>	<b>4,302,584</b>	<b>17,170</b>	<b>4,319,754</b>
		<b>TOTAL, RDT&amp;E NAVY</b>	<b>19,270,932</b>	<b>351,596</b>	<b>19,622,528</b>

## Items of Special Interest

*Advanced energy storage technologies for unmanned undersea vehicles*

The budget request contained \$91.4 million in PE 62123N for force protection applied research, containing \$43.6 million for the development of surface ship and submarine hull, mechanical, and electrical technology, but contained no funds for advanced energy storage technologies for unmanned undersea vehicles.

The committee notes the 2004 Navy Unmanned Undersea Vehicle (UUV) Master Plan highlights advanced energy storage as a critical technology necessary for supporting unmanned undersea operational requirements. Additionally, the 2007 naval science and technology strategic plan lists power and energy as a key focus area for energy assurance to improve maritime freedom of action. The committee agrees that to meet growing maritime threats, current and future naval forces' require energy and propulsion capabilities that provide sufficient power for endurance, range, and speed requirements for the next generation of UUVs.

The committee recommends an increase of \$3.0 million in PE 62123N for the development of advanced energy storage and propulsion technologies for use in UUVs.

*Advanced linear accelerator facility*

The budget request contained \$74.9 million in PE 11221N for strategic sub and weapons systems support, but included no funds for the Crane linear accelerator (LINAC) facility.

The committee notes that the linear accelerator simulates the high radiation environment in space and is a critical tool for testing the effectiveness of electronic systems that are deployed in space.

The committee recommends an increase of \$1.2 million in PE 11221N for the completion of the LINAC facility and urges the Navy to use this research facility in coordination with the goals of the Joint Radiation Hardened Electronics Oversight Council.

*Advanced steam turbine*

The budget request contained \$1.7 million in PE 63513N for shipboard system component development but contained no funding for development of the advanced steam turbine.

The committee supports developing multiple technologies for improved competition in the procurement of major equipment for ships and submarines. Developing improved magnetic bearing assemblies would provide a secondary turbine source for improved competition in Virginia class submarines construction.

The committee recommends an increase of \$7.5 million in PE 63513N for qualification of magnetic bearing assemblies in advanced steam turbines.

*Automated fiber optic manufacturing initiative for Navy ships*

The budget request contained \$90.0 million in PE 64567N for ship contract design and live fire test and evaluation, but included no funds for automated fiber optic manufacturing initiative for Navy ships.

The committee understands the benefits of optical fiber and notes its growing use in a number of current and future defense platforms, including communication components for tactical shipboard applications. The committee further notes that current technology for the manufacture of fiber optic cable assemblies requires a complex process performed manually adding costs to production and field maintenance. The committee applauds the recently completed efforts by the Office of Naval Research manufacturing technology program to develop an automated process to produce high quality factory terminated fiber optic assemblies. The committee understands challenges remain affecting larger scale deployment of fiber optic technology aboard naval ships.

The committee recommends an increase of \$5.2 million in PE 64567N for the continued development of automated fiber optic manufacturing initiative for Navy ships.

*Common command and control system module*

The budget request contained \$154.8 million in PE 64558N for new design SSN but contained no funding for development of a common command and control system module (CCCS) for advanced submarine construction.

The committee understands that development of a common command and control system module for use on Virginia class submarines (Blk IV/V), SSGN's, and the Ohio class submarine replacement program will allow for rapid integration of new technologies due to the highly reconfigurable CCCS.

The committee recommends an increase of \$9.0 million in PE 64558N for development of common command and control system module.

*Continuous active sonar for torpedo systems*

The budget request contained \$57.5 million in PE 63506N but contained no funding for continuous active sonar (CAS) technology.

The committee understands that CAS technology has been shown to maximize sound energy on target allowing lower source levels than used in current pulsed mid-frequency sonar system. This technology has the potential to significantly enhance the ability to detect, classify, and localize (DCL) incoming hostile torpedoes.

The committee recommends an increase of \$5.0 million in PE 63506N for continuous active sonar technology for torpedo DCL systems.

*Deployable autonomous distributed system*

The budget request contained \$24.8 million in PE 24311N for integrated surveillance system but contained no funding for continued development of deployable autonomous distributed system (DADS).

The committee understands that development of a deployable network of acoustic sensors which can be delivered from multiple platforms is essential to combat the threat posed by increasingly quiet diesel electric and nuclear powered submarines in high contact density littoral environments.

The committee recommends an increase of \$3.6 million in PE 24311N for continued development and testing of deployable distributed systems.

*Electronic warfare technology, doctrine and tactics development*

The budget request contained \$97.6 million in PE 64270N for electronic warfare development.

The committee notes that electronic warfare is one of the many critical components that contribute to successful U.S. military operations. The committee believes that the Department of Defense must be able to jointly exploit the full range of the electromagnetic spectrum while denying the same capability to our enemies. However, given the multiple approaches being implemented within each of the military services regarding electronic warfare, the committee is concerned that the Department of Defense, as a whole, lacks a comprehensive and coherent electronic warfare acquisition and implementation strategy.

The committee notes that the Commander, U.S. Strategic Command, at the request of the Commander, U.S. Pacific Command, directed an Electronic Warfare Capabilities Based Assessment that subsequently identified serious capability gaps that should be addressed by the military departments. The study notes that each of the military departments faces unique challenges in four main areas: sustaining and modernizing legacy electronic warfare equipment and assets; investing in critical electronic warfare technologies to counter emerging and future threats; training and equipping warfighters to conduct electronic warfare operations in any conflict environment; and, coordinating joint electronic warfare capabilities and operations with the other military departments.

For example, the Department of the Army is rebuilding its electronic warfare community and capability and in February 2009 issued a doctrinal manual for electronic warfare operations. However, the Army is years away from reestablishing necessary electronic warfare expertise and the Army did not coordinate or consult with either the Joint Staff or the other military departments prior to the release of its doctrinal manual. The Department of the Air Force has been slow to determine its stand-off jammer requirements to meet established electronic warfare capabilities and has been unable to provide the congressional defense committees its mitigation plan to fulfill that capability gap. The Department of the Navy is successfully replacing the EA-6B Prowler with the EA-18G Growler, but faces challenges in developing its next-generation electronic attack capabilities and upgrading its ship electronic warfare systems. Finally, the Marine Corps is trying to fully integrate electronic warfare throughout its force, but challenges exist regarding required fiscal resources and plans for its next generation of electronic warfare systems.

The committee looks forward to working with the Department of Defense on the recommendations identified in this study and recommends an increase of \$4.0 million in PE 64270N for electronic warfare technology. The committee also includes a provision in title X of this Act that would require the Secretary of Defense to submit an annual report concerning the electronic warfare strategy of the Department of Defense.

*Extended range joint stand-off weapon*

The budget request contained \$10.0 million in PE 64727N for joint stand-off weapon systems, but contained no funds for the extended range joint stand-off weapon (JSOW-ER).

The committee understands the Navy has a requirement for a certain number of aircraft launched weapons to engage targets beyond a range of 70 nautical miles, and that the Navy currently fills that requirement with the Expanded Response Stand-off Land Attack Missile (SLAM-ER), Harpoon missile, and Tomahawk missile. The committee notes that the engine from the Miniature Air-Launched Decoy program could be integrated into a Joint Stand-off Weapon (JSOW) and could engage targets at more than four times the current range of the JSOW missile and be more cost-effective than current long-range stand-off missiles.

The committee recommends an increase of \$6.5 million in PE 64727N for development of JSOW-ER.

*Future generation thinline towed array*

The budget request contained \$560.8 million in PE 63561N for advanced submarine development but contained no funding for modernization efforts to produce the future generation thinline towed array.

The committee understands that the TB 29A thinline towed array system is the world's premier undersea acoustic sensor and is in use on all classes of U.S. submarines. The TB 29A delivers unprecedented information to the commander and has unique capability, in concert with the ships' sonar and fire control system, to detect, locate, and classify the most challenging targets in the most challenging acoustic environment. However, the current thinline array is susceptible to failure of telemetry components due to frequent deployment and retrieval. Additional funding is required to redesign electronic connectors in the array to significantly improve array reliability.

The committee recommends an increase of \$4.7 million in PE 63561N for development of improved components of the thinline towed array.

*High density power conversion and distribution equipment*

The budget request contained \$5.6 million in PE 63573N for advanced surface machinery systems but contained no funding for development of high density power conversion and distribution equipment.

The committee understands that surface ships' electrical distribution systems are being tasked due to the increased demand for electrical energy from new equipment and weapons systems. Increasing voltage and current requirements require advances in switchboard design, current interruptions devices, and distribution systems. Additional funding will allow for proof of concept and prototype development for new systems with the capacity to handle the increased electrical loading of naval surface ships.

The committee recommends an increase of \$3.4 million in PE 63573N for development of high density power conversion and distribution equipment.

*High-Integrity Global Positioning System*

The budget request contained \$59.1 million in PE 63235N for the High-Integrity Global Positioning System (HIGPS).

HIGPS is designed to develop the technology required to demonstrate the capability to use the existing Iridium satellite con-

stellation to enhance current GPS navigation and timing capabilities. The benefits of this approach have not been sufficiently proven. Therefore, the committee does not recommend funding for this request.

The committee recommends no funds in PE 63235N for the High-Integrity Global Positioning System, a decrease of \$59.1 million from the budget request.

*Hybrid electric drive*

The budget request contained \$5.6 million in PE 63573N for advanced surface machinery systems but contained no funding for continued development and testing of hybrid electric drive systems for surface combatants.

Hybrid electric drive systems have the potential to realize significant savings in total overall fuel consumption for surface combatants by allowing a much more efficient drive system, coupled directly to the ships' reduction gears, to propel the ship during periods of position keeping, loiter, and low speed patrol. The committee believes the advancement of this promising technology is vital in the effort to reduce operation and maintenance costs.

The committee recommends an increase of \$5.0 million in PE 63573N for the continued development of hybrid electric drive technology for surface combatants.

*Laser module assembly for Navy's acoustic sensors*

The budget request contained \$551.8 million in PE 63561N for advance submarine system development but contained no funding for continued development and test of a low cost laser module assembly for Navy acoustic sensors.

The committee remains concerned with a closing acoustic advantage gap enjoyed by the U.S. submarine force with the advent of increasingly quiet diesel-electric drive submarines proliferating throughout the world. To ensure our forces maintain an acoustic advantage against potential adversaries, the committee supports research and development efforts exploring new technologies in acoustic and non-acoustic detection, classification, and localization. The committee understands the significant increase in capability that would be realized with the maturity of laser technology in acoustic detection systems.

The committee recommends an increase of \$1.5 million in PE 63561N for the development of a low cost laser module assembly for use with navy acoustic sensors.

*Marine Corps assault vehicles*

The budget request contained \$293.5 million in PE 63611M for expeditionary fighting vehicle (EFV) research and development.

The committee recognizes the need for the Marine Corps to develop and field a new amphibious tracked vehicle in support of the national military strategy requirement for amphibious forcible entry capability. In addition, the committee recognizes the potential risk to Navy ships in some contingencies inherent in the limited off-shore range of the Marine Corps' current amphibious assault vehicle, which was first introduced in the early 1970s.

In the committee report (H. Rept. 110-652) accompanying the Duncan Hunter National Defense Authorization Act for Fiscal Year

2009, the committee noted its concern with the level of protection against improvised explosive devices (IEDs) and mine threats provided by the EFV's design. Given the ubiquity of IED attacks in current conflicts, the committee did not believe that a flat-bottom EFV design would provide an adequate level of protection. In response to these concerns, and after conducting a review of protection enhancement options, the Marine Corps committed to developing an armor appliqué kit for EFVs that could significantly enhance the vehicle's protection against IEDs. The committee supports this effort to improve the vehicle's protection against this threat.

Further, the committee believes that the EFV should achieve a protection level against IEDs equivalent to, or better than, the protection level of the heaviest mine resistant ambush protected (MRAP) vehicles in service today prior to low-rate production beginning for the EFV. Given the high probability that Marines operating EFVs in future conflicts will face the threat of IEDs, the committee believes that achieving this standard of protection for the vehicle should be a major factor in Department of Defense oversight of the EFV program. In addition, the committee is aware that there are design changes, such as a flat-bed engine and other armor solutions, which could afford additional protection when compared to the current EFV appliqué armor kit design. The committee believes that these and other survivability improvements could be implemented as a product improvement program, even if not incorporated in the initial production design.

Therefore, the committee directs the Secretary of the Navy to submit, by February 15, 2010, a report to the congressional defense committees on survivability design aspects of the EFV and its level of protection in comparison to MRAP vehicles, against a range of threats, including but not limited to IEDs, mines, rocket propelled grenades, and anti-tank guided missiles. This report should also include analysis of EFV survivability improvement options beyond the armor appliqué kit, and the potential requirements, cost, and schedule implications of EFV improvements that could better protect against mine and IED threats.

The committee recommends \$293.5 million, the full amount requested, in PE 63611M for EFV research and development.

#### *Marine mammal awareness, alert, and response systems*

The budget request contained \$16.6 million in PE 63254N for anti-submarine warfare systems development but contained no funds for the marine mammal awareness, alert, and response systems.

The committee remains concerned with both the need to protect marine mammals from adverse effects of mid-frequency sonar and the need for the Navy to train using mid-frequency sonar in a realistic environment. The committee understands that development of the marine mammal awareness, alert, and response system would significantly increase the Navy's ability to monitor marine mammal activity in the vicinity of training exercises using mid-frequency sonar.

The committee recommends an increase of \$3.5 million in PE 63254N for the development of the marine mammal awareness, alert, and response system.

*Mold-in-place coating development for the U.S. submarine fleet*

The budget request contained \$154.8 million in PE 64558N for new design SSN but contained no additional funding to complete mold-in-place efforts for submarine bow domes.

The committee has consistently supported efforts to qualify a non-autoclave process to produce non-pressure hull structures for submarines. A non-autoclave process to produce composite bow domes for submarines has been developed and has the potential for significant cost reduction savings. Additional funding is required to complete the bow dome system by developing and certifying a mold-in-place process for the manufacture of a rubber boot that will decouple the hydrodynamic flow of the bow dome from the ships' sonar receivers.

The committee recommends an increase of \$2.0 million in PE 64558N for continued development of mold-in-place technology for a rubber isolation boot used in conjunction with a composite bow dome.

*Nanoelectronics, nanometrology and nanobiology initiative*

The budget request contained \$413.7 million in PE 61153N for defense research sciences, but included no funds for the nanoelectronics, nanometrology and nanobiology initiative.

The committee believes that a wide range of new fundamental naval capabilities will depend on innovative concepts driven by nanotechnology development. The committee further believes that nanotechnology-based devices developed through merging electronic and biological functionalities will enable critical developments for high-performance sensors and medical capabilities.

The committee recommends an increase of \$2.0 million in PE 61153N for the continued integration of nanotechnology-based capabilities through the nanoelectronics, nanometrology and nanobiology initiative.

*Remote fuel assessment system*

The budget request contained \$104.1 million in PE 62236N for warfighter sustainment applied research, but included no funds for the development of a remote fuel assessment system (RFAS).

The committee recognizes the RFAS would provide the Marine Corps with a critical field capability to rapidly assess the quality of cached and secure fuel supplies at key distribution nodes without the extensive logistic support presently required in current overseas contingency operations. The committee understands this capability could be developed and demonstrated in a relatively short timeframe and could prove to be a critical combat enabler.

The committee recommends an increase of \$2.0 million in PE 62236N for the rapid development and demonstration of RFAS technology.

*Standoff explosive detection system*

The budget request contained \$91.4 million in PE 62123N for force protection applied research, but contained no funds for stand-off explosive detection systems.

The standoff explosive detection system program would develop a mobile, vehicle mounted, improvised explosive device (IED) detector that would safely detect explosives in a buried IED from a safe

standoff distance of 20 meters. The committee is aware that IEDs are the primary weapons of choice by the insurgency operating in Iraq and Afghanistan. The committee understands that IEDs are used as weapons of strategic and tactical influence and continue to account for the majority of casualties to the warfighter in Operation Iraqi Freedom and Operation Enduring Freedom. The committee supports rapid advances in IED detection and mitigation and would encourage joint solutions whenever possible.

The committee recommends an increase of \$2.0 million in PE 62123N to begin the development of standoff explosives detection systems.

#### *Surface ship advanced capability build*

The budget request contained \$178.5 million in PE 64307N for surface combatant combat system engineering, but contained no funds for surface ship open architecture advanced capability builds.

The committee understands that additional modeling activities in the current advance capability build will allow for risk mitigation in rapid capability insertion of processes for future combat system upgrades.

The committee recommends an increase of \$5.0 million in PE 64307N for open architecture modeling for surface ship advanced capability builds.

#### *Trigger and alert sonobuoy system project*

The budget request contained \$16.6 million in PE 63254N for anti-submarine warfare systems development but contained no funds for the trigger and alert sonobuoy system project.

The committee remains concerned with both the need to protect marine mammals from adverse effects of mid-frequency sonar and the need for the Navy to train using mid-frequency sonar in a realistic environment. The committee understands that the trigger and alert sonobuoy system project would provide invaluable information about marine mammals and their environment that could not be gained by other means and would lead directly to methods to improve the Navy's ability to mitigate impacts on the marine environment.

The committee recommends an increase of \$1.5 million in PE 63254N for the trigger and alert sonobuoy system project.

#### *VH-71 Presidential helicopter program*

The budget request contained \$85.2 million for cancellation costs of the VH-71 Presidential helicopter recapitalization program recently terminated by the Secretary of Defense.

The committee understands that the Secretary of Defense announced on April 6, 2009 the cancellation of the VH-71 program based on excessive cost growth and schedule delays. The committee is disappointed that the Navy has invested \$3.3 billion in this program to date. The committee is also disappointed that the Navy's acquisition system was not provided adequate support, resources, and authority by the Office of the Secretary of Defense (OSD) and the White House Military Office (WHMO) to execute a successful acquisition program. The committee understands that despite the many warnings and expert advice from the Government Accountability Office, Navy acquisition officials were directed by OSD and

WHMO to execute a schedule-driven program and were unable to adequately synchronize and adhere to prudent acquisition practices.

The committee supports a new acquisition plan which may incorporate more than a one platform solution to the needs of the President. The committee notes that a June 5, 2009 Congressional Research Service (CRS) report cites Navy estimates that a new acquisition program would cost \$10.0 to \$17.0 billion. Therefore, the committee strongly suggests that the Department of Defense consider continuing procurement of the current “increment 1” helicopter for use as the normal transport for the President, and study other alternatives for Presidential transport in other situations. The committee notes that this approach will leverage on the investment already made by the taxpayer in developing a helicopter that would meet all normal requirements of the President.

*Wave energy power buoy generating system*

The budget request contained \$4.0 million in PE 63725N for facilities improvement but contained no funds for the wave energy power buoy generating system.

The committee is aware that the Department of Defense has many goals in place relating to the use of renewable energy for installations. The committee understands that the wave energy power buoy generating system will help the Department meet its renewable energy goals.

The committee recommends an increase of \$3.0 million in PE 63725N for the wave energy power buoy generating system.

AIR FORCE RESEARCH, DEVELOPMENT, TEST, AND EVALUATION

Overview

The budget request contained \$28.0 billion for Air Force research, development, test, and evaluation (RDT&E).

The committee recommends \$28.5 billion, an increase of \$500.0 million to the budget request.

**Title II - Research, Development, Test, and Evaluation**  
(Dollars in Thousands)

<u>Line</u>	<u>Program Element</u>	<u>Program Title</u>	<u>FY 2010 Request</u>	<u>House Change</u>	<u>House Authorized</u>
		<b>RESEARCH, DEVELOPMENT, TEST &amp; EVALUATION, AIR FORCE</b>			
		<b>BASIC RESEARCH</b>			
001	0601102F	DEFENSE RESEARCH SCIENCES	321,028		321,028
002	0601103F	UNIVERSITY RESEARCH INITIATIVES	132,249		132,249
003	0601108F	HIGH ENERGY LASER RESEARCH INITIATIVES	12,834		12,834
004	0301555F	CLASSIFIED PROGRAMS	0		0
005	0301556F	SPECIAL PROGRAM	0		0
		<b>SUBTOTAL, BASIC RESEARCH, AIR FORCE</b>	<b>466,111</b>	<b>0</b>	<b>466,111</b>
		<b>APPLIED RESEARCH</b>			
006	0602015F	MEDICAL DEVELOPMENT	0	1,000	1,000
		AFSOC Injury Prevention and Human Performance Initiative		[1,000]	
007	0602102F	MATERIALS	127,957	5,000	132,957
		Rio Grande Valley Nanotech Institute		[5,000]	
008	0602201F	AEROSPACE VEHICLE TECHNOLOGIES	127,129	8,500	135,629
		UAV Sensor and Maintenance Development		[5,500]	
		Unmanned Sense, Track, and Avoid Radar		[3,000]	
009	0602202F	HUMAN EFFECTIVENESS APPLIED RESEARCH	85,122		85,122
010	0602203F	AEROSPACE PROPULSION	196,529	21,500	218,029
		Integrated Electric Starter		[3,500]	
		Advanced Lithium Battery Scale-Up and Manufacturing		[10,000]	
		Advanced Vehicle Propulsion Center (AVPC)		[3,000]	

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<u>Line</u>	<u>Program Element</u>	<u>Program Title</u>	<u>FY 2010 Request</u>	<u>House Change</u>	<u>House Authorized</u>
011	0602204F	Multi-Mode Propulsion Phase IIA: High Performance Green Propellant AEROSPACE SENSORS Sensors and Near-Field Communications Net-Centric Sensor Grids Advanced Meta Materials	121,768	[5,000] 11,650 [2,900] [3,000] [3,750] [2,000]	133,418
012	0602601F	SPACE TECHNOLOGY Information Quality Tools for Persistent Surveillance Data Sets	104,148	4,800 [4,800]	108,948
013	0602602F	Advanced Modular Avionics for ORS Use CONVENTIONAL MUNITIONS	58,289		58,289
014	0602605F	DIRECTED ENERGY TECHNOLOGY	105,677		105,677
015	0602702F	COMMAND CONTROL AND COMMUNICATIONS	0		0
016	0602788F	DOMINANT INFORMATION SCIENCES AND METHODS Cyber Boot Camp	115,278	1,000 [1,000]	116,278
017	0602890F	HIGH ENERGY LASER RESEARCH Advanced Deformable Mirrors for High Energy Laser Weapons	52,754	2,000 [2,000]	54,754
		<b>SUBTOTAL, APPLIED RESEARCH, AIR FORCE</b>	<b>1,094,651</b>	<b>55,450</b>	<b>1,150,101</b>
018	0603112F	<b>ADVANCED TECHNOLOGY DEVELOPMENT</b> ADVANCED MATERIALS FOR WEAPON SYSTEMS Metals Affordability Initiative	37,901	14,500 [10,000]	52,401
019	0603199F	Rapid Automated Processing of Advances Low Observables	2,955	[4,500]	2,955
020	0603203F	SUSTAINMENT SCIENCE AND TECHNOLOGY (S&T) ADVANCED AEROSPACE SENSORS	51,482	3,000	54,482

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<u>Line</u>	<u>Program Element</u>	<u>Program Title</u>	<u>FY 2010 Request</u>	<u>House Change</u>	<u>House Authorized</u>
021	0603211F	Moving Target Strike AEROSPACE TECHNOLOGY DEV/DEMO Long Loiter, Load Bearing Antenna Platform for Pervasive Airborne Intelligence	76,844	[3,000] 8,000 [8,000]	84,844
022	0603216F	AEROSPACE PROPULSION AND POWER TECHNOLOGY 150 Shaft HP Scaleable UAV Engine Adaptable Integrated Vapor Cycle Based Environmental Control and Power System	175,676	9,200 [5,000] [4,200]	184,876
023	0603231F	CREW SYSTEMS AND PERSONNEL PROTECTION TECHNOLOGY JSF Tactical Air Configuration Module	0	5,000 [5,000]	5,000
024	0603270F	ELECTRONIC COMBAT TECHNOLOGY COTS Analysis Tools for Navigational Warfare	31,021	1,500 [1,500]	32,521
025	0603401F	ADVANCED SPACECRAFT TECHNOLOGY Department of Defense Cubesat Bus Development Small Responsive Spacecraft at Low-Cost (SRSL)	83,909	6,500 [2,000] [4,500]	90,409
026	0603444F	MAUI SPACE SURVEILLANCE SYSTEM (MSSS)	5,813		5,813
027	0603456F	HUMAN EFFECTIVENESS ADVANCED TECHNOLOGY DEVELOPMENT	24,565		24,565
028	0603601F	CONVENTIONAL WEAPONS TECHNOLOGY	14,356		14,356
029	0603605F	ADVANCED WEAPONS TECHNOLOGY	30,056		30,056
030	0603680F	MANUFACTURING TECHNOLOGY PROGRAM Nano-Composite and Structures Manufacturing Technology Development Repair Technology Insertion Program Advanced Integrated Structure for Affordable Transport Aircraft Production of Nanocomposites for Aerospace Applications	39,913	15,700 [4,000] [5,200] [3,000] [3,500]	55,613

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<u>Line</u>	<u>Program Element</u>	<u>Program Title</u>	<u>FY 2010 Request</u>	<u>House Change</u>	<u>House Authorized</u>
031	0603788F	BATTLESPACE KNOWLEDGE DEVELOPMENT AND DEMONSTRATION Cyber Attack and Security Environment	39,708	5,000 [5,000]	44,708
032	0603789F	C3I ADVANCED DEVELOPMENT	0		0
033	0603924F	HIGH ENERGY LASER ADVANCED TECHNOLOGY PROGRAM	3,831		3,831
		<b>SUBTOTAL, ADVANCED TECHNOLOGY DEVELOPMENT, AIR FORCE</b>	<b>618,030</b>	<b>68,400</b>	<b>686,430</b>
		<b>ADVANCED COMPONENT DEVELOPMENT &amp; PROTOTYPES</b>			
034	0603260F	INTELLIGENCE ADVANCED DEVELOPMENT	5,009		5,009
035	0603287F	PHYSICAL SECURITY EQUIPMENT	3,623		3,623
036	0603421F	NAVSTAR GLOBAL POSITIONING SYSTEM III	0		0
037	0603423F	GLOBAL POSITIONING SYSTEM III - OPERATIONAL CONTROL SEGMENT	0		0
038	0603430F	ADVANCED EHF MILSATCOM (SPACE)	464,335		464,335
039	0603432F	POLAR MILSATCOM (SPACE)	253,150		253,150
040	0603438F	SPACE CONTROL TECHNOLOGY	97,701		97,701
041	0603742F	COMBAT IDENTIFICATION TECHNOLOGY	27,252		27,252
042	0603790F	NATO RESEARCH AND DEVELOPMENT	4,351		4,351
043	0603791F	INTERNATIONAL SPACE COOPERATIVE R&D	632		632
044	0603845F	TRANSFORMATIONAL SATCOM (TSAT)	0		0
045	0603850F	INTEGRATED BROADCAST SERVICE	20,739		20,739
046	0603851F	INTERCONTINENTAL BALLISTIC MISSILE	66,079		66,079
047	0603854F	WIDEBAND GLOBAL SATCOM RDT&E (SPACE)	70,956		70,956
048	0603859F	POLLUTION PREVENTION	2,896		2,896

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049	0603860F	JOINT PRECISION APPROACH AND LANDING SYSTEMS	23,174		23,174
050	0604015F	NEXT GENERATION BOMBER	0		0
051	0604283F	BATTLE MGMT COM & CTRL SENSOR DEVELOPMENT	22,612		22,612
052	0604327F	HARD AND DEEPLY BURIED TARGET DEFEAT SYSTEM (HDBTDS) PROGRAM	20,891		20,891
053	0604330F	JOINT DUAL ROLE AIR DOMINANCE MISSILE	6,882		6,882
054	0604337F	REQUIREMENTS ANALYSIS AND MATURATION (NON-SPACE/SPACE)	35,533		35,533
055	0604635F	GROUND ATTACK WEAPONS FUZE DEVELOPMENT	18,778		18,778
056	0604796F	ALTERNATIVE FUELS	89,020	8,500	97,520
		Bio-Diesel Algae Fuel Production Program		[3,000]	
		Advanced Propulsion Non-Tactical Vehicle		[5,500]	
057	0604830F	AUTOMATED AIR-TO-AIR REFUELING	43,158		43,158
058	0604856F	COMMON AERO VEHICLE (CAV)	0		0
059	0604857F	OPERATIONALLY RESPONSIVE SPACE Program Increase	112,861	23,400	136,261
060	0604858F	TECH TRANSITION PROGRAM	9,611		9,611
061	0305178F	NATIONAL POLAR-ORBITING OPERATIONAL ENVIRONMENTAL SATELLITE SYSTEM (NPOESS)	396,641		396,641
		<b>SUBTOTAL, ADVANCED COMPONENT DEVELOPMENT &amp; PROTOTYPES, AIR FORCE</b>	<b>1,795,884</b>	<b>31,900</b>	<b>1,827,784</b>
062	0603840F	SYSTEM DEVELOPMENT & DEMONSTRATION GLOBAL BROADCAST SERVICE (GBS)	31,124		31,124

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063	0604222F	NUCLEAR WEAPONS SUPPORT	37,860		37,860
064	0604226F	B-1B	0		0
065	0604233F	SPECIALIZED UNDERGRADUATE FLIGHT TRAINING	6,227		6,227
066	0604240F	B-2 ADVANCED TECHNOLOGY BOMBER Advanced Data Link	0	14,600 [14,600]	14,600
067	0604261F	PERSONNEL RECOVERY SYSTEMS	0		0
068	0604270F	ELECTRONIC WARFARE DEVELOPMENT Rapid Replacement of Mission Critical Logistics Electronics	97,275	4,900 [4,900]	102,175
069	0604281F	TACTICAL DATA NETWORKS ENTERPRISE	88,444		88,444
070	0604287F	PHYSICAL SECURITY EQUIPMENT	50		50
071	0604329F	SMALL DIAMETER BOMB (SDB)	153,815		153,815
072	0604421F	COUNTERSPACE SYSTEMS	64,248		64,248
073	0604425F	SPACE SITUATION AWARENESS SYSTEMS	308,134		308,134
074	0604429F	AIRBORNE ELECTRONIC ATTACK	11,107		11,107
075	0604441F	SPACE BASED INFRARED SYSTEM (SBIRS) HIGH EMD	512,642		512,642
076	0604443F	THIRD GENERATION INFRARED SURVEILLANCE (3GIRS) Program Reduction	143,169	-20,000 [-20,000]	123,169
077	0604602F	ARMAMENT/ORDNANCE DEVELOPMENT	18,671		18,671
078	0604604F	SUBMUNITIONS	1,784		1,784
079	0604617F	AGILE COMBAT SUPPORT Backpack Medical Oxygen System	11,261	2,900 [2,900]	14,161
080	0604706F	LIFE SUPPORT SYSTEMS ACES 5 Ejection Seat	10,711	7,000 [7,000]	17,711
081	0604735F	COMBAT TRAINING RANGES	29,718		29,718

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082	0604740F	INTEGRATED COMMAND & CONTROL APPLICATIONS (IC2A) Distributed Mission Interoperability Toolkit (DMIT)	10	7,000 [7,000]	7,010
083	0604750F	INTELLIGENCE EQUIPMENT	1,495		1,495
084	0604800F	JOINT STRIKE FIGHTER (JSF) F136 Engine Development Program Excess	1,858,055	153,500 [231,500] [-78,000]	2,011,555
085	0604851F	INTERCONTINENTAL BALLISTIC MISSILE	60,010		60,010
086	0604853F	EVOLVED EXPENDABLE LAUNCH VEHICLE PROGRAM (SPACE)	26,545		26,545
087	0605011F	RDT&E FOR AGING AIRCRAFT	0		0
088	0605221F	NEXT GENERATION AERIAL REFUELING AIRCRAFT	439,615		439,615
089	0605277F	CSAR-X RDT&E Unjustified Request for HH-60M	89,975	-75,000 [-75,000]	14,975
090	0605278F	HC/MC-130 RECAP RDT&E	20,582		20,582
091	0605452F	JOINT SIAP EXECUTIVE PROGRAM OFFICE	34,877		34,877
092	0207434F	LINK-16 SUPPORT AND SUSTAINMENT	0		0
093	0207450F	E-10 SQUADRONS	0		0
094	0207451F	SINGLE INTEGRATED AIR PICTURE (SIAP)	13,466		13,466
095	0207701F	FULL COMBAT MISSION TRAINING	99,807		99,807
096	0305176F	COMBAT SURVIVOR EVADER LOCATOR	0		0
097	0401138F	JOINT CARGO AIRCRAFT (JCA)	9,353		9,353
098	0401318F	CV-22	19,640		19,640
099	0401845F	AIRBORNE SENIOR LEADER C3 (SLC3S)	20,056		20,056
		<b>SUBTOTAL, SYSTEM DEVELOPMENT &amp; DEMONSTRATION, AIR FORCE</b>	<b>4,219,726</b>	<b>94,900</b>	<b>4,314,626</b>

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		<b>RDT&amp;E MANAGEMENT SUPPORT</b>			
100	0604256F	THREAT SIMULATOR DEVELOPMENT	27,789		27,789
101	0604759F	MAJOR T&E INVESTMENT	60,824	3,000	63,824
		Eglin AFB Range Operations Control Center		[3,000]	
102	0605101F	RAND PROJECT AIR FORCE	27,501		27,501
103	0605502F	SMALL BUSINESS INNOVATION RESEARCH	0		0
104	0605712F	INITIAL OPERATIONAL TEST & EVALUATION	25,833		25,833
105	0605807F	TEST AND EVALUATION SUPPORT	736,488		736,488
106	0605860F	ROCKET SYSTEMS LAUNCH PROGRAM (SPACE)	14,637		14,637
107	0605864F	SPACE TEST PROGRAM (STP)	47,215		47,215
108	0605976F	FACILITIES RESTORATION AND MODERNIZATION - TEST AND EVALUATION SUPPORT	52,409		52,409
109	0605978F	FACILITIES SUSTAINMENT - TEST AND EVALUATION SUPPORT	29,683	1,750	31,433
		Computer-Control Upgrade to the BAK-12		[1,750]	
110	0702806F	ACQUISITION AND MANAGEMENT SUPPORT	18,947		18,947
111	0804731F	GENERAL SKILL TRAINING	1,450		1,450
112	0909999F	FINANCING FOR CANCELLED ACCOUNT ADJUSTMENTS	0		0
113	1001004F	INTERNATIONAL ACTIVITIES	3,748		3,748
		<b>SUBTOTAL, RDT&amp;E MANAGEMENT SUPPORT, AIR FORCE</b>	<b>1,046,524</b>	<b>4,750</b>	<b>1,051,274</b>
		<b>OPERATIONAL SYSTEMS DEVELOPMENT</b>			
114	0604263F	COMMON VERTICAL LIFT SUPPORT PLATFORM	9,513		9,513

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115	0605024F	ANTI-TAMPER TECHNOLOGY EXECUTIVE AGENCY	47,276		47,276
116	0605798F	ANALYSIS SUPPORT GROUP	0		0
117	0101113F	B-52 SQUADRONS	93,930		93,930
118	0101122F	AIR-LAUNCHED CRUISE MISSILE (ALCM)	3,652		3,652
119	0101126F	B-1B SQUADRONS	148,025		148,025
120	0101127F	B-2 SQUADRONS	415,414		415,414
121	0101313F	STRAT WAR PLANNING SYSTEM - USSTRATCOM	33,836		33,836
122	0101314F	NIGHT FIST - USSTRATCOM	5,328		5,328
123	0101815F	ADVANCED STRATEGIC PROGRAMS DaVinci Project	0	1,250	1,250
124	0102325F	ATMOSPHERIC EARLY WARNING SYSTEM	9,832	[1,250]	9,832
125	0102326F	REGION/SECTOR OPERATION CONTROL CENTER MODERNIZATION PROGRAM	25,734		25,734
126	0102823F	STRATEGIC AEROSPACE INTELLIGENCE SYSTEM ACTIVITIES	18		18
127	0203761F	WARFIGHTER RAPID ACQUISITION PROCESS (WRAP) RAPID TRANSITION FUND	11,996		11,996
128	0205219F	MQ-9 UAV	39,245		39,245
129	0207040F	MULTI-PLATFORM ELECTRONIC WARFARE EQUIPMENT	14,747		14,747
130	0207131F	A-10 SQUADRONS	9,697		9,697
131	0207133F	F-16 SQUADRONS	141,020		141,020
132	0207134F	F-15E SQUADRONS Corrosion Detection and Visualization Program	311,167	2,000	313,167
133	0207136F	MANNED DESTRUCTIVE SUPPRESSION	10,748	[2,000]	10,748
134	0207138F	F-22A SQUADRONS	569,345		569,345

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135	0207161F	TACTICAL AIM MISSILES	5,915		5,915
136	0207163F	ADVANCED MEDIUM RANGE AIR-TO-AIR MISSILE (AMRAAM)	49,971		49,971
137	0207170F	JOINT HELMET MOUNTED CUEING SYSTEM (JHMCS)	2,529		2,529
138	0207227F	COMBAT RESCUE - PARARESCUE	2,950		2,950
139	0207247F	AF TENCAP	11,643		11,643
140	0207249F	PRECISION ATTACK SYSTEMS PROCUREMENT	2,950		2,950
141	0207253F	COMPASS CALL	13,019		13,019
142	0207268F	AIRCRAFT ENGINE COMPONENT IMPROVEMENT PROGRAM	166,563		166,563
143	0207277F	CSAF INNOVATION PROGRAM	4,621		4,621
144	0207325F	JOINT AIR-TO-SURFACE STANDOFF MISSILE (JASSM)	29,494		29,494
145	0207410F	AIR & SPACE OPERATIONS CENTER (AOC)	99,405		99,405
146	0207412F	CONTROL AND REPORTING CENTER (CRC)	52,508		52,508
147	0207417F	AIRBORNE WARNING AND CONTROL SYSTEM (AWACS)	176,040		176,040
148	0207418F	TACTICAL AIRBORNE CONTROL SYSTEMS	0		0
149	0207423F	ADVANCED COMMUNICATIONS SYSTEMS/JTRS	63,782		63,782
150	0207424F	EVALUATION AND ANALYSIS PROGRAM ( C )	0		0
151	0207431F	COMBAT AIR INTELLIGENCE SYSTEM ACTIVITIES	1,475		1,475
152	0207438F	THEATER BATTLE MANAGEMENT (TBM) C4I	19,067		19,067
153	0207445F	FIGHTER TACTICAL DATA LINK	72,106		72,106
154	0207446F	BOMBER TACTICAL DATA LINK	0		0
155	0207448F	C2ISR TACTICAL DATA LINK	1,667		1,667
156	0207449F	COMMAND AND CONTROL (C2) CONSTELLATION	26,792		26,792
157	0207581F	JOINT SURVEILLANCE/TARGET ATTACK RADAR SYSTEM (JSTARS)	140,670		140,670
158	0207590F	SEEK EAGLE	22,071		22,071

**Title II - Research, Development, Test, and Evaluation**

(Dollars in Thousands)

<u>Line</u>	<u>Program Element</u>	<u>Program Title</u>	<u>FY 2010 Request</u>	<u>House Change</u>	<u>House Authorized</u>
159	0207601F	USAF MODELING AND SIMULATION	27,245		27,245
160	0207605F	WARGAMING AND SIMULATION CENTERS	7,018		7,018
161	0207697F	DISTRIBUTED TRAINING AND EXERCISES	6,740		6,740
162	0208006F	MISSION PLANNING SYSTEMS	91,995		91,995
163	0208021F	INFORMATION WARFARE SUPPORT	12,271		12,271
164	0208161F	SPECIAL EVALUATION SYSTEM	0		0
165	0301310F	NATIONAL AIR INTELLIGENCE CENTER	0	4,000	4,000
		Open Source Research Centers		[4,000]	
166	0301314F	COBRA BALL	0		0
167	0301315F	MISSILE AND SPACE TECHNICAL COLLECTION	0	4,800	4,800
		Technical Sensors Integrated Ground Station		[4,800]	
168	0301324F	FOREST GREEN	0		0
169	0301386F	GDIP COLLECTION MANAGEMENT	0		0
170	0302015F	E-4B NATIONAL AIRBORNE OPERATIONS CENTER (NAOC)	26,107		26,107
171	0303112F	AIR FORCE COMMUNICATIONS (AIRCOM)	0		0
172	0303131F	MINIMUM ESSENTIAL EMERGENCY COMMUNICATIONS NETWORK (MEECN)	72,694		72,694
173	0303140F	INFORMATION SYSTEMS SECURITY PROGRAM	196,621		196,621
174	0303141F	GLOBAL COMBAT SUPPORT SYSTEM	3,375		3,375
175	0303150F	GLOBAL COMMAND AND CONTROL SYSTEM	3,149		3,149
176	0303158F	JOINT COMMAND AND CONTROL PROGRAM (JC2)	3,087		3,087
177	0303601F	MILSATCOM TERMINALS	257,693		257,693
179	0304260F	AIRBORNE SIGINT ENTERPRISE	176,989		176,989
180	0304311F	SELECTED ACTIVITIES	0		0

**Title II - Research, Development, Test, and Evaluation**

(Dollars in Thousands)

<u>Line</u>	<u>Program Element</u>	<u>Program Title</u>	<u>FY 2010 Request</u>	<u>House Change</u>	<u>House Authorized</u>
181	0304348F	ADVANCED GEOSPATIAL INTELLIGENCE (AGI) Advanced Technical Intelligence Center	0	9,000 [9,000]	9,000
182	0305099F	GLOBAL AIR TRAFFIC MANAGEMENT (GATM) Carbon Nanotube Enhanced Power Sources for Space	6,028	3,300 [3,300]	9,328
183	0305103F	CYBER SECURITY INITIATIVE	2,065		2,065
184	0305110F	SATELLITE CONTROL NETWORK (SPACE)	20,991		20,991
185	0305111F	WEATHER SERVICE	33,531		33,531
186	0305114F	AIR TRAFFIC CONTROL, APPROACH, AND LANDING SYSTEM (ATCAL)	9,006		9,006
187	0305116F	AERIAL TARGETS	54,807		54,807
188	0305124F	SPECIAL APPLICATIONS PROGRAM	0		0
189	0305127F	FOREIGN COUNTERINTELLIGENCE ACTIVITIES	0		0
190	0305128F	SECURITY AND INVESTIGATIVE ACTIVITIES	742		742
191	0305142F	APPLIED TECHNOLOGY AND INTEGRATION	0		0
192	0305146F	DEFENSE JOINT COUNTERINTELLIGENCE ACTIVITIES	39		39
194	0305164F	NAVSTAR GLOBAL POSITIONING SYSTEM (USER EQUIPMENT) (SPACE)	137,692		137,692
195	0305165F	NAVSTAR GLOBAL POSITIONING SYSTEM (SPACE AND CONTROL SEGMENTS)	52,039		52,039
196	0305172F	COMBINED ADVANCED APPLICATIONS	0		0
197	0305173F	SPACE AND MISSILE TEST AND EVALUATION CENTER	3,599		3,599
198	0305174F	SPACE WARFARE CENTER	3,009		3,009
199	0305182F	SPACELIFT RANGE SYSTEM (SPACE)	9,957		9,957
200	0305193F	INTELLIGENCE SUPPORT TO INFORMATION OPERATIONS (IO)	1,240		1,240
201	0305202F	DRAGON U-2	0		0

**Title II - Research, Development, Test, and Evaluation**

(Dollars in Thousands)

<u>Line</u>	<u>Program Element</u>	<u>Program Title</u>	<u>FY 2010 Request</u>	<u>House Change</u>	<u>House Authorized</u>
202	0305205F	ENDURANCE UNMANNED AERIAL VEHICLES	73,736		73,736
203	0305206F	AIRBORNE RECONNAISSANCE SYSTEMS Multiple UAS Cooperative Concentrated Observation and Engagement Against a Common Ground Objective	143,892	7,500 [7,500]	151,392
204	0305207F	MANNED RECONNAISSANCE SYSTEMS Rivet Joint Services Oriented Architecture (SOA)	12,846	2,500 [2,500]	15,346
205	0305208F	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	82,765		82,765
206	0305219F	MQ-1 PREDATOR A UAV	18,101		18,101
207	0305220F	RQ-4 UAV	317,316		317,316
208	0305221F	NETWORK-CENTRIC COLLABORATIVE TARGETING	8,160		8,160
209	0305265F	GPS III SPACE SEGMENT	815,095		815,095
210	0305614F	JSPOC MISSION SYSTEM	131,271		131,271
211	0305887F	INTELLIGENCE SUPPORT TO INFORMATION WARFARE	5,267		5,267
212	0305906F	NCMC - TW/AA SYSTEM	0		0
213	0305913F	NUDET DETECTION SYSTEM (SPACE)	84,021		84,021
214	0305924F	NATIONAL SECURITY SPACE OFFICE	10,634		10,634
215	0305940F	SPACE SITUATION AWARENESS OPERATIONS	54,648		54,648
216	0307141F	INFORMATION OPERATIONS TECHNOLOGY INTEGRATION & TOOL DEVELOPMENT	30,076		30,076
217	0308699F	SHARED EARLY WARNING (SEW)	3,082		3,082
218	0401115F	C-130 AIRLIFT SQUADRON	201,250		201,250
219	0401119F	C-5 AIRLIFT SQUADRONS (IF)	95,266		95,266
220	0401130F	C-17 AIRCRAFT (IF)	161,855		161,855
221	0401132F	C-130J PROGRAM	30,019		30,019

**Title II - Research, Development, Test, and Evaluation**

(Dollars in Thousands)

<u>Line</u>	<u>Program Element</u>	<u>Program Title</u>	<u>FY 2010 Request</u>	<u>House Change</u>	<u>House Authorized</u>
222	0401134F	LARGE AIRCRAFT IR COUNTERMEASURES (LAIRCM)	31,784		31,784
223	0401218F	KC-135S	10,297		10,297
224	0401219F	KC-10S	35,586		35,586
225	0401221F	KC-135 TANKER REPLACEMENT	0		0
226	0401314F	OPERATIONAL SUPPORT AIRLIFT Unjustified Requirement for PAR	4,916	-4,916 [-4,916]	0
227	0401839F	AIR MOBILITY TACTICAL DATA LINK	0		0
228	0408011F	SPECIAL TACTICS / COMBAT CONTROL Special Mission Clothing for AFSOC	8,222	2,700 [2,700]	10,922
229	0702207F	DEPOT MAINTENANCE (NON-IF)	1,508		1,508
230	0702976F	FACILITIES RESTORATION & MODERNIZATION - LOGISTICS	0		0
231	0708011F	INDUSTRIAL PREPAREDNESS Wire Integrity Technology	0	2,000 [2,000]	2,000
232	0708610F	LOGISTICS INFORMATION TECHNOLOGY (LOGIT)	246,483		246,483
233	0708611F	SUPPORT SYSTEMS DEVELOPMENT Warner-Robins Air Logistics Center Streamlined Processes Micro-Grid Energy Storage Utilizing a Deployable Zinc-Bromide Flow Battery	6,288	11,200 [4,200] [5,000]	17,488
234	0804743F	ALC Logistics Integration Environment	805		805
235	0804757F	OTHER FLIGHT TRAINING	3,220		3,220
236	0804772F	JOINT NATIONAL TRAINING CENTER TRAINING DEVELOPMENTS	1,769		1,769
237	0808716F	OTHER PERSONNEL ACTIVITIES	116		116
238	0901202F	JOINT PERSONNEL RECOVERY AGENCY	6,376		6,376

**Title II - Research, Development, Test, and Evaluation**  
(Dollars in Thousands)

<u>Line</u>	<u>Program Element</u>	<u>Program Title</u>	<u>FY 2010 Request</u>	<u>House Change</u>	<u>House Authorized</u>
239	0901212F	SERVICE-WIDE SUPPORT (NOT OTHERWISE ACCOUNTED FOR)	0		0
240	0901218F	CIVILIAN COMPENSATION PROGRAM	8,174		8,174
241	0901220F	PERSONNEL ADMINISTRATION	10,492		10,492
242	0901538F	FINANCIAL MANAGEMENT INFORMATION SYSTEMS DEVELOPMENT	55,991		55,991
999	99999999	OTHER PROGRAMS	11,955,084	215,000	12,170,084
		Program Increase		[215,000]	
		<b>SUBTOTAL, OPERATIONAL SYSTEMS DEVELOPMENT, AIR FORCE</b>	<b>18,751,901</b>	<b>260,334</b>	<b>19,012,235</b>
		<b>TOTAL, RDT&amp;E AIR FORCE</b>	<b>27,992,827</b>	<b>515,734</b>	<b>28,508,561</b>

## Items of Special Interest

*Advanced Modular Avionics for Operationally Responsive Space Use*

The budget request contained \$104.1 million in PE 62601F for space technology, but contained no funding for the Advanced Modular Avionics for Operationally Responsive Space Use project.

Developing modern modular avionics systems will enable a dynamic input/output capability for a variety of satellite systems, thereby bringing interoperability and interchangeability to systems on tactical satellites.

The committee recommends an increase of \$4.8 million in PE 62601F for the Advanced Modular Avionics for Operationally Responsive Space Use project.

*Advanced Vehicle Propulsion Center*

The budget request contained \$196.5 million in PE 62203F for aerospace propulsion, but contained no funding for the Advanced Vehicle Propulsion Center (AVPC).

The AVPC initiative is a unique, world-class analytical environment for engineering, design, and development of current and future propulsion systems, space vehicles, missiles, and advanced weapon concepts at Edwards Air Force Base in California. The center could save the Air Force millions of dollars in future program costs through the integration of the best engineering, design, analysis, and cost tools from government, industry, and academia and by providing uniquely sophisticated system optimization and support.

The committee recommends an increase of \$3.0 million in PE 62203F for the Advanced Vehicle Propulsion Center.

*Air Force test and evaluation support*

The budget request contained \$736.5 million in PE 65807F for Air Force test and evaluation support.

The committee notes that the fiscal year 2010 request for Air Force test and evaluation is \$57.9 million below the level projected in the fiscal year 2009 budget request. The committee further notes that the other six program elements that support Air Force test and evaluation were a combined \$24.4 million below fiscal year 2009 budget projections. The committee is concerned that these reductions could, over time, reduce the Air Force's ability to provide adequate test and evaluation support, and that such a lack of support could negatively impact numerous critical Department of Defense programs. In addition, the committee notes that fiscal year 2010 budget request materials do not show future year's funding for this program, making it impossible for the committee to fully evaluate the Air Force's long term plans. Therefore, the committee directs the Director, Test Resource Management Center to provide a report to the congressional defense committees, by February 15, 2010, laying out the potential negative impacts of projected funding levels for the Air Force test and evaluation program.

The committee recommends \$736.5 million, the full amount requested, in PE 65807F for Air Force test and evaluation support.

*Battle Control Center Acquisition Strategy*

Battle Control System-Mobile (BCS-M) is the ground-based tactical command and control system for theater air defense, airspace management, aircraft identification, surveillance, and tactical data link management. BCS-M modernizes the Theater Air Control System's (TACS) aging Control and Reporting Center. The command and control operations center-piece of BCS-M is known as Battle Control Center (BCC). The original Air Force acquisition strategy for the BCC intended to capitalize on the common software architecture baseline of the BCS-Fixed North American Air Defense Command air defense system, which achieved initial operational capability on October 31, 2006.

The committee notes that the Air Force terminated the BCC portion of the BCS-Mobile in September 2008, due to budget constraints. Air Combat Command has stated its intent to conduct an analysis of alternatives to validate a revised BCC roadmap in order to include a new program in the fiscal year 2012 budget request.

The committee directs the Secretary of the Air Force to provide a report to the congressional defense committees by February 15, 2010, on the Air Force's plan to leverage investments made in the BCS-Fixed air defense program into the follow-on BCC program. The report should include an analysis of the investment already made in the BCC, the costs of a new start program, and the plan to ensure software and hardware commonality between the BCS-Fixed and the follow-on BCC programs.

*Cyber Boot Camp*

The budget request contained \$115.3 million in PE 62788F for the enhancement of command, control, and communications systems within the Air Force, including funds to support the Advanced Course in Engineering (ACE) Cyber Boot Camp summer program for the Air Force Reserve Officer Training Corps (ROTC).

The committee is encouraged by efforts at the Air Force Research Laboratory Rome Research Site (AFRL/RRS) to develop educational curriculum to train the future workforce of cyber operations experts. The mission of the ACE is to develop ROTC cadets into cyber officers. ACE represents the only cyber education offered by the Department of Defense for ROTC cadets. ACE is a 10-week summer program consisting of classes, on-the-job mentoring, and officer development that targets the top students in computer-related disciplines and teaches them to become original thinkers, problem solvers, and technical leaders. The committee recognizes that this program is vital to ensuring a robust information technology workforce that is capable of handling cyber threats to our systems. The committee believes the ACE Cyber Boot Camp should be expanded beyond the Air Force to include ROTC cadets from the other military services.

The committee recommends \$116.3 million, an increase of \$1.0 million, in PE 62788F for AFRL/RRS to support the expansion of the ACE Cyber Boot curriculum to other service ROTC participants, and to provide for additional 10-week courses to accommodate this expansion.

*Department of Defense Cubesat Bus Development*

The budget request contained \$83.9 million in PE 63401F for advanced spacecraft technology, but contained no funding for the Department of Defense Cubesat Bus Development project.

The Department of Defense Cubesat Bus Development project would contribute to the development of smaller and more agile national space surveillance assets that deliver space-based capabilities at substantially lower cost than current systems. The project would perform fundamental research, development, testing, and validation of domestic source, low-cost key system components comprised of flight computers, power switching hardware, and spacecraft attitude determination and control hardware.

The committee recommends an increase of \$2.0 million in PE 63401F for the Department of Defense Cubesat Bus Development project.

*F-35*

The budget request contained \$1.9 billion in PE 64800F, and \$1.7 billion in PE 64800N, for development of the F-35, but contained no funds for development of a competitive F-35 propulsion system. The committee notes that the aggregate amount requested for F-35 development is \$1.4 billion higher than projected last year, and that \$476.0 million of that amount conforms to increases recommended by a recent joint estimating team, and understands this amount will be used primarily for management reserve. The budget request also contained \$2.0 billion for procurement of 10 F-35As and \$300.6 million for F-35 advance procurement in Aircraft Procurement, Air Force, but contained no funds for either procurement of competitive F-35 propulsion systems or for advance procurement of competitive F-35 propulsion system long-lead components. Additionally, the budget request contained \$4.0 billion for the procurement of 16 F-35Bs and four F-35Cs and \$481.0 million for F-35 advance procurement in Aircraft Procurement, Navy, but contained funds for neither procurement of competitive propulsion systems nor advance procurement of competitive F-35 competitive F-35 propulsion systems long-lead components. The Aircraft Procurement, Navy budget request also contained \$1.3 billion for spares and repair parts.

The competitive F-35 propulsion system program is developing the F136 engine, which would provide a competitive alternative to the currently-planned F135 engine. For the past three years, in the committee report (H. Rept. 109-452) accompanying the John Warner National Defense Authorization Act for Fiscal Year 2007, in the committee report (H. Rept. 110-146) accompanying the National Defense Authorization Act for Fiscal Year 2008, and in the committee report (H. Rept. 110-652) accompanying the Duncan Hunter National Defense Authorization Act for Fiscal Year 2009, the committee recommended increases for the F-35 competitive propulsion system, and notes that in all cases, the other three congressional defense committees also recommended increases for this purpose. Despite section 213 of the National Defense Authorization Act for Fiscal Year 2008 (Public Law 110-181), which requires the Secretary of Defense to obligate and expend sufficient annual amounts for the continued development and procurement of a competitive propulsion system for the F-35, the committee is disappointed that

the Department of Defense (DOD) has, for the third consecutive year, chosen not to comply with both the spirit and intent of this provision by opting not to include funds for this purpose in the budget request.

The committee notes that the F135 engine development program has experienced cost growth since the engineering and manufacturing development (EMD) program began in fiscal year 2002. At the beginning of EMD in fiscal year 2002, the F135 engine development program was expected to cost \$4.828 billion in then-year dollars. The F-35 program manager reports that as of the end of 2008, development costs have grown to \$6.7 billion in then-year dollars, an increase of \$1.872 billion, or 38 percent. Additionally, the committee notes that the F-35 program manager has reported an increase of approximately 38 to 43 percent in F135 engine procurement cost estimates between December 2005 and December 2008, in the annual selected acquisition reports for the F-35C and F-35A variants. Between December 2005 and December 2008, engine procurement cost estimates for the F-35B have grown approximately 47 percent, but the F-35B engine procurement cost growth is attributable to both the F135 engine and the F-35B's lift fan. Conversely, the F136 engine program has not experienced any cost growth since its inception. The F136 pre-EMD contract, which began in 2002 and was completed in 2004, was for \$411.0 million and did not experience cost growth. The F136 EMD contract was awarded in 2005, and the cost estimate, at \$2.486 billion, has been stable since contract award. Given the F135 development and procurement cost increases, the committee is perplexed by the Department's decisions over the past three years to not include an F-35 competitive propulsion system program in its budget requests. Based on the F135 cost growth, F135 test failures noted in the committee report (H. Rept. 110-652) accompanying the Duncan Hunter National Defense Authorization Act for Fiscal Year 2009, and resultant schedule delays due to F135 engine test failures, the committee remains steadfast in its belief that the non-financial factors of a two-engine competitive program such as better engine performance, improved contractor responsiveness, a more robust industrial base, increased engine reliability and improved operational readiness, strongly favor continuing the F-35 competitive propulsion system program.

The committee also notes that the Office of the Secretary of Defense's Director of Portfolio Acquisition testified before the Air and Land Forces Subcommittee on May 20, 2009, and stated that the Department planned a 75 percent higher year-over-year production rate for the F-35 program for fiscal year 2010 and that this rate, "seems to be an achievable rate." The committee further notes that the production rate for fiscal year 2009 is 17 aircraft, of which 14 are for the Department of Defense and 3 are international aircraft. A 75 percent higher production rate for fiscal year 2010 would total 30 aircraft, and the committee notes that 2 international aircraft are planned, leaving 28 DOD aircraft in fiscal year 2010 necessary to achieve the 75 percent year-over-year production rate, two less than the 30 F-35s contained in the Department of the Navy and Department of the Air Force budget requests. Therefore, the committee recommends a reduction of one F-35B in Aircraft Procurement, Navy and one F-35A in Aircraft Procurement, Air Force, and

their associated spares, as noted in the tables elsewhere in this report.

The committee understands that \$320.0 million of the \$476 million recommended by the recent joint estimating team would meet requirements for sufficient management reserve, and therefore recommends an aggregate reduction of \$156.0 million in PEs 64800N and 64800F as noted in the tables elsewhere in this report.

For continued development of the competitive F-35 propulsion system program, the committee recommends a total increase of \$463.0 million in PEs 64800F and 64800N as noted in the tables elsewhere in this report. The committee also recommends an aggregate increase of \$140.0 million as noted in the tables elsewhere in this report in Aircraft Procurement, Navy and Aircraft Procurement, Air Force for the procurement of four F136 engines, F136 spare parts, and advance procurement of F136 long-lead components to continue F136 procurement in fiscal year 2011.

#### *KC-X tanker replacement program*

The committee believes that the Department of Defense should implement measures to ensure competition throughout the lifecycle of the KC-X tanker replacement program to ensure that the program delivers the best capability to the warfighter and the best value to the U.S. Government. Accordingly, the committee urges the Secretary of Defense to utilize as many of the competitive measures specified in subsection (b) of section 202 of the Weapon Systems Acquisition Reform Act of 2009 (Public Law 111-23) as is practicable when developing the acquisition strategy and source selection plan. The committee notes that the intent of section 202 is to require the Secretary of Defense to plan for persistent competition to control program costs and improve the reliability of the KC-X tanker acquired by the Department throughout the program's lifecycle, including development, procurement, and sustainment.

#### *Metals Affordability Initiative*

The budget request contained \$37.9 million in PE 63112F for advanced materials for weapon systems.

The committee supports the continued government-industry collaboration provided through the Metals Affordability Initiative. It provides significant improvements in the manufacturing of specialty metals for aerospace applications for the government and aerospace industry, and provides improved affordability of aerospace metals. Further, the committee encourages the Air Force to budget for this highly successful initiative in future years.

The committee recommends an increase of \$10.0 million in PE 63112F for the Metals Affordability Initiative.

#### *Multi-Mode Propulsion Phase IIA: High Performance Green Propellant*

The budget request contained \$196.5 million in PE 62203F for aerospace propulsion, but contained no funding for the Multi-Mode Propulsion Phase IIA: High Performance Green Propellant project.

The Multi-Mode Propulsion (MMP) system is designed to be an enabler of Operationally Responsive Space (ORS) by meeting multiple program needs with the same propulsion system. However, as currently planned, MMP would not meet a key requirement for

ORS, which is the ability to launch within seven days from a stated need. The current hydrazine chemical solution being demonstrated under MMP Phase III does not allow such launch flexibility due to its toxicity and related extended launch operations loading procedures. Funding would accommodate a Phase IIA risk-reduction effort to develop an alternate chemical solution.

The committee recommends an increase of \$5.0 million in PE 62203F for the Multi-Mode Propulsion Phase IIA: High Performance Green Propellant project.

*National Polar-orbiting Operational Environmental Satellite System*

The committee is concerned that the tri-agency National Polar-orbiting Operational Environmental Satellite System (NPOESS) program will not deliver operational weather data in a timely fashion. The committee is aware of the cost, schedule, and management issues that continue to impede progress, and is not confident that the tri-agency executive committee governing the program can remedy the chronic problems plaguing this national priority acquisition.

Therefore, the committee directs the Department of Defense Executive Agent for Space, in consultation with the Administrator of the National Oceanic and Atmospheric Administration and the Administrator of the National Aeronautics and Space Administration, to evaluate options for restructuring the program, ranging from improving the current management structure to creating two separate programs based on the Defense Meteorological Satellite and the Polar Orbiting Environmental Satellite programs.

The committee further directs that, for each option, the Department of Defense Executive Agent for Space assess the prospects for achieving the objectives of the May 5, 1994, Presidential Decision Directive, National Science and Technology Council (NSTC)-2 that created the NPOESS program. NSTC-2 placed emphasis on maintaining continuity and reducing the cost of the operational weather mission. The description of the options should also include cost analyses and proposed mechanisms for cost control. The committee directs the Department of Defense Executive Agent for Space to submit the evaluation of options for restructuring the NPOESS program to the congressional defense committees by October 1, 2009.

*Operationally Responsive Space*

The budget request contained \$112.9 million in PE 64857F for Operationally Responsive Space (ORS). However, the budget request did not include sufficient funding to complete and launch ORS Satellite-1, an intelligence, surveillance, and reconnaissance satellite being developed to satisfy an urgent and compelling combatant commander requirement, validated by U.S. Strategic Command, to directly support U.S. Central Command's ongoing operations. The Chief of Staff of the Air Force identified this requirement in his letter of May 18, 2009, describing unfunded requirements.

The committee recommends \$136.3 million, an increase of \$23.4 million, in PE 64857F for Operationally Responsive Space to fund

the remainder of the development and launch costs for ORS Satellite-1.

*Protected military satellite communications*

On April 6, 2009, the Secretary of Defense announced his recommendation to the President to terminate the \$26.0 billion Transformational Satellite Communications (TSAT) program, which was intended to extend high-bandwidth protected satellite communications capabilities to deployed troops and deliver more data at higher speeds for “on the move” military users.

The budget request contained no funding for the TSAT program and the Department has begun the process of closing it down.

With the cancellation of the TSAT program, the budget request for Air Force national security space programs shifted emphasis to the Advanced Extremely High Frequency (AEHF) program to meet future requirements for protected communications. However, the current version of the AEHF satellite will only be capable of delivering a fraction of the protected communications bandwidth that was anticipated in the TSAT program, and currently has almost no capability for delivering data to mobile users.

In addition, the committee is aware that, as a result of the cancellation of the TSAT program, the industrial talent focused on developing systems to meet the very specific military requirement for jam-resistant communications will begin to rapidly dissipate over the next year.

In a related effort to meet growing military requirements for communications bandwidth, the budget request contained increased funding for the Wideband Global Satellite (WGS) communications program, a constellation of commercial-class satellites that will provide high bandwidth for mobile, as well as fixed users. However, the WGS system does not currently provide jam-resistant communications.

Contractors participating in both the AEHF and WGS programs have provided to the committee various recommendations for modifying each of these satellites in ways that might address bandwidth requirements for protected communications.

Section 1047 of the Duncan Hunter National Defense Authorization Act for Fiscal Year 2009 (Public Law 110–417) requires the Secretary of Defense and the Director of National Intelligence to conduct a joint review of the bandwidth capacity requirements of the Department of Defense and the intelligence community by October 14, 2009. In coordination with this statutory review, the committee directs the Secretary of Defense to prepare a strategy for addressing the military requirements for jam-resistant, protected communications that addresses the fragility of the industrial base supporting efforts to meet these requirements, and to deliver the strategy concurrent with the submission of the statutory review.

*Rivet Joint RC–135 Services Oriented Architecture*

The budget request contained \$12.8 million in PE 35207F for manned reconnaissance systems, but did not contain sufficient funding to complete implementation of the Rivet Joint RC–135 Services Oriented Architecture (SOA) program.

The RC–135 SOA project will ensure full integration of Rivet Joint into the intelligence, surveillance, and reconnaissance (ISR)

enterprise, and will meet Department of Defense and intelligence community requirements for making ISR data and information discoverable, accessible, and to enable information sharing.

The committee recommends an increase of \$2.5 million in PE 35207F to complete implementation of the Rivet Joint RC-135 Services Oriented Architecture program, including the RC-135 Processing and Analysis Center.

#### *Small Responsive Spacecraft at Low-Cost*

The budget request contained \$83.9 million in PE 63401F for advanced spacecraft technology, but contained no funding for the Small Responsive Spacecraft at Low-Cost (SRSL) project.

The SRSL would build on previous accomplishments of the Space Dynamics Laboratory at Utah State University in conjunction with the Air Force Research Laboratory, to develop and demonstrate technologies for new, low-cost space systems that have military utility and address warfighter needs. The project would develop a series of quick-response, small, lower-cost reconnaissance spacecraft, modular in design, to allow configuration to meet specific military needs under Operationally Responsive Space mission requirements.

The committee recommends an increase of \$4.5 million in PE 63401F for the Small Responsive Spacecraft at Low-Cost project.

#### *Third Generation Infrared Surveillance*

The budget request contained \$143.2 million in PE 64443F for Third Generation Infrared Surveillance (3GIRS).

The 3GIRS program is designed to provide advanced capability to warn of ballistic missile attacks on the United States, its deployed forces, and its allies, while also supporting missile defense, battlespace awareness, and technical intelligence missions. The program, originally referred to as the Alternative Infrared Satellite System (AIRSS), was initiated in 2006, as a result of a Nunn-McCurdy review of the Space Based Infrared Systems (SBIRS)-High program to generate competition for the SBIRS geosynchronous orbit (GEO)-3 satellite and to explore alternative technologies.

With the Defense Acquisition Executive's decision to procure SBIRS GEO-3 in July 2007, and following congressional guidance, the Air Force has redirected AIRSS resources to pursue risk reduction, system definition, and ground tests to enable a Third Generation Space Based Infrared program after the SBIRS satellites are delivered.

Originally conceived as a low-technical risk system, the 3GIRS program now includes significant technology development and flight-test demonstrations. The fiscal year 2010 budget request would support continued risk reduction and maturation of full-earth, wide field-of-view (WFOV) infrared (IR) sensor technology, enabling improved detection sensitivities and faster warning times of new and emerging worldwide missile threats against the United States, its deployed forces, and its allies. Sensor test and evaluation efforts would include hosting an IR payload prototype on a commercial host, WFOV algorithm development, and planning for integration into the existing SBIRS ground architecture.

While the committee supports continued development of the innovative sensor technologies being explored by this program, it

finds the 3GIRS development program is somewhat premature given the continuing challenges involved in fielding the current generation of SBIRS satellites.

The committee recommends \$123.2 million, a decrease of \$20.0 million, in PE 64443F for 3GIRS.

#### DEFENSE-WIDE RESEARCH, DEVELOPMENT, TEST, AND EVALUATION

##### Overview

The budget request contained \$20.7 billion for Defense-Wide research, development, test, and evaluation (RDT&E).

The committee recommends \$20.8 billion, a decrease of \$100.0 million to the budget request.

**Title II - Research, Development, Test, and Evaluation**

(Dollars in Thousands)

<u>Line</u>	<u>Program Element</u>	<u>Program Title</u>	<u>FY 2010 Request</u>	<u>House Change</u>	<u>House Authorized</u>
		<b>RESEARCH, DEVELOPMENT, TEST &amp; EVALUATION, DEFENSE-WIDE</b>			
		<b>BASIC RESEARCH</b>			
001	0601000BR	DTRA BASIC RESEARCH INITIATIVE	48,544	2,000	50,544
		Virtual Perimeter Monitoring System (VPMS)		[2,000]	
002	0601101E	DEFENSE RESEARCH SCIENCES	226,125	4,200	230,325
		Development of Low-Cost, Stable Vaccines for Field Application		[3,200]	
		High School Science Study Group/CS Futures		[1,000]	
003	0601111D8Z	GOVERNMENT/INDUSTRY COSPONSORSHIP OF UNIVERSITY RESEARCH	0		0
004	0601114D8Z	DEFENSE EXPERIMENTAL PROGRAM TO STIMULATE COMPETITIVE RESEARCH	0		0
005	0601120D8Z	NATIONAL DEFENSE EDUCATION PROGRAM	89,980		89,980
006	0601384BP	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM	58,974	5,000	63,974
		Synchrotron Beamline and Experimental Station		[5,000]	
		<b>SUBTOTAL, BASIC RESEARCH, DEFENSE-WIDE</b>	<b>423,623</b>	<b>11,200</b>	<b>434,823</b>
		<b>APPLIED RESEARCH</b>			
007	0602000D8Z	JOINT MUNITIONS TECHNOLOGY	22,669		22,669
008	0602227D8Z	MEDICAL FREE ELECTRON LASER	0		0
009	0602228D8Z	HISTORICALLY BLACK COLLEGES AND UNIVERSITIES (HBCU) SCIENCE	15,164	5,000	20,164

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<u>Line</u>	<u>Program Element</u>	<u>Program Title</u>	<u>FY 2010 Request</u>	<u>House Change</u>	<u>House Authorized</u>
		Historically Black Colleges and Universities and Minority Serving Institutions Program		[5,000]	
010	0602234D8Z	LINCOLN LABORATORY RESEARCH PROGRAM	34,034		34,034
011	0602303E	INFORMATION & COMMUNICATIONS TECHNOLOGY Program Reduction	282,749	-10,000	272,749
012	0602304E	COGNITIVE COMPUTING SYSTEMS	142,840		142,840
013	0602383E	BIOLOGICAL WARFARE DEFENSE	40,587		40,587
014	06023848P	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM Chemical and Biological Resistant Clothing	209,072	2,000	211,072
015	0602663D8Z	JOINT DATA MANAGEMENT ADVANCED DEVELOPMENT	4,940		4,940
016	0602670D8Z	HUMAN, SOCIAL AND CULTURE BEHAVIOR MODELING (HSCB) APPLIED RESEARCH	9,446		9,446
017	0602702E	TACTICAL TECHNOLOGY Program Reduction	276,075	-10,000	266,075
018	0602715E	MATERIALS AND BIOLOGICAL TECHNOLOGY Improved Performance of ODS Ferritic Steels Program Reduction	268,859	-3,000	265,859
019	0602716E	ELECTRONICS TECHNOLOGY Program Reduction	223,841	-10,000	213,841
020	0602718BR	WEAPONS OF MASS DESTRUCTION DEFEAT TECHNOLOGIES Eagles Eyes - Stand-off Radiation Detection	219,130	3,600	222,730
021	1160401BB	SPECIAL OPERATIONS TECHNOLOGY DEVELOPMENT SOF Craft Integrated Backbone	27,384	4,250	31,634

**Title II - Research, Development, Test, and Evaluation**

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022	1160407BB	Rapid and Low Cost Development of Next Generation Patrol Ships for Special Operations SOF MEDICAL TECHNOLOGY DEVELOPMENT	0	[2,250]	0
		<b>SUBTOTAL, APPLIED RESEARCH, DEFENSE-WIDE</b>	<b>1,776,790</b>	<b>-18,150</b>	<b>1,758,640</b>
		<b>ADVANCED TECHNOLOGY DEVELOPMENT</b>			
023	0603000D8Z	JOINT MUNITIONS ADVANCED TECHNOLOGY	23,538		23,538
024	0603121D8Z	SO/LIC ADVANCED DEVELOPMENT Lasercomm Link for Explosive Ordnance Disposal Robot Operations	43,808	3,000	46,808
025	0603122D8Z	COMBATING TERRORISM TECHNOLOGY SUPPORT Affordable Robust Mid-Sized UGV Advanced Transparent LAS Glass Ceramic Armor Systems for Force Protection	81,868	[3,000] 13,400 [4,000] [1,250]	95,268
026	0603160BR	Integrated Rugged Checkpoint Container Combating Terrorism: Threat and Risk Assessment Thresholds for Neurological Injuries from Repeated Blast Exposures COUNTERPROLIFERATION INITIATIVES - PROLIFERATION PREVENTION AND DEFEAT	233,203	[2,500] [2,650] [3,000]	233,203
027	0603175C	BALLISTIC MISSILE DEFENSE TECHNOLOGY	109,760		109,760
028	0603200D8Z	JOINT ADVANCED CONCEPTS Robotic Border Area Surveillance System Program	7,817	4,000	11,817
029	0603225D8Z	JOINT DOD-DOE MUNITIONS TECHNOLOGY DEVELOPMENT	23,276	[4,000]	23,276
030	0603286E	ADVANCED AEROSPACE SYSTEMS	338,360	-75,000	263,360



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045	0603727D8Z	End to End Semi Fab Alpha Tool JOINT WARFIGHTING PROGRAM	11,135	[5,000]	11,135
046	0603739E	ADVANCED ELECTRONICS TECHNOLOGIES Program Reduction	205,912	-15,000	190,912
047	0603745D8Z	SYNTHETIC APERTURE RADAR (SAR) COHERENT CHANGE DETECTION (CDD)	4,864	[-15,000]	4,864
048	0603750D8Z	ADVANCED CONCEPT TECHNOLOGY DEMONSTRATIONS	0		0
049	0603755D8Z	HIGH PERFORMANCE COMPUTING MODERNIZATION PROGRAM	221,286		221,286
050	0603760E	COMMAND, CONTROL AND COMMUNICATIONS SYSTEMS	293,476		293,476
051	0603764E	LAND WARFARE TECHNOLOGY	0		0
052	0603765E	CLASSIFIED DARPA PROGRAMS	186,526		186,526
053	0603766E	NETWORK-CENTRIC WARFARE TECHNOLOGY	135,941		135,941
054	0603767E	SENSOR TECHNOLOGY Program Reduction	243,056	-15,000	228,056
055	0603768E	GUIDANCE TECHNOLOGY	37,040	[-15,000]	37,040
056	0603769SE	DISTRIBUTED LEARNING ADVANCED TECHNOLOGY DEVELOPMENT	13,822		13,822
057	0603781D8Z	SOFTWARE ENGINEERING INSTITUTE	31,298		31,298
058	0603805S	DUAL USE TECHNOLOGY	0		0
059	0603826D8Z	QUICK REACTION SPECIAL PROJECTS Program Reduction	107,984	-10,000	97,984
060	0603828D8Z	JOINT EXPERIMENTATION Tidewater Full Scale Exercise	124,480	[-10,000]	127,180
061	0603832D8Z	DOD MODELING AND SIMULATION MANAGEMENT OFFICE	38,505	2,700	38,505
062	0603941D8Z	TEST & EVALUATION SCIENCE & TECHNOLOGY	95,734	[2,700]	95,734

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063	0603942D8Z	TECHNOLOGY TRANSFER National Radio Frequency RD&T Transfer Center	2,219	3,000 [3,000]	5,219
064	0909999D8Z	FINANCING FOR CANCELLED ACCOUNT ADJUSTMENTS	0		0
065	1160402BB	SPECIAL OPERATIONS ADVANCED TECHNOLOGY DEVELOPMENT Partnership for Defense Innovation Wi-Fi Laboratory Testing and Assessment Center	31,675	3,500 [3,500]	35,175
066	1160422BB	AVIATION ENGINEERING ANALYSIS	3,544		3,544
067	1160472BB	SOF INFORMATION AND BROADCAST SYSTEMS ADVANCED TECHNOLOGY	4,988		4,988
		<b>SUBTOTAL, ADVANCED TECHNOLOGY DEVELOPMENT, DEFENSE-WIDE</b>	<b>3,570,404</b>	<b>-69,600</b>	<b>3,500,804</b>
		<b>ADVANCED COMPONENT DEVELOPMENT &amp; PROTOTYPES</b>			
068	0603161D8Z	NUCLEAR AND CONVENTIONAL PHYSICAL SECURITY EQUIPMENT RDT&E ADC&P	36,019		36,019
069	0603228D8Z	PHYSICAL SECURITY EQUIPMENT	0		0
070	0603527D8Z	RETRACT LARCH	21,718		21,718
071	0603709D8Z	JOINT ROBOTICS PROGRAM Autonomous Machine Vision for Mapping and Investigation of Remote Sites	11,803	3,850 [2,250]	15,653
		RobonostIX Integration to Improve Readiness of Robotic Unmanned Systems		[1,600]	
072	0603714D8Z	ADVANCED SENSOR APPLICATIONS PROGRAM	17,771		17,771

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073	0603851D8Z	ENVIRONMENTAL SECURITY TECHNICAL CERTIFICATION PROGRAM	31,613		31,613
074	0603881C	BALLISTIC MISSILE DEFENSE TERMINAL DEFENSE SEGMENT	719,465		719,465
075	0603882C	BALLISTIC MISSILE DEFENSE MIDCOURSE DEFENSE SEGMENT	982,922		982,922
076	0603883C	BALLISTIC MISSILE DEFENSE BOOST DEFENSE SEGMENT	186,697		186,697
077	0603884BP	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM	205,952		205,952
078	0603884C	BALLISTIC MISSILE DEFENSE SENSORS	636,856		636,856
079	0603886C	BALLISTIC MISSILE DEFENSE SYSTEM INTERCEPTOR	0		0
080	0603888C	BALLISTIC MISSILE DEFENSE TEST & TARGETS	966,752		966,752
081	0603890C	BMD ENABLING PROGRAMS	369,145	-25,000	344,145
		Programs Reduction		[-25,000]	
082	0603891C	SPECIAL PROGRAMS - MDA	301,566		301,566
083	0603892C	AEGIS BMD	1,690,758		1,690,758
084	0603893C	SPACE TRACKING & SURVEILLANCE SYSTEM	180,000		180,000
085	0603894C	MULTIPLE KILL VEHICLE	0		0
086	0603895C	BALLISTIC MISSILE DEFENSE SYSTEM SPACE PROGRAMS	12,549		12,549
087	0603896C	BALLISTIC MISSILE DEFENSE COMMAND AND CONTROL, BATTLE MANAGEMENT AND COMMUNICATI	340,014		340,014
088	0603897C	BALLISTIC MISSILE DEFENSE HERCULES	48,186		48,186
089	0603898C	BALLISTIC MISSILE DEFENSE JOINT WARFIGHTER SUPPORT	60,921	500	61,421
		Independent Advisory Group to Review Ballistic Missile Defense Training Needs		[500]	
090	0603904C	MISSILE DEFENSE INTEGRATION & OPERATIONS CENTER (MDIOC)	86,949	5,000	91,949
		Joint Data Exchange Center-Missile Defense		[5,000]	
091	0603906C	REGARDING TRENCH	6,164		6,164

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092	0603907C	SEA BASED X-BAND RADAR (SBX)	174,576		174,576
093	0603908C	BMD EUROPEAN INTERCEPTOR SITE	0		0
094	0603909C	BMD EUROPEAN MIDCOURSE RADAR	0		0
095	0603911C	BMD EUROPEAN CAPABILITY	50,504		50,504
096	0603912C	BMD EUROPEAN COMMUNICATIONS SUPPORT	0		0
097	0603913C	ISRAELI COOPERATIVE PROGRAMS	119,634	20,500	140,134
		Short Range Ballistic Missile Defense		[20,500]	
098	0603920D8Z	HUMANITARIAN DEMINING	14,687		14,687
099	0603923D8Z	COALITION WARFARE	13,885		13,885
100	0604016D8Z	DEPARTMENT OF DEFENSE CORROSION PROGRAM	4,887		4,887
101	0604400D8Z	DEPARTMENT OF DEFENSE (DOD) UNMANNED AIRCRAFT SYSTEM (UAS) COMMON DEVELOPMENT	55,289		55,289
102	0604648D8Z	JOINT CAPABILITY TECHNOLOGY DEMONSTRATIONS	18,577	4,300	22,877
		Mobile Detection Assessment Response System Enhancements		[4,300]	
103	0604670D8Z	HUMAN, SOCIAL AND CULTURE BEHAVIOR MODELING (HSCB) RESEARCH AND ENGINEERING	7,006		7,006
104	0604787D8Z	JOINT SYSTEMS INTEGRATION COMMAND (JSIC)	19,744		19,744
105	0604828D8Z	JOINT FIRES INTEGRATION AND INTEROPERABILITY TEAM	16,972		16,972
106	0605017D8Z	REDUCTION OF TOTAL OWNERSHIP COST	24,647		24,647
107	0303191D8Z	JOINT ELECTROMAGNETIC TECHNOLOGY (JET) PROGRAM	3,949		3,949
		<b>SUBTOTAL, ADVANCED COMPONENT DEVELOPMENT &amp; PROTOTYPES, DEFENSE-WIDE</b>	<b>7,438,177</b>	<b>9,150</b>	<b>7,447,327</b>

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108	0604051D8Z	SYSTEM DEVELOPMENT & DEMONSTRATION	28,862		28,862
109	0604161D8Z	DEFENSE ACQUISITION CHALLENGE PROGRAM (DACP)	7,628		7,628
		NUCLEAR AND CONVENTIONAL PHYSICAL SECURITY EQUIPMENT			
		RDT&E SDD			
110	0604165D8Z	PROMPT GLOBAL STRIKE CAPABILITY DEVELOPMENT	166,913		166,913
111	0604384BP	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM	332,895		332,895
112	0604709D8Z	JOINT ROBOTICS PROGRAM	5,127		5,127
113	0604764K	ADVANCED IT SERVICES JOINT PROGRAM OFFICE (AITS-JPO)	39,911		39,911
114	0604771D8Z	JOINT TACTICAL INFORMATION DISTRIBUTION SYSTEM (JTIDS)	20,633		20,633
115	0605000BR	WEAPONS OF MASS DESTRUCTION DEFEAT CAPABILITIES	8,735		8,735
116	0605013BL	INFORMATION TECHNOLOGY DEVELOPMENT	11,705	124,410	136,115
		Transfer from Title XIV		[124,410]	
117	0605018BTA	DEFENSE INTEGRATED MILITARY HUMAN RESOURCES SYSTEM (DIMHRS)	70,000		70,000
118	0605020BTA	BUSINESS TRANSFORMATION AGENCY R&D ACTIVITIES	197,008		197,008
119	0605021SE	HOMELAND PERSONNEL SECURITY INITIATIVE	395		395
120	0605027D8Z	OUSD(C) IT DEVELOPMENT INITIATIVES	5,000		5,000
121	0605140D8Z	TRUSTED FOUNDRY	41,223		41,223
122	0605648D8Z	DEFENSE ACQUISITION EXECUTIVE (DAE) PILOT PROGRAM	4,267		4,267
123	0303141K	GLOBAL COMBAT SUPPORT SYSTEM	18,431		18,431
124	0303158K	JOINT COMMAND AND CONTROL PROGRAM (JC2)	49,047		49,047
125	0807708D8Z	WOUNDED ILL AND INJURED SENIOR OVERSIGHT COMMITTEE (WII-SOC) STAFF OFFICE	1,609		1,609

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		<b>SUBTOTAL, SYSTEM DEVELOPMENT &amp; DEMONSTRATION, DEFENSE-WIDE</b>	<b>1,009,389</b>	<b>124,410</b>	<b>1,133,799</b>
		<b>RDT&amp;E MANAGEMENT SUPPORT</b>			
126	0603757D8Z	TRAINING TRANSFORMATION (T2)	0		0
127	0604774D8Z	DEFENSE READINESS REPORTING SYSTEM (DRRS)	13,121		13,121
128	0604875D8Z	JOINT SYSTEMS ARCHITECTURE DEVELOPMENT	15,247		15,247
129	0604940D8Z	CENTRAL TEST AND EVALUATION INVESTMENT DEVELOPMENT (CTEIP)	145,052	7,500	152,552
		Joint Gulf Range Test and Training Complex		[3,000]	
		Gulf Range Mobile Instrumentation Capability		[3,000]	
		Advanced SAM Hardware Simulator Development		[1,500]	
130	0604943D8Z	THERMAL VICAR	9,045		9,045
131	0605100D8Z	JOINT MISSION ENVIRONMENT TEST CAPABILITY (JMETC)	9,455		9,455
132	0605104D8Z	TECHNICAL STUDIES, SUPPORT AND ANALYSIS Center for Technology and National Security Policy at the National Defense University	44,760	1,000	45,760
133	0605110D8Z	USD(A&T)-CRITICAL TECHNOLOGY SUPPORT	4,914		4,914
134	0605117D8Z	FOREIGN MATERIAL ACQUISITION AND EXPLOITATION	94,921		94,921
135	0605126J	JOINT INTEGRATED AIR AND MISSILE DEFENSE ORGANIZATION (JIAMDO)	96,909	-21,000	75,909
		Information System Security - Program Not Justified		[-21,000]	
136	0605128D8Z	CLASSIFIED PROGRAM USD(P)	0		0
137	0605130D8Z	FOREIGN COMPARATIVE TESTING	35,054		35,054

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138	0605161D8Z	NUCLEAR MATTERS-PHYSICAL SECURITY	6,474		6,474
139	0605170D8Z	SUPPORT TO NETWORKS AND INFORMATION INTEGRATION	14,916		14,916
140	0605200D8Z	GENERAL SUPPORT TO USD (INTELLIGENCE)	5,888		5,888
141	0605384BP	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM	106,477		106,477
142	0605502BR	SMALL BUSINESS INNOVATION RESEARCH	0		0
143	0605502C	SMALL BUSINESS INNOVATIVE RESEARCH - MDA	0		0
144	0605502D8Z	SMALL BUSINESS INNOVATIVE RESEARCH	0		0
145	0605502E	SMALL BUSINESS INNOVATIVE RESEARCH	0		0
146	0605502S	SMALL BUSINESS INNOVATIVE RESEARCH	0		0
147	0605790D8Z	SMALL BUSINESS INNOVATION RESEARCH/CHALLENGE ADMINISTRATION	2,163		2,163
148	0605798D8Z	DEFENSE TECHNOLOGY ANALYSIS	11,005		11,005
149	0605798S	DEFENSE TECHNOLOGY ANALYSIS	0		0
150	0605799D8Z	EMERGING CAPABILITIES	19,981		19,981
151	0605801KA	DEFENSE TECHNICAL INFORMATION CENTER (DTIC)	54,411	-5,000	49,411
		Program Reduction		[-5,000]	
152	0605803SE	R&D IN SUPPORT OF DOD ENLISTMENT, TESTING AND EVALUATION	19,554		19,554
153	0605804D8Z	DEVELOPMENT TEST AND EVALUATION	23,512	3,000	26,512
		Renewable Energy Systems (RES) for Defense Applications		[3,000]	
154	0605897E	DARPA AGENCY RELOCATION	45,000	-10,000	35,000
		Program Reduction		[-10,000]	
155	0605898E	MANAGEMENT HQ - R&D	51,055		51,055
156	0606100D8Z	BUDGET AND PROGRAM ASSESSMENTS	5,929		5,929
157	0606301D8Z	AVIATION SAFETY TECHNOLOGIES	8,000		8,000

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158	0204571J	JOINT STAFF ANALYTICAL SUPPORT	1,250		1,250
159	0301555G	CLASSIFIED PROGRAMS	0		0
160	0301556G	SPECIAL PROGRAM	0		0
161	0303166D8Z	SUPPORT TO INFORMATION OPERATIONS (IO) CAPABILITIES	30,604		30,604
162	0303169D8Z	INFORMATION TECHNOLOGY RAPID ACQUISITION	4,667		4,667
163	0305103E	CYBER SECURITY INITIATIVE	50,000		50,000
164	0305193D8Z	INTELLIGENCE SUPPORT TO INFORMATION OPERATIONS (IO)	20,648		20,648
165	0305193G	INTELLIGENCE SUPPORT TO INFORMATION OPERATIONS (IO)	0		0
166	0305400D8Z	WARFIGHTING AND INTELLIGENCE-RELATED SUPPORT	829		829
167	0804767D8Z	COCOM EXERCISE ENGAGEMENT AND TRAINING TRANSFORMATION (CE2T2)	34,306		34,306
168	0901585C	PENTAGON RESERVATION	19,709		19,709
169	0901598C	MANAGEMENT HQ - MDA	57,403		57,403
170	0901598D8W	IT SOFTWARE DEV INITIATIVES	980		980
170A	9999999	OTHER PROGRAMS	124,705		124,705
		<b>SUBTOTAL, RDT&amp;E MANAGEMENT SUPPORT, DEFENSE-WIDE</b>	<b>1,189,553</b>	<b>-24,500</b>	<b>1,165,053</b>
171	0604130V	OPERATIONAL SYSTEMS DEVELOPMENT			
		DEFENSE INFORMATION SYSTEM FOR SECURITY (DISS)	1,384		1,384
172	0605127T	REGIONAL INTERNATIONAL OUTREACH (RIO) AND PARTNERSHIP FOR PEACE INFORMATION MANA	2,001		2,001
173	0605147T	OVERSEAS HUMANITARIAN ASSISTANCE SHARED INFORMATION SYSTEM (OHASIS)	292		292

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174	0607384BP	CHEMICAL AND BIOLOGICAL DEFENSE (OPERATIONAL SYSTEMS DEVELOPMENT)	6,198		6,198
175	0607828D8Z	JOINT INTEGRATION AND INTEROPERABILITY	46,214		46,214
176	0204571J	JOINT STAFF ANALYTICAL SUPPORT	0		0
177	0208043J	CLASSIFIED PROGRAMS	2,179		2,179
178	0208045K	C4I INTEROPERABILITY	74,786		74,786
180	0301144K	JOINT/ALLIED COALITION INFORMATION SHARING	10,767		10,767
181	0301301L	GENERAL DEFENSE INTELLIGENCE PROGRAM	0	5,800	5,800
		Advanced Scientific Missile Intelligence Preparation of the Battlespace (IPB)		[4,000]	
		Portable Device for Latent Fingerprint Identification		[1,800]	
182	0301318BB	HUMINT (CONTROLLED)	0		0
183	0301371G	CYBER SECURITY INITIATIVE - CCP	0		0
184	0301372L	CYBER SECURITY INITIATIVE - GDIP	0		0
185	0301555BZ	CLASSIFIED PROGRAMS	0		0
186	0301556BZ	SPECIAL PROGRAM	0		0
187	0302016K	NATIONAL MILITARY COMMAND SYSTEM-WIDE SUPPORT	548		548
188	0302019K	DEFENSE INFO INFRASTRUCTURE ENGINEERING AND INTEGRATION	17,655		17,655
189	0303126K	LONG-HAUL COMMUNICATIONS - DCS	9,406		9,406
190	0303131K	MINIMUM ESSENTIAL EMERGENCY COMMUNICATIONS NETWORK (MEECN)	9,830		9,830
191	0303135G	PUBLIC KEY INFRASTRUCTURE (PKI)	8,116		8,116
192	0303136G	KEY MANAGEMENT INFRASTRUCTURE (KMI)	41,002		41,002
193	0303140D8Z	INFORMATION SYSTEMS SECURITY PROGRAM	13,477		13,477

**Title II - Research, Development, Test, and Evaluation**  
(Dollars in Thousands)

<u>Line</u>	<u>Program Element</u>	<u>Program Title</u>	<u>FY 2010 Request</u>	<u>House Change</u>	<u>House Authorized</u>
194	0303140G	INFORMATION SYSTEMS SECURITY PROGRAM	408,316		408,316
195	0303140K	INFORMATION SYSTEMS SECURITY PROGRAM	0		0
196	0303148K	DISA MISSION SUPPORT OPERATIONS	1,205		1,205
197	0303149J	C4I FOR THE WARRIOR	4,098		4,098
198	0303150K	GLOBAL COMMAND AND CONTROL SYSTEM	23,761		23,761
199	0303153K	JOINT SPECTRUM CENTER	18,944		18,944
200	0303170K	NET-CENTRIC ENTERPRISE SERVICES (NCES)	1,782		1,782
201	0303260D8Z	JOINT MILITARY DECEPTION INITIATIVE ( C )	942		942
202	0303610K	TELEPORT PROGRAM	5,239		5,239
203	0304210BB	SPECIAL APPLICATIONS FOR CONTINGENCIES	16,381		16,381
204	0304345BQ	NATIONAL GEOSPATIAL-INTELLIGENCE PROGRAM (NGP)	0		0
206	0305103D8Z	CYBER SECURITY INITIATIVE	993		993
207	0305103G	CYBER SECURITY INITIATIVE	0		0
208	0305103K	CYBER SECURITY INITIATIVE	10,080		10,080
209	0305125D8Z	CRITICAL INFRASTRUCTURE PROTECTION (CIP)	12,725		12,725
210	0305127BZ	FOREIGN COUNTERINTELLIGENCE ACTIVITIES	0		0
211	0305127L	FOREIGN COUNTERINTELLIGENCE ACTIVITIES	0		0
212	0305146BZ	DEFENSE JOINT COUNTERINTELLIGENCE ACTIVITIES	0		0
213	0305146L	DEFENSE JOINT COUNTERINTELLIGENCE ACTIVITIES	0		0
214	0305183L	DEFENSE HUMAN INTELLIGENCE (HUMINT) ACTIVITIES	0		0
215	0305186D8Z	POLICY R&D PROGRAMS	6,948		6,948
216	0305193L	INTELLIGENCE SUPPORT TO INFORMATION OPERATIONS (IO)	0		0
217	0305199D8Z	NET CENTRICITY	1,479		1,479
218	0305202G	DRAGON U-2	0		0

**Title II - Research, Development, Test, and Evaluation**  
(Dollars in Thousands)

<u>Line</u>	<u>Program Element</u>	<u>Program Title</u>	<u>FY 2010 Request</u>	<u>House Change</u>	<u>House Authorized</u>
219	0305206G	AIRBORNE RECONNAISSANCE SYSTEMS	0		0
220	0305207G	MANNED RECONNAISSANCE SYSTEMS	0	3,000	3,000
		Personal Area Network for Land Soldiers (PANLS)		[3,000]	
221	0305208BB	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	1,407		1,407
222	0305208BQ	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	0		0
223	0305208G	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	0		0
224	0305208K	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	3,158		3,158
225	0305208L	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	0		0
226	0305219BB	MQ-1 PREDATOR A UAV	2,067		2,067
227	0305229G	REAL-TIME ARCHITECTURE DEVELOPMENT (RT10)	0		0
228	0305387D8Z	HOMELAND DEFENSE TECHNOLOGY TRANSFER PROGRAM	2,963		2,963
229	0305600D8Z	INTERNATIONAL INTELLIGENCE TECHNOLOGY ASSESSMENT, ADVANCEMENT AND INTEGRATION	1,389		1,389
230	0305866L	DIA SUPPORT TO SOUTHCOM INTELLIGENCE ACTIVITIES	0		0
231	0305880L	COMBATANT COMMAND INTELLIGENCE OPERATIONS	0		0
232	0305883L	HARD AND DEEPLY BURIED TARGET (HDBT) INTEL SUPPORT	0		0
233	0305884L	INTELLIGENCE PLANNING AND REVIEW ACTIVITIES	0		0
235	0305889G	COUNTERDRUG INTELLIGENCE SUPPORT	0		0
236	0307141G	INFORMATION OPERATIONS TECHNOLOGY INTEGRATION & TOOL DEV	0		0
237	0307207G	AERIAL COMMON SENSOR (ACS)	0		0
238	0708011S	INDUSTRIAL PREPAREDNESS	20,514	4,200	24,714
		Commercialization of High Rate Polyimide Composites for Military & Commercial Aircraft		[2,000]	
		Optical Fiber Assembly Manufacturing		[1,000]	

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**Title II - Research, Development, Test, and Evaluation**

(Dollars in Thousands)

<u>Line</u>	<u>Program Element</u>	<u>Program Title</u>	<u>FY 2010 Request</u>	<u>House Change</u>	<u>House Authorized</u>
239	0708012S	Northwest Manufacturing Initiative	2,798	[1,200]	2,798
240	0902298J	LOGISTICS SUPPORT ACTIVITIES	8,303		8,303
241	1001018D8Z	MANAGEMENT HEADQUARTERS (JCS)	74,485		74,485
242	1105219BB	NATO AGS	4,380		4,380
243	1130435BB	MQ-9 UAV	0		0
244	1160279BB	STORM	0		0
		SMALL BUSINESS INNOVATIVE RESEARCH/SMALL BUS TECH TRANSFER PILOT PROG	0		0
245	1160403BB	SPECIAL OPERATIONS AVIATION SYSTEMS ADVANCED DEVELOPMENT	82,621		82,621
246	1160404BB	SPECIAL OPERATIONS TACTICAL SYSTEMS DEVELOPMENT	6,182		6,182
247	1160405BB	SPECIAL OPERATIONS INTELLIGENCE SYSTEMS DEVELOPMENT	21,273	30,100	51,373
		Biometric Optical Surveillance System (BOSS)		[2,000]	
		Advanced, Long Endurance Unattended Ground Sensor		[8,000]	
		Counterproliferation Analysis and Planning System (CAPS)		[20,100]	
248	1160408BB	SOF OPERATIONAL ENHANCEMENTS	60,310		60,310
249	1160421BB	SPECIAL OPERATIONS CV-22 DEVELOPMENT	12,687		12,687
250	1160423BB	JOINT MULTI-MISSION SUBMERSIBLE	43,412		43,412
251	1160425BB	SPECIAL OPERATIONS AIRCRAFT DEFENSIVE SYSTEMS	0		0
252	1160426BB	OPERATIONS ADVANCED SEAL DELIVERY SYSTEM (ASDS) DEVELOPMENT	1,321		1,321
253	1160427BB	MISSION TRAINING AND PREPARATION SYSTEMS (MTPS)	3,192		3,192
254	1160428BB	UNMANNED VEHICLES (UV)	0		0
255	1160429BB	MC130J SOF TANKER RECAPITALIZATION	5,957		5,957

**Title II - Research, Development, Test, and Evaluation**

(Dollars in Thousands)

<u>Line</u>	<u>Program Element</u>	<u>Program Title</u>	<u>FY 2010 Request</u>	<u>House Change</u>	<u>House Authorized</u>
256	1160474BB	SOF COMMUNICATIONS EQUIPMENT AND ELECTRONICS SYSTEMS	733		733
257	1160476BB	SOF TACTICAL RADIO SYSTEMS	2,368		2,368
258	1160477BB	SOF WEAPONS SYSTEMS	1,081		1,081
259	1160478BB	SOF SOLDIER PROTECTION AND SURVIVAL SYSTEMS	597		597
260	1160479BB	SOF VISUAL AUGMENTATION, LASERS AND SENSOR SYSTEMS	3,369	1,750	5,119
		Miniature Day Night Sight for Crew Served Weapons		[1,750]	
261	1160480BB	SOF TACTICAL VEHICLES	1,973		1,973
262	1160482BB	SOF ROTARY WING AVIATION	18,863		18,863
263	1160483BB	SOF UNDERWATER SYSTEMS	3,452	4,000	7,452
		Transformer Technology for Combat Submersibles (TTCS)		[4,000]	
264	1160484BB	SOF SURFACE CRAFT	12,250		12,250
265	1160488BB	SOF PSYOP	9,887		9,887
266	1160498BB	SOF GLOBAL VIDEO SURVEILLANCE ACTIVITIES	4,944		4,944
267	1160490BB	SOF OPERATIONAL ENHANCEMENTS INTELLIGENCE	11,547		11,547
999	9999999	OTHER PROGRAMS	4,148,984	3,000	4,151,984
		Final E-Curfew (FeC) Enhancements		[3,000]	
		<b>SUBTOTAL, OPERATIONAL SYSTEMS DEVELOPMENT, DEFENSE-WIDE</b>	<b>5,335,215</b>	<b>51,850</b>	<b>5,387,065</b>
		<b>Total, RDT&amp;E Defense-Wide</b>	<b>20,741,542</b>	<b>84,360</b>	<b>20,825,902</b>

## Items of Special Interest

*Airborne Laser*

The budget request contained \$186.7 million in PE 63883C for the Airborne Laser (ABL) program.

The committee continues to have concerns about the operational effectiveness, suitability, survivability, and affordability of the ABL program. The committee notes that the ABL program is eight years behind schedule and approximately \$4.0 billion over budget. The Chairman of the Joint Chiefs of Staff echoed these concerns in testimony before the committee this year and noted that ABL's operational concept was "flawed."

Given these concerns, the committee supports the decision to cancel the second ABL prototype aircraft. This action is consistent with section 235 of the Duncan Hunter National Defense Authorization Act for Fiscal Year 2009 (Public Law 110-417), which limits the availability of funds for procurement of a second or subsequent ABL aircraft until the Secretary of Defense, after receiving an assessment by the Director of Operational Test and Evaluation, submits a certification to the congressional defense committees that the ABL system has demonstrated a high probability of being operationally effective, suitable, survivable, and affordable.

The committee recommends \$186.7 million, the amount of the budget request, in PE 63883C for the ABL program.

*Arrow-3 upper-tier weapons system*

The committee supports efforts to develop an upper-tier follow-on to the Arrow Weapons System for the State of Israel. After a number of changes to Israel's requirements, the United States and Israel have chosen to pursue the development of the Arrow-3 interceptor as the primary approach for an upper-tier missile defense capability for Israel. However, the committee notes that this is a technically challenging undertaking that involves the development of a number of critical and complex technologies that neither Israel nor the United States have ever produced. This has led a number of senior Department of Defense officials to label Arrow-3 as a "high-risk" program. Consequently, it is uncertain as to whether Israel can succeed in developing all of the technologies associated with the Arrow-3 interceptor in time to meet its required fielding schedule.

The committee understands that the Department of Defense is currently negotiating a project agreement with the Israeli Ministry of Defense for the Arrow-3 program. Given the high-risk nature of Arrow-3, the committee understands that the Arrow-3 project agreement will contain clear knowledge points (i.e., technical benchmarks) and a schedule that will govern the development of the program. Future decisions about the program should be based on the Arrow-3 system's ability to meet the agreed knowledge points and schedule. Therefore, the committee directs the Secretary of Defense to submit a report to the congressional defense committees by April 15, 2010, that describes the agreed knowledge points and schedule, and assesses whether the Arrow-3 program is meeting the agreed knowledge points and schedule. The committee further directs that the report include a discussion of alternative paths the Department is examining to assist Israel in developing

an upper-tier missile defense capability, such as the land-based version of the Standard Missile-3 (SM-3), should the Arrow-3 program fail to meet the agreed knowledge points and schedule.

Noting the evolving ballistic missile threat in the Middle East region, the committee believes that if the Arrow-3 program fails to meet the agreed knowledge points and schedule within a reasonable timeframe, the Department should give serious consideration to deploying a land-based version of the SM-3 missile to Israel as an alternative.

*Center for technology and national security policy at the National Defense University*

The budget request contained \$44.8 million in PE 65104D8Z for technical studies, support, and analysis, but contained no funds for analyses by the Center for Technology and National Security Policy (CTNSP) at the National Defense University.

The committee recognizes that CTNSP continues to provide valuable support to the Department through the development of a wide range of studies which are designed to inform and sharpen national security decision making. The committee continues to be the beneficiary of CTNSP studies and CTNSP experts, and encourages the CTNSP to continue to explore issues of importance to the Department and the nation. The committee believes the CTNSP should explore research into several key areas, including science and technology to support irregular warfare, test and evaluation infrastructure, improving integration of social science research into defense programs, and workforce development for future cyber warriors.

The committee recommends \$45.8 million, an increase of \$1.0 million, in PE 65104D8Z for the CTNSP.

*Coordination of energy storage device requirements and investments*

The committee is aware that there are currently over 500 battery related programs and thousands of devices being developed or used by the Department of Defense, defense agencies, combatant commands, and military services that rely on batteries for some or all of their functionality. These devices include night vision goggles, navigational devices, thermal weapon sights, radios, chemical-biological sensors, unmanned drones, and tactical vehicles among others. Further, the demand for portable power on the battlefield continues to grow, and power requirements for portable and mobile electronics continue to outpace the capacity of existing power sources. The committee is particularly concerned that soldiers may be required to carry 20 to 40 pounds of batteries on a typical four-day mission. Additionally, the acquisition, storage, distribution, and disposal of batteries pose a formidable logistical challenge on the battlefield. The committee is also aware that the number of batteries required for military effectiveness may be further complicated by requirements for military-unique and system-unique battery sources that can be costly to manufacture and support.

Section 218 of the Duncan Hunter National Defense Authorization Act for Fiscal Year 2009 (Public Law 110-417) required the Secretary of Defense to develop an advanced energy storage technology and manufacturing roadmap. Further, that provision required that the roadmap be developed in coordination with all elements and organizations of the Department of Defense, other ap-

appropriate federal, state and local government organizations, and representatives from private industry and academia. The committee notes that that report is due October 14, 2009. The committee believes that the roadmap will provide an opportunity for enhanced coordination and communication regarding development and production of energy storage technologies such as batteries, fuel cells, and capacitors. The committee includes a provision elsewhere in this title that would require the Comptroller General to conduct an assessment of the Department of Defense coordination of energy storage device investments and requirements.

*Counterproliferation analysis and planning system*

The budget request contained \$21.3 million in PE 116405BB for special operations intelligence systems development, but contained no funds for the counterproliferation analysis and planning system (CAPS).

The committee is aware that the counterproliferation analysis and planning system provides military planners and intelligence analysts with a capability to identify facilities and buildings that are critical nodes in foreign weapons of mass destruction manufacturing processes. CAPS is developed and maintained by Lawrence Livermore National Laboratory and managed by the U.S. Special Operations Command in coordination with the U.S. Strategic Command. The committee encourages the Secretary of Defense to incorporate funding for CAPS into the baseline budget in future years.

The committee recommends an increase of \$20.1 million in PE 116405BB for the counterproliferation analysis and planning system.

*Defense computing challenges*

The committee notes the important role of information technology (IT), computing, and processing capabilities in providing critical defense capabilities. In the past, Department of Defense funding for IT research and development has provided a solid foundation for pervasive technologies now firmly available in both the defense and commercial sectors.

The committee encourages the Department of Defense to do more to improve our ability to address future and emerging grand challenges in defense computing. For example, increased persistent surveillance leads to challenges in providing management and discovery in large complex data sets. The emergence of ultra-large-scale systems and new high-end computing capabilities will require new programming approaches to handle massive parallel processing. The committee urges the Department of Defense to increase resources devoted to research on these challenges in order to maintain its military edge into the future.

*Director, Test Resource Management Center*

Section 231 of the Bob Stump National Defense Authorization Act for Fiscal Year 2003 (Public Law 107–314) established the Department of Defense (DOD) Test Resource Management Center (TRMC) to provide improved management and oversight of the DOD major range and test facility base (MRTFB). Section 231, as amended in the National Defense Authorization Act for Fiscal Year 2004 (Public Law 108–136) and the National Defense Authorization

Act for Fiscal Year 2006 (Public Law 109-163), established the TRMC as a DOD field activity, and tasked its director with review and oversight of DOD proposed budgets and expenditures for test and evaluation resources of the MRTFB, drafting of biennial strategic plans, review of annual military service budget requests, and administration of the central test and evaluation investment program (CTEIP). Congress established this activity and the position of the director to ensure that the military services were adequately funding their test and evaluation infrastructure to a level necessary to meet DOD test and evaluation requirements.

In the eight years since its founding, the committee believes that the TRMC has largely fulfilled its purpose. Its annual certifications and reports provide a valuable tool for Congress to ensure that the MRTFB is adequately funded to meet its mission requirements. However, the committee remains concerned that the military services have, at times, not provided the Director, TRMC with adequate notice and information concerning significant proposed changes to service elements of the MRTFB to allow the director to meet his statutory obligations. The committee also remains concerned that over time, the test and evaluation infrastructure of the Department of Defense has continued to deteriorate. Therefore, to ensure that the Director, TRMC has the information necessary to provide timely and accurate recommendations, this Act includes legislative language providing the director with the same access to information granted to the Director, Operational Test and Evaluation.

#### *Ground-based Midcourse Defense program*

The budget request contained \$982.9 million in PE 63882C for the Ground-based Midcourse Defense (GMD) program.

The committee notes its continuing concerns with the operational effectiveness, suitability, and survivability of the GMD system. The Director of Operational Test and Evaluation (DOT&E) continues to raise concerns about GMD testing. DOT&E's "Fiscal Year 2009 Annual Report to Congress" stated, "GMD flight testing to date will not support a high level of confidence in its limited capabilities . . . additional test data collected under realistic test conditions is necessary to validate the models and simulations and to increase the ability of those models and simulations to accurately predict system capability." Furthermore, the Government Accountability Office noted in a March 2008, report on the missile defense program for fiscal year 2008 that the deployment schedule for the GMD system has outpaced testing.

The committee understands that the Department plans to limit the deployment of operational GMD interceptors in Alaska and California to 30. The committee notes that in testimony to Congress earlier this year, the Secretary of Defense indicated that given the limited nature of the long-range missile threat from rogue states, 30 GMD interceptors should be sufficient to meet warfighter requirements in the near- to mid-term. Based on this and other information, the committee supports the decision to limit the deployment of additional GMD interceptors in Alaska and California. Furthermore, the committee remains concerned that in the rush to deploy an initial system in 2004, suitability concerns associated with the system failed to receive sufficient attention. This concern was reinforced earlier this year when the Director of the

Missile Defense Agency testified to the committee that health and status indicators had forced the agency to remove a number of GMD interceptors from their silos to perform unscheduled maintenance and missile refurbishment. The committee believes that greater attention must be focused on the reliability, maintainability, and suitability of the GMD system. Elsewhere in this title, the committee includes a provision to address this issue.

The committee recommends \$982.9 million, the amount of the budget request, in PE 63882C for the GMD program.

#### *High Accuracy Network Determination System*

The budget request contained \$198.4 million in PE 63648D8Z for Joint Capability Technology Demonstrations, but contained no funding for the High Accuracy Network Determination System-Intelligent Optical Network (HANDS-ION) program. HANDS-ION addresses critical space situational awareness needs and reduces the potential for collisions of space assets by reducing errors in the current space-object maintenance catalog, as well as supplements the catalog with system characterization information.

The committee recommends an increase of \$2.0 million in PE 63648D8Z for the HANDS-ION program.

#### *Hybrid air vehicle technology*

The committee is aware that the Rapid Reaction Technology Office in the Department of Defense is exploring early development activities for a hybrid air vehicle (HAV). If the proposed capabilities for a rigid-hull lighter-than-air vehicle come to fruition, the Department of Defense has the potential to revolutionize the future of intra-theater airlift. The conceptual goals for the HAV would greatly increase the heavy cargo lift capability, reduce the logistics footprint in theater, and radically change the hub and spoke logistics structure that has developed since the end of World War II. HAV capability could reduce our dependence on foreign airbases and ports, as well as the effectiveness of anti-access strategies like those used to disrupt our supply routes from the Islamic Republic of Pakistan into the Islamic Republic of Afghanistan. In the nearer term, HAV could serve an important role in providing persistent surveillance capabilities, through longer duration dwell times and a wider range of sensor packages, than is currently possible with existing technologies. The committee encourages the Department to continue to invest in developing and demonstrating core technologies for HAVs, and believes that such efforts should include closer coordination and cooperation with the Air Force and Transportation Command.

#### *Implementation of the defense agencies initiative*

The committee continues to support the implementation of an enterprise resource planning (ERP) system in order to improve the financial management of the defense agencies. The Defense Agencies Initiative (DAI), the ERP solution being implemented by the Business Transformation Agency, is a vital step to improving the accuracy, reliability, and transparency of financial transactions within the 16 defense agencies and 7 field activities of the Department of Defense.

The committee is concerned that important lessons from recent implementations of ERPs are not being followed. Early integration activities of other ERPs, like DAI and the Defense Integrated Military Human Resources System, indicate the need to pre-process and cleanse the data in preparation for transition from legacy systems to the new ERP. The failure to do so has resulted in extensive program delays.

Therefore, the committee directs the Secretary of Defense to have each of the defense agencies and field activities participating in DAI to begin the process of auditing their financial data. Each of these audits should be initiated not less than 6 months before they begin implementing DAI in order to improve the chances for a successful implementation. The Secretary should submit notifications to the congressional defense committees within 15 days of the initiation, as well as the completion, of a financial audit for each defense agency and field activity participating in DAI.

*K-12 education in computer sciences and mathematics*

The budget request contained \$226.1 million in PE 61101E for basic research in the Defense Advanced Research Projects Agency (DARPA), including \$2.0 million for the Computer Futures program; \$96.1 million in PE 61104A for basic research in the Army, including \$5.3 million for the eCybermission program; and \$413.7 million in PE 61153N for basic research in the Navy, but included no funds for educational outreach programs in STEM to stimulate careers in computer science and engineering.

The committee is concerned about reports such as the National Academy of Science study "Rising Above the Gathering Storm," which indicate that the United States may not be producing sufficient numbers of scientists and engineers (S&E) to meet our future national security needs. The strength of the nation is founded on a knowledge economy, so should the nation be unable to provide for its demands in S&Es, it will have severe detrimental effects on the defense sector and the broader economic health of the nation. Facing a similar challenge 50 years ago, President Eisenhower increased investments in science and mathematics education that continue to pay dividends today.

In that same spirit, service and agency investments in K-12 educational outreach programs represent an investment in the nation's intellectual capital that the committee believes will reap significant rewards in the future. The Computer Futures program is supporting K-12 educational programs to develop and foster students of computer science and mathematics at an early age in order to create a pipeline to support the nation's future scientific and engineering needs in these areas. The eCybermission program is a nationwide, web-based science, technology, engineering, and mathematics (STEM) competition designed to stimulate interest and encourage continued education in these technical areas among middle and high school students.

The committee recommends \$227.1 million, an increase of \$1.0 million, in PE 61101E for DARPA's Computer Futures program to create and validate additional curriculum covering new topics, and to expand the program into new school systems. The committee recommends \$97.1 million, an increase of \$1.0 million, in PE 61104A for expansion of the e-Cybermission program to create new

curricula and to expand the geographic diversity of the participating schools.

The committee also recommends \$415.7 million, an increase of \$2.0 million, in PE 61153N for the development of a Navy cyber educational outreach program, similar to DARPA's Computer Science Futures program, or the Army e-Cybermission. In developing this program, the committee encourages the Navy to consider innovative strategies to leverage Department of Defense and Department of Navy laboratories and advanced educational institutions to create long term partnerships. The committee also encourages the Navy to consider developing a full-spectrum program that encompasses K-12 and even undergraduate outreach, including the possible provision of scholarships for promising students.

*Kinetic Energy Interceptor and Multiple Kill Vehicle technology applications*

The committee recognizes that the Kinetic Energy Interceptor (KEI) program and the Multiple Kill Vehicle (MKV) program have completed research and development of certain technologies that could be beneficial to other defense programs. The committee directs the Secretary of Defense to provide a report to the congressional defense committees not later than March 31, 2010, on the feasibility of completing development of certain technologies that were in the process of being developed through the KEI and MKV programs and could have additional useful defense applications.

*Missile defense and military operational requirements*

One of the key themes resident in the three missile defense programs that the Secretary of Defense has recommended for termination in the fiscal year 2010 budget request (the second Airborne Laser aircraft, the Multiple Kill Vehicle program, and the Kinetic Energy Interceptor (KEI) program) is that each program has not been linked to clear military operational requirements. The committee believes that this is a direct result of the Department's decision in 2002 to remove the Missile Defense Agency (MDA) from the normal Department of Defense requirements process, and from oversight by the Joint Requirements Oversight Council. For example, the KEI program was originally presented to Congress as a sea-based, mobile missile defense interceptor. However, the current KEI interceptor is too large to fit into any existing Navy surface combatant without significant and costly modifications.

The need to effectively link missile defense programs with the Department's overall requirements process is essential if the United States is to deploy operationally effective, suitable, and survivable systems. While a number of steps to improve MDA's integration with the rest of the Department of Defense have recently occurred, such as the establishment of the Warfighter Involvement Program and the Missile Defense Executive Board, the committee believes that additional effort is required in this area. As the Department conducts the missile defense policy and strategy review required by section 234 of the Duncan Hunter National Defense Authorization Act for Fiscal Year 2009 (Public Law 110-417), the committee encourages the Department to take the necessary actions to ensure that missile defense programs are closely linked to the military operational requirements process.

*Missile defense inventory and force structure analysis*

The committee has long been concerned about how the Department of Defense has developed missile defense force structure and inventory requirements. In the committee report (H. Rept. 110–652) accompanying the Duncan Hunter National Defense Authorization Act for Fiscal Year 2009, the committee directed the Secretary of Defense to develop a process and methodology for determining overall missile defense force structure and inventory requirements. The Department recently notified the committee that it has begun an initial review of requirements and plans to address the committee’s direction as part of the missile defense policy and strategy review required by section 229 of the Duncan Hunter National Defense Authorization Act for Fiscal Year 2009 (Public Law 110–417). The committee supports this decision.

The committee expects that once the requirements review is complete, the Department will provide the results of the review to the committee, similar to the manner in which the Department provided the Joint Capabilities Mix II study results.

The committee believes that missile defense should be placed within a stronger defense planning framework to identify the nation’s longer-term missile defense requirements to defend the United States, its deployed forces, and friends and allies against the full range of ballistic missile threats. Without such a framework, the committee is concerned that program decisions and tradeoffs may be made without a comprehensive understanding of the end-to-end requirements of the entire ballistic missile defense system. The committee believes that it is important for the Department’s review to include participation of key stakeholders such as the Office of the Secretary of Defense, the Joint Staff, the combatant commands, and the relevant defense agencies. Furthermore, the committee believes that the analysis supporting the review should ensure that missile defense force structure and inventory requirements are clearly linked to threat assessments and warfighter requirements, such as operational effectiveness, suitability, maintainability, and survivability.

*Missile Defense Agency space support*

The committee recognizes that global, pervasive and persistent sensor coverage is necessary to support on-demand engagement of ballistic missiles early in flight. Space sensors provide such coverage free from geographical constraints and the need for host nation basing. The Missile Defense Agency is pursuing a space architecture which will integrate feeds from existing and programmed Overhead Persistent Infrared (OPIR) satellites with an envisioned fire control quality Precision Tracking Space Sensor (PTSS) constellation in Low Earth Orbit. Leveraging of OPIR assets will result in substantial technical simplification of the PTSS layer and significant cost savings.

The committee directs the Secretary of Defense to provide a report to the defense committees not later than March 1, 2010, providing a description of the PTSS long lead risk reduction activities to include: (1) payload design, prototyping and laboratory characterization; (2) continuing work on consolidated ground processing of overhead sensor feeds; and (3) implementation of the C2BMC interface.

*New approaches for national security information sharing*

The committee notes that since the attacks of September 11, 2001, the Department of Defense, Department of State, Department of Homeland Security, and other members of the intelligence community have made some progress in implementing recommendations for improved interagency information sharing. The committee is concerned, however, that in pursuing information technology solutions with traditional systems providers, the Departments are neither fully coordinated nor are they leveraging the full range of innovative information technologies offered by small businesses.

The committee is aware that many such technologies offered by small businesses have already been prototyped on programs such as the Department of State's Net-Centric Diplomacy initiative and the U.S. Special Operations Command INFORM program. Therefore, in an effort to ensure information sharing solutions through leveraging breakthrough technology innovations, the committee encourages the Secretary of Defense to explore new, emerging commercial information technologies for interagency information sharing by:

- (1) Transitioning mature innovative technology prototypes for information sharing in ways that are independent of current large systems development efforts performed through traditional lead systems integrators; and
- (2) Integrating Small Business Innovative Research (SBIR) proposals to support major Departmental programs for information sharing, command and control and data fusion.

*Organic social science expertise within the Department of Defense*

The committee is encouraged by the amount of effort that the Department of Defense has focused on cultivating social science expertise to support defense missions. In the committee report (H. Rept. 110-652) accompanying the Duncan Hunter National Defense Authorization Act for Fiscal Year 2009, the committee noted concerns about the dearth of social science expertise within the Department. As new human, cultural, and social behavior related research and operational initiatives are started or expanded, such as the Minerva Initiative and the Human Terrain System, the lack of organic expertise is becoming more acute.

The committee supports the greater development of in-house capacity to take advantage of increasing social science methods in order to reduce dependencies on contractors or academics on the battlefield. The committee encourages the Secretary of Defense to utilize the full range of tools at the Department's disposal to increase that capacity, including:

- (1) Encouraging the development of appropriate personnel specialties in the military departments;
- (2) Encouraging advanced degrees for officers and enlisted personnel in key disciplines, such as anthropology, social psychology, sociology, and computational social sciences;
- (3) Expanding faculty positions in military colleges for key disciplines, such as anthropology, social psychology, sociology, and computational social sciences, especially as they support multidisciplinary research centers in those institutions; and

- (4) Developing a more robust concept for reachback that better leverages the academic community.

*Quantum computing research*

The committee is aware that quantum computing is emerging as a potentially new disruptive technology. While it has the potential to greatly enhance U.S. computing capability, it can also be used as a tool by adversaries wishing to compromise our technological capabilities. The committee encourages the Department of Defense (DOD) to continue to lead research in this area, but requires a better understanding of the state of research by the Department as well as by industry, academia, other federal and international entities.

Therefore, the committee directs the Under Secretary of Defense for Acquisition, Technology and Logistics, in coordination with the scientific offices of the military departments and defense agencies, to submit a report to the congressional defense committees assessing the state of quantum computing research. The report should be submitted within 120 days after the date of enactment of this Act, and should include the following elements:

- (1) A description of quantum computing research activities within the Department of Defense, including those associated with cryptography, encryption, and stenography;
- (2) An assessment of the possible impacts of quantum computing on DOD operations;
- (3) An assessment of the secondary materiel impacts associated with the adoption of quantum computing techniques, such as hardware, routing or networking upgrades required to implement a quantum computing architecture;
- (4) A comparative assessment of efforts within the United States and internationally in quantum computing, including civilian agency and commercial research and development; and
- (5) An assessment of the sufficiency of the national workforce, including those civilian and military personnel within the Department capable of carrying out or managing these quantum computing research activities.

*Report on joint wargaming simulation management*

The committee has reviewed the Department's *Report on Department of Defense Joint Modeling and Simulation Activities*, submitted in response to section 1042 of the National Defense Authorization Act for Fiscal Year 2008 (Public Law 110–181). The committee notes that the current value of modeling and simulation (M&S) to the Department of Defense (DOD) is clear and affirms the House of Representatives 2007 declaration (H. Res. 487) that M&S is a national critical technology. The committee further notes the utility of M&S continues to expand and that the application of this technology will become pervasive in all aspects of defense military and business operations.

As the impact of, and reliance upon, M&S increases, its trustworthiness must be assured by disciplined validation. To be affordable, duplicative efforts must be identified and rationalized. Because all possible uses of models and simulations and ways of employing them in combination cannot be anticipated, they should adhere to standards that maximize their interoperability and reuse.

To allow the Department to use M&S to collaborate with other government agencies and allied nations to plan, train, and develop new defense capabilities, those standards must be common. M&S requirements and resources must be visible across the Department to facilitate cooperative developments and reuse. Additionally, the work force must be educated to use M&S to its full potential.

Attaining these enterprise-level goals requires an effective DOD M&S management process, but it is not clear that the Department's new approach as outlined in DOD Directive 5000.59, entitled DoD Modeling and Simulation Management, rises to that level. Although the report claims that "the Department is executing enterprise management of M&S capabilities to enhance the return on M&S investment," it does not provide any specifics supporting that assertion. Additionally, the report is largely unresponsive to the requirement to describe "incentives and plans to reduce or divest duplicative or outdated capabilities." The report claims the Department's M&S steering committee management and coordination efforts are "yielding a high return on investment from the over \$2.2 billion annual investment in joint M&S programs . . .," but it does not provide any metrics to validate that claim.

For these and other reasons, the committee believes a more careful consideration of DOD M&S management is appropriate. The committee directs the Secretary of Defense to submit to the congressional defense committees a report that explains the investments from the funding provided to its M&S management organization (PE 63832D8Z, Joint Wargaming Simulation Management Office) and their impact on the rest of DOD M&S investments to achieve greater cost-effectiveness. The report should cover fiscal years 2006–2009 and should be submitted by January 31, 2010.

In light of the fact that M&S technology has transitioned beyond the technology development stage into mainstream use, the report should also consider the appropriateness of the current management of this Program Element by the Director of Defense Research and Engineering.

#### *Report on requirements for non-lethal weapons*

In the committee report (H. Rept. 110–652) accompanying the National Defense Authorization Act for Fiscal Year 2009, the committee noted the value of non-lethal weapons in reducing risks to the warfighter and to non-combatants in current and prospective contingency operations. The committee urged the Department to accelerate its efforts to field such systems, including active denial technologies to: ensure adequate funding for the non-lethal weapons science and technology base; and to develop policy, doctrine, and tactics for their employment. Since then, the increase in piracy on the high seas, unintended noncombatant casualties in the Islamic Republic of Afghanistan, and the evolution of U.S. defense strategy toward a greater focus on support and stability operations, support to civil authorities, humanitarian assistance, and unconventional and irregular warfare reinforce the committee's belief that non-lethal weapons can play a valuable role in ensuring mission success. Despite this, the General Accountability Office (GAO), in an April 2009 report titled *DOD Needs to Improve Program Management, Policy, and Testing to Enhance Ability to Field Operationally Useful Non-lethal Weapons*, noted flaws in the Depart-

ment's process for procuring non-lethal weapons. The committee agrees with the GAO that the acquisition process for procuring these capabilities must be streamlined and made more efficient. The process must also support the Department's requirements for fielding such systems in a timely manner in support of mission objectives.

Accordingly, the committee directs the Secretary of Defense to submit to the congressional defense committees a report, by November 1, 2009, on the Department's requirements for non-lethal weapons. The report should address, at a minimum, the following:

(1) A description of the types of missions where non-lethal weapons would provide a useful adjunct to the use of lethal force;

(2) An explanation of how the Department intends to integrate non-lethal weapons into U.S. defense strategy, including the role envisioned for non-lethal systems in the Quadrennial Defense Review;

(3) An assessment of whether the services have adequately prioritized the development and fielding of non-lethal weapons vis-a-vis other capabilities tailored to the requirements of irregular warfare;

(4) An assessment of how the combatant commanders view the utility of non-lethal weapons for operations in their respective theaters;

(5) A description of the actions the Department has taken to address the concerns contained in the GAO report and the results of those actions; and

(6) An identification of impediments to the development and fielding of non-lethal weapons and an explanation of what actions the Department is taking to overcome those impediments.

#### *Short-range ballistic missile defense*

The budget request contained \$119.6 million in PE 63913C for Israeli Cooperative Programs.

The short-range ballistic missile defense program is being jointly developed by the United States and the State of Israel to provide an affordable and effective defense against the threat from long-range artillery rockets and short-range ballistic missiles, and will provide direct benefits to the security of both nations.

The committee recommends \$140.1 million, an increase of \$20.5 million, in PE 63913C to support continued development of the short-range ballistic missile defense program.

#### *Solid state technology for non-lethal systems*

Current active denial non-lethal systems require large gyrotron tube-based technology that limits these systems to primarily support fixed site operations. In order to make this non-lethal technology tactically viable to mobile forces, the current tube-based technology must be replaced by smaller, lighter, lower-cost systems that allow active denial technology to be integrated with ground combat vehicles. One enabler for smaller size and cost reduction is the development of a versatile high-power solid-state array. The committee urges the Department to pursue other technologies, such as a high-power solid-state source, to accelerate the development and demonstration of a more compact Active Denial System.

*Theater missile defense*

The committee has been concerned for several years that the missile defense program has been too focused on the threat from long-range ballistic missiles at the expense of providing combatant commanders with sufficient theater missile defense capabilities. The threat from short- and medium-range ballistic missiles represents the overwhelming ballistic missile threat to U.S. interests, deployed forces, and friends and allies around the world. According to estimates from the U.S. intelligence community, the total number of ballistic missiles other than from the United States, the North Atlantic Treaty Organization nations, the Russian Federation, and the People's Republic of China is over 5,900. Of that number, short- and medium-range ballistic missiles represent 99 percent of the total inventory.

The Joint Capabilities Mix Study II, conducted by the Joint Staff in 2007 to examine theater missile defense inventory requirements, concluded that combatant commanders required nearly double the 96 Terminal High Altitude Area Defense (THAAD) interceptors and the 133 Standard Missile-3 (SM-3) interceptors than originally planned to address the short- and medium-range ballistic missile threat. The committee notes its support for the Department's decision to increase funding for the THAAD and Aegis Ballistic Missile Defense programs by \$900.0 million in fiscal year 2010. Under the revised program plan, the SM-3 interceptor inventory will grow from 133 to 329, and the THAAD interceptor inventory will grow from 96 to 287 over the Future Years Defense Program.

This decision represents an important milestone in providing the warfighter with the capabilities necessary to defend against the threats to U.S. interests, its deployed forces, and friends and allies around the world. The committee also supports the Department's decision to initiate the development of a land-based version of the SM-3 interceptor. Deployment of such a capability has the potential to expand missile defense coverage for U.S. deployed forces and friends and allies around the world.

## OPERATIONAL RESEARCH, DEVELOPMENT, TEST, AND EVALUATION

## Overview

The budget request contained \$190.8 million for Operational research, development, test, and evaluation (RDT&E).

The committee recommends \$190.8 million, the requested amount for fiscal year 2009.

**Title II - Research, Development, Test, and Evaluation**  
(Dollars in Thousands)

<u>Line</u>	<u>Program Element</u>	<u>Program Title</u>	<u>FY 2010 Request</u>	<u>House Change</u>	<u>House Authorized</u>
001	0605118OTE	OPERATIONAL TEST & EVALUATION, DEFENSE	58,647		58,647
002	0605131OTE	OPERATIONAL TEST AND EVALUATION	12,285		12,285
003	0605814OTE	LIVE FIRE TEST AND EVALUATION	119,838		119,838
		OPERATIONAL TEST ACTIVITIES AND ANALYSES			
		<b>Total, Operational Systems Development, Defense-wide</b>	<b>190,770</b>	<b>0</b>	<b>190,770</b>

## LEGISLATIVE PROVISIONS

## SUBTITLE A—AUTHORIZATION OF APPROPRIATIONS

## Section 201—Authorization of Appropriations

This section would establish the amounts authorized to be appropriated for research, development, test, and evaluation for the Department of Defense for fiscal year 2010.

## SUBTITLE B—PROGRAM REQUIREMENTS, RESTRICTIONS, AND LIMITATIONS

## Section 211—Limitation on Obligation of Funds for the Navy Next Generation Enterprise Network

This section would prohibit the Secretary of the Navy from obligating more than 50 percent of the remaining funds for the Navy-Marine Corps Intranet Continuity of Services Contract or the Next Generation Enterprise Network (NGEN) until a detailed architectural specification for NGEN is submitted to the congressional defense committees.

## Section 212—Limitation on Expenditure of Funds for Joint Multi-Mission Submersible Program

This section would require the Secretary of Defense, in consultation with the Director of National Intelligence, to complete an assessment of a potential cost-sharing agreement between the Department of Defense and the intelligence community for the Joint Multi-Mission Submersible (JMMS) program. This section would further prohibit the expenditure of funds in fiscal year 2010 for JMMS until the congressional defense and intelligence committees receive the required assessment and a certification from the Secretary that the plan developed pursuant to the aforementioned assessment represents the most effective and affordable means for meeting the underlying requirement.

## Section 213—Separate Program Elements Required for Research and Development of Individual Body Armor and Associated Components

This section would require the Secretary of Defense to ensure that within each research, development, test and evaluation account a separate, dedicated program element is assigned to the research and development of individual body armor.

The committee understands the objective for body armor science and technology (S&T) initiatives are to advance protection levels, reduce armor weights, and develop manufacturing practices that ensure quality and affordability. Current S&T programs are pursuing two technical design paths to enhance current fielded body armor designs. The first path is pursuing the same level of protection at significantly reduced weights. The second path is exploring increased levels of protection at equal weight and/or in better flexible configurations. The committee strongly supports these S&T initiatives and believes these efforts directly focused on body armor are collaborative, coordinated, and leveraged with the work of other military services, industry, and academia.

While these S&T activities are reasonably robust, the committee notes there are currently no significant research, development, test and evaluation (RDT&E) accounts to transfer the S&T activities into. The committee expects the establishment of RDT&E program elements to: ensure the warfighter is equipped with the most current individual protection gear; find ways to reduce weight with current technologies via mission tailoring and low-risk reduced protection; and increase investment in promising technologies that would eventually achieve reduced weight and increased protection together, as well as maximize flexibility and modularity.

**Section 214—Separate Procurement and Research, Development, Test and Evaluation Line Items and Program Elements for the F-35B and the F-35C Joint Strike Fighter Aircraft**

This section would require the would require the Secretary of Defense, beginning with the fiscal year 2011 annual budget submission of the Department of Defense to the President, to provide a separate budget line item and program element within the Department of the Navy aircraft procurement and research, development, test and evaluation accounts for the F-35B and the F-35C aircraft.

**Section 215—Restriction on Obligation of Funds Pending Submission of Selected Acquisition Reports**

This section would fence 50 percent of research and development funding for specified Army development programs pending receipt of required Department of Defense selected acquisition reports.

**Section 216—Restriction on Obligation of Funds for Future Combat Systems Program Pending Receipt of Report**

This section would restrict the obligation of 75 percent of fiscal year 2010 Future Combat Systems research and development funds pending receipt of the milestone review report required by section 214(c) of the John Warner National Defense Authorization Act for Fiscal Year 2007 (Public Law 109-364). Current law only restricts procurement funding.

**Section 217—Limitation of the Obligation of Funds for the Net-Enabled Command and Control System**

This section would prohibit the Secretary of Defense from obligating more than 25 percent of the funds for the Net-Enabled Command and Control (NECC) system until a plan for reorganizing and consolidating the management of the NECC and the Global Command and Control System (GCCS) family of systems is submitted to the congressional defense committees.

The committee is concerned that the Department of Defense has been unable to develop a rational plan for modernizing joint command and control. While the program has continued to address previous concerns with technical risk, testing, and cost, it is apparent that the Department's management and governance construct for this program has delayed approval of milestone B to such a point that the program will be in breach of the Nunn-McCurdy temporal limitations. This in turn, has affected the Department's

ability to develop and field the next generation of joint command and control capabilities.

**Section 218—Limitation on Obligation of Funds for F-35 Lightning II Program**

This section would limit the obligation of amounts authorized to be appropriated or otherwise made available for fiscal year 2010 for research, development, test, and evaluation for the F-35 Lightning II program to 75 percent until 15 days after the Under Secretary of Defense for Acquisition, Technology and Logistics certifies in writing to the congressional defense committees that: all funds made available for the continued development and procurement of a competitive propulsion system for the F-35 Lightning II have been obligated; the Secretary of Defense submits the report required by section 123 of the Duncan Hunter National Defense Authorization Act for Fiscal Year 2009 (Public Law 110-417); and the Secretary of Defense submits to the congressional defense committees the annual plan and certification for fiscal year 2010 required by section 231a of title 10, United States Code.

**Section 219—Programs Required to Provide the Army with Ground Combat Vehicle and Self-Propelled Artillery Capabilities**

This section requires the Secretary of Defense to carry out programs to develop, test, and, when demonstrated operationally effective, suitable, survivable, and affordable, field new or upgraded Army ground combat vehicle and self-propelled artillery capabilities. The Section requires a report, by February 1, 2010, on the Secretary of Defense's plans to implement these programs. The section also restricts obligation of 50 percent of the funds for certain Army vehicle research and development programs pending receipt of the report.

**SUBTITLE C—MISSILE DEFENSE PROGRAMS**

**Section 221—Integrated Air and Missile Defense System Project**

This section would limit the obligation of funding for the Integrated Air and Missile Defense (IAMD) System project until the Secretary of Defense certifies to the congressional defense committees that he has: executed a review of the IAMD project; determined the project is an affordable, executable project; determined that the project meets a current required capability; and, concluded that no other project could be executed, at less cost, that would be capable of fulfilling the required capability.

**Section 222—Ground-based Midcourse Defense Sustainment and Modernization Program**

This section would require the Secretary of Defense to establish a sustainment and modernization program to ensure the long-term reliability, availability, maintainability, and supportability of the Ground-based Midcourse Defense (GMD) system to protect the United States against limited ballistic missile attacks, whether accidental, unauthorized, or deliberate. It would also require the Secretary of Defense to submit a report to the congressional defense

committees outlining the Department of Defense's long-term sustainment and modernization plan for that system.

The committee notes its continuing concern about the long-term sustainment, maintainability, and modernization of the GMD system. The committee believes that the establishment of a lifecycle sustainment program, as required by this provision, would ensure the long-term reliability of the GMD system through surveillance, analysis, modeling and simulation, testing, and preserve a responsive industrial base. Furthermore, the committee believes that a modernization program would allow for the industrial base to enhance the GMD system in response to evolving threats, introduce new technology as it becomes available, and mitigate parts obsolescence.

The committee further notes that the Department plans to terminate the ground-based interceptor (GBI) production line in 2012 but intends to retain the option for future procurement of GBIs, including for flight-test assets and spares. However, several second and third tier suppliers complete GBI component deliveries in 2009 and 2010. As part of the sustainment and modernization program, the committee encourages the Department to develop a strategy for preserving the industrial base that supports the GMD system.

#### Section 223—Limitation on Availability of Funds for Acquisition or Deployment of Missile Defenses in Europe

This section would prohibit the Department of Defense from acquiring (other than for initial long-lead procurement) or deploying operational missiles of a long-range missile defense system in Europe until the Secretary of Defense, after receiving the views of the Director of Operational Test and Evaluation, submits to the congressional defense committees a report certifying that the proposed interceptor to be deployed as part of such a missile defense system has demonstrated, through successful, operationally realistic flight testing, a high probability of working in an operationally effective manner and the ability to accomplish the mission.

#### Section 224—Sense of Congress Reaffirming Continued Support for Protecting the United States Against Limited Ballistic Missile Attacks Whether Accidental, Unauthorized, or Deliberate

This section would express the sense of Congress for the continued support for protecting the United States against limited ballistic missile attacks (whether accidental, unauthorized, or deliberate) by continuing robust research, development, test, and evaluation of the Ground-based Midcourse Defense system and the Standard Missile-3 Block IIA interceptor.

#### Section 225—Ascent Phase Missile Defense Strategy

This section would require the Secretary of Defense to submit a report to the congressional defense committees outlining a strategy for ascent phase missile defense within 180 days after the date of enactment of this Act.

Section 226—Availability of Funds for a Missile Defense System for Europe and the United States

This section would make various findings regarding missile defense, and reserve \$343.1 million from funds available for the Missile Defense Agency in fiscal years 2009 and 2010 for the purpose of developing missile defenses in Europe.

This section would allow the Secretary of Defense to obligate and expend funds reserved under this section for one of two purposes. Either the Secretary may obligate and expend funds on the research, development, test, and evaluation of the proposed mid-course radar element of the Ground-based Midcourse Defense system in the Czech Republic and the proposed long-range missile defense interceptor site element of such defense system in the Republic of Poland; or the Secretary may obligate and expend funds on the research, development, test, and evaluation, procurement, site activation, construction, preparation of, equipment for, or deployment of an alternative integrated missile defense system that would protect Europe and the United States from the threats posed by all types of ballistic missiles.

This section would condition obligation or expenditure of funds for the second option on a certification of the Secretary that the alternative is expected to be: consistent with the direction of the North Atlantic Council to address ballistic missile threats to Europe and the United States in a prioritized manner that includes consideration of the level of imminence of the threat and the level of acceptable risk; at least as cost-effective, technically reliable, and operationally available in protecting Europe and the United States from missile threats as first alternative; deployable in a sufficient amount of time to counter current and emerging ballistic missile threats (as determined by the intelligence community) launched from the Middle East region that could threaten Europe and the United States; and interoperable with other components of missile defense and compliments the North Atlantic Treaty Organization's missile defense strategy.

SUBTITLE D—REPORTS

Section 231—Comptroller General Assessment of Coordination of Energy Storage Device Requirements and Investments

This section would require the Comptroller General to conduct an assessment of Department of Defense coordination of energy storage device requirements and investments and submit the findings and recommendations of the assessment to the Senate Committee on Armed Services and House Committee on Armed Services no later than March 1, 2010.

Section 232—Annual Comptroller Report on the F-35 Lightning II Aircraft Acquisition Program

This section would require the Comptroller General to conduct an annual review of the F-35 Lightning II aircraft acquisition program by March 15 of each year, from 2010 through 2015, and submit a report to the congressional defense committees which shall include: the extent to which the acquisition program is meeting development and procurement cost, schedule, and performance goals;

the progress and results of developmental and operational testing and plans for correcting deficiencies in aircraft performance, operational effectiveness, and suitability; and aircraft procurement plans, production results, and efforts to improve manufacturing efficiency and supplier performance.

Section 233—Report on Integration of Department of Defense Intelligence, Surveillance, and Reconnaissance Capabilities

This section would limit the obligation of the amounts made available for PE 35884L for intelligence planning, to not more than 25 percent until 30 days after the date on which the Under Secretary of Defense for Intelligence provides the information required in subparagraphs (D), (E), and (F) of section 923(d)(1) of the National Defense Authorization Act for 2004 (Public Law 108–136).

Section 234—Report on Future Research and Development of Man-Portable and Vehicle-Mounted Guided Missile Systems

The section requires a report from the Secretary of the Army on the Army's future plans for upgrades to, and replacement of, selected Army missile systems. The section restricts obligation of 30 percent of Army missile research and development funding pending submission of the report.

SUBTITLE E—OTHER MATTERS

Section 241—Access of the Director of the Test Resource Management Center to Department of Defense Information

This section would grant the Director, Test Resource Management Center (TRMC) the same authority to military service department information that current law provides the Director, Operational Test and Evaluation. The purpose of this new authority would be to ensure that the Director, TRMC has access to all the information he needs to carry out his duties to certify service budgets and provide recommendations to the Secretary of Defense regarding Department of Defense test and evaluation infrastructure.

Section 242—Inclusion in Annual Budget Request and Future-Years Defense Program of Sufficient Amounts for Continued Development and Procurement of Competitive Propulsion System for F-35 Lightning II

This section would amend chapter 9 of title 10, United States Code, by adding a new section 235 that would require that the Secretary of Defense to include, in the materials submitted by the Secretary to the President, a request for such amounts as necessary for the full funding of the continued development and procurement of a competitive propulsion system for the F-35 Lightning II effective for the budget of the President submitted to Congress under section 1105(a) of title 31, United States Code, for fiscal year 2011 and each fiscal year thereafter. This section would also require that the Secretary of Defense ensure that, of the funds authorized to be appropriated for fiscal year 2010 or any year thereafter for research, development, test, and evaluation and procurement, be obligated and expended in sufficient annual amounts for the continued development and procurement of two options for the F-35 Light-

ning II propulsion system in order to ensure the development and competitive production of the F-35 Lightning II propulsion system. Additionally, this section would amend the National Defense Authorization Act for Fiscal Year 2008 (Public Law 110-181) by striking section 213.

Section 243—Establishment of Program to Enhance Participation of Historically Black Colleges and Universities and Minority-Serving Institutions in Defense Research Programs

This section would require the Secretary of Defense to establish a program that would enhance the capability of minority-serving institutions, as defined under title III and title V of the Higher Education Act of 1965 (Public Law 89-329), to perform research that is vital to national defense.

The committee asserts that our nation requires and will continue to require a highly trained, technical workforce in an ever-increasing knowledge-based economy. As occupations in science, technology, engineering, and mathematics (STEM) rise, a critical number of America's scientists and engineers prepare to retire over the next 10 to 15 years. The committee remains concerned that this continued imbalance will leave a tremendous gap in our nation's ability to provide qualified students to meet the rising demand for a strong scientific workforce, especially within the Department of Defense (DOD).

The DOD scientific workforce has traditionally been at the forefront of technological advances supporting defense platforms, weaponry, and command and control systems as well as the changing demands of battlefields and special operations activities. However, the committee notes that several articles over the last 5 years, including the National Academies study, *Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future* (July 2008), argue that the United States' pre-eminence in science and technology advances has begun to erode. Over the past 5 years, senior DOD officials have testified to the committee that the Department's science and engineering workforce has experienced an attrition of more than 13,000 personnel over the last 10 years, while the demands for that same workforce is projected to increase by more than 10 percent over the next 5 years. The committee notes that several major studies since 1999 conclude that the production of U.S. graduates in critical areas of science and engineering are not meeting national, homeland, and economic security needs. The committee understands that the federal workforce and, in particular, the national security workforce, faces direct and escalating competition from domestic and global commercial interests for top-of-their-class scientists and engineers.

The committee stresses that, to address the nation's science and engineering workforce shortfall, the United States must marshal all its human capital reserves, including minority groups who are engaged or have propensity to engage in STEM fields. The committee supports the conclusion reached in the National Science and Technology Council report, *Strong U.S. Scientific, Technical, and Engineering Workforce in the 21st Century*, that as minority groups increase within the U.S. population, increasing their participation rate in science and engineering is critical if our nation is to maintain the overall participation rate in the STEM disciplines. The Na-

tional Science Board's 2004 *Science and Engineering Indicators* emphasized that African Americans, Hispanics, and other minority groups are about a quarter of the U.S. population, but make up only 18 percent of the undergraduate population, 2.5 percent of the science and engineering majors, and 6 percent of the science and engineering workforce. Given that the overall number of U.S. students receiving bachelor degrees and the number of such students attending graduate school in most STEM fields have declined sharply by comparison to the previous decade, the committee remains committed to ensuring that the Department adequately supports the training and development of all students, including those ethnic and gender-specific groups that are the most at risk within the STEM disciplines, as well as ensure an adequate supply of scientists and engineers to meet the national security needs of our nation. Therefore, the committee believes that increasing the participation of underrepresented groups is critical to ensuring the United States can draw upon a robust workforce of scientists and engineers who can continue to produce innovative technological advances for the purposes of national and economic security.

The committee notes that minority-serving institutions defined under title III and title V of the Higher Education Act (HEA) of 1965 (Public Law 89-329) represent a significant source of minority students in the engineering, science, mathematics, technology education and research fields. According to the Institute for Higher Education Policy, approximately 2.3 million students, or about one-third of all African Americans, American Indians/Alaska Natives, and Hispanics in all higher education institutions in the United States and Puerto Rico, were enrolled at institutions funded under title III and title V of HEA. These numbers have grown rapidly in recent years. The committee notes that the National Center for Education Statistics, U.S. Department of Education, reports enrollment at these institutions accelerated by 66 percent from 1995 to 2003, compared to only 20 percent at all postsecondary institutions. The committee believes that by educating the nation's increasingly diverse minority populations, these institutions represent the vanguard of the country's potential and promise, which should be appropriately supported.

The government's interest in the promotion of racial diversity has been found by courts to be sufficiently compelling in the context of higher education. The committee notes that sections 1067, 1101, and 1051 of title 20, United States Code, emphasize that there is a particular national interest in supporting institutions that serve a high percentage of low-income students. Further, those sections, express and support the nation's interest in aiding those institutions of higher education that have historically served minority students and whose participation in the American system of higher education is in the nation's interest. Accordingly, in the spirit and intent of the above noted statutory codes, the committee reaffirms this position and further confirms that the government's compelling interest in promoting diversity in higher education is buttressed by its compelling national security interest in a cohesive military. This requires a diverse civilian and enlisted base that have been educated and trained in varied educational settings to perform research, development, testing, and evaluation within the Department.

The committee commends the Department of Defense for its efforts to support programs designed to provide opportunities for minority-serving institutions to participate in defense research programs. The committee encourages the Department to continue to maximize opportunities for these institutions and recommends that the Department develop innovative ways to continue the involvement of these institutions in defense research, test and evaluation programs. This section would assist the Department with implementing outreach, technical assistance, capacity building, and mentoring programs relative to minority-serving institutions.

#### Section 244—Extension of Authority to Award Prizes for Advanced Technology Achievements

This section would extend the Department's ability to award cash prizes in recognition of outstanding achievements and innovative research, development, and technology development of interest to the Department from both traditional and non-traditional sources. The committee recognizes that prize authority is a useful tool in generating broad public interest and engagement in defense technology needs and provides a means for the Department to gain a significant return on investment in the areas of research, technology, and prototyping. The committee notes the Department's past use of prize authority for robotic vehicle competition and wearable power systems and encourages further use.

This section would extend the authority from September 30, 2010 to September 30, 2013.

#### Section 245—Executive Agent for Advanced Energetics

This section would require the establishment of an executive agent to oversee Department of Defense activities related to advanced energetics. In the committee report (H. Rept. 110-652) accompanying the Duncan Hunter National Defense Authorization Act for Fiscal Year 2009, the committee expressed concerns over the known advances in energetic materials research, development, and manufacturing technologies by foreign countries. The committee noted that such advances could pose a national security risk arising from new and unanticipated energetic materials developed by foreign governments. The committee further noted that the Department of Defense has not maintained a robust energetics program necessary to develop future innovative munitions and the next generation of energetic scientists and engineers. As a result of these concerns, the committee directed the Secretary of Defense, in consultation with other federal agencies, to assess the current state and future advances in energetic material research, development, and manufacturing in both foreign countries and the United States and submit its findings to the congressional defense committees by March 1, 2009. As of May 2009, the Department has yet to submit the report.

The committee believes the Department lacks a consistent, future capability-based strategy for energetics research, development, and manufacturing and notes that efforts to address these concerns have been underfunded and disjointed. Fragmented programs supporting energetic research and the decline of the workforce affiliated with these programs create a significant loss of capacity for

such a critically important capability. The committee believes that advanced energetic technology crosses the domain of all the military departments and requires a consolidated and focused approach to enhance the capability across the Department.

#### Section 246—Study on Thorium-Liquid Fueled Reactors for Naval Forces

This section would require the Secretary of Defense and the Chairman of the Joint Chiefs of Staff (CJCS) to carry out a study on the use of thorium-liquid fueled nuclear reactors for naval power needs. The report would analyze and compare thorium liquid fueled reactors and uranium fueled reactors for safety, power requirements, and lifecycle costs. The Secretary and CJCS would be required to submit a report to the congressional defense committees on their findings by February 1, 2011.

#### Section 247—Visiting National Institutes of Health Senior Neuroscience Fellowship Program

This section would provide the Secretary of Defense the authority to establish a visiting National Institutes of Health (NIH) neuroscience fellowship within the Department of Defense. The program would include fellowships with the Defense Advanced Research Projects Agency and the Defense Center of Excellence for Psychological Health and Traumatic Brain Injury for the purposes of expanding collaboration with the NIH on neuroscience research. The period of any fellowship under this program should not last more than two years.

### TITLE III—OPERATION AND MAINTENANCE

#### OVERVIEW

The budget request contained approximately \$185.7 billion in operation and maintenance funds to ensure that the Department of Defense can train, deploy, and sustain U.S. military forces. The budget request increased the operation and maintenance account by \$6.6 billion over the fiscal year 2009 enacted level, resulting in a 3.7 percent increase after accounting for inflation. The committee commends the Department for applying additional resources to the readiness accounts in fiscal year 2010, but overall readiness remains tenuous and further attention will be needed in subsequent fiscal years to return U.S. forces to full-spectrum preparedness.

By relying upon Overseas Contingency Operations (OCO) funding to achieve air, ground, and sea training at levels required to maintain military standards, the fiscal year 2010 budget request essentially leaves training at a steady state. Vital to training for the full-spectrum mission are Combat Training Center rotations, sustained air crew training, and increased ship-deployed steaming days. The fiscal year 2010 budget request slightly increases tank training miles to 550 (from 547 funded in fiscal year 2009). Flying hours slightly increase for the Navy. The Air Force's flying-hour program has been reduced by \$67.0 million, or 52,000 hours, due to the retirement of roughly 250 aircraft. Additionally, the Navy