

TITLE II—RESEARCH, DEVELOPMENT, TEST, AND EVALUATION

Explanation of tables

The following tables provide the program-level detailed guidance for the funding authorized in title II of this Act. The tables also display the funding requested by the administration in the fiscal year 2006 budget request for research, development, test and evaluation programs, and indicate those programs for which the committee either increased or decreased the requested amounts. As in the past, the administration may not exceed the authorized amounts (as set forth in the tables or, if unchanged from the administration request, as set forth in budget justification documents of the Department of Defense), without a reprogramming action in accordance with established procedures. Unless noted in this report, funding changes to the budget request are made without prejudice.

NATIONAL DEFENSE AUTHORIZATION FOR FISCAL YEAR 2006
(Dollars in Thousands)

<u>Title II -- RESEARCH, DEVELOPMENT, TEST & EVALUATION</u>	<u>Authorization</u>	<u>Senate</u>	<u>Senate</u>
	<u>Request</u>	<u>Change</u>	<u>Authorized</u>
Research, Development, Test & Evaluation, Army	9,733,824	-17,000	9,716,824
Research, Development, Test & Evaluation, Navy	18,037,991	360,100	18,398,091
Research, Development, Test & Evaluation, Air Force	22,612,351	24,217	22,636,568
Research, Development, Test & Evaluation, Defense-wide	18,803,416	39,880	18,843,296
Operational Test & Evaluation	168,458		168,458
TOTAL RDT&E	69,356,040	407,197	69,763,237

Subtitle A—Authorization of Appropriations

Science and technology

The committee notes the critical role that investments in defense science and technology (S&T) and basic research play in developing the revolutionary military capabilities of the future. These programs also train the next generation of U.S. scientists, engineers, and technology entrepreneurs who will maintain complex weapons and defense systems and who will assist in solving future national security challenges. The committee remains concerned about the overall funding level for defense science and research. The committee notes that the fiscal year 2006 budget request for S&T is below the previous year's requested level. If in any year from fiscal year 2001 to 2009 the budget request for these research programs does not increase by 2 percent over inflation, the National Defense Authorization Act for Fiscal Year 2000 (Public Law 106-65) requires the Department of Defense to certify the impact of the S&T budget on national security and to initiate a Defense Science Board study assessing the impact of the proposed budget on defense technology and the national defense.

The committee notes that the recent National Research Council report entitled "Assessment of Department of Defense Basic Research" contained a number of findings and recommendations. The report found that "in real terms the resources provided for Department of Defense basic research have declined substantially over the past decade." The report also found that there has been a recent deemphasis on "unfettered exploration" in the basic research program, which "historically has been a critical enabler of the most important breakthroughs in military capabilities." The committee is troubled by the lack of support for real innovative work at the Department, which could have serious consequences for the development of necessary future military capabilities. Therefore, the committee recommends an increase of over \$30.0 million in the Department's basic research accounts.

The committee notes that the National Research Council report also made a number of recommendations to improve the execution of the basic research program. The committee directs the Secretary of Defense to provide a report to the congressional defense committees no later than March 1, 2006, which evaluates the National Research Council recommendations to improve the Department's basic research program, and details a plan and schedule for the implementation of appropriate recommendations.

Finally, the committee has provided increases in the S&T program to support specific focus areas in fiscal year 2006, including: close to \$50.0 million for unmanned systems; approximately \$63.0 million for power technology advances; nearly \$116.0 million for force protection, transformational technologies, and training innovations; \$42.0 million in manufacturing research and process technologies; over \$105.0 million to support counterterrorism efforts; and \$68.0 million for combat casualty care and military medicine, including a targeted \$40.0 million for prevention, mitigation, and treatment of blast injuries.

Subtitle B—Program Requirements, Restrictions, and Limitations**Contract for the procurement of Future Combat System (sec. 211)**

The committee recommends a provision that would require the Secretary of the Army to ensure that the Future Combat System (FCS), including all projects and equipment that are a part of the FCS program, be developed and procured through a contract under the authority of Part 15 of the Federal Acquisition Regulation (FAR), relating to acquisition of items by negotiated contract (48 C.F.R. 15.000 et seq.) rather than through a contract under the authority of section 845 of the National Defense Authorization Act for Fiscal Year 2004 (Public Law 108–136, 10 U.S.C. 2371 note).

The committee has expressed concern regarding the Army's use of an "other transaction authority" (OTA) contract vehicle to manage the FCS program. The committee does not believe that the \$20.9 billion agreement entered between the Army and the Lead Systems Integrator for the FCS program is consistent with the language and intent of section 845 authority. Section 845 authority is intended to be used for limited prototype projects, particularly those in which the Department of Defense seeks to engage non-traditional defense contractors that may be averse to the requirements imposed by a standard Department contract.

The committee notes that the Army has announced its intent to renegotiate this contract to a FAR Part 15 contract. This provision is intended to support that decision.

Joint field experiment on stability and support operations (sec. 212)

The committee recommends a provision that would require the Secretary of Defense to conduct a joint field experiment focused on the transition from major combat operations to stability and support operations required to restore security, provide for immediate humanitarian needs, and begin the reconstruction activities necessary to assist a host nation in achieving self-sufficiency. The committee expects that responsibility for the conduct of the joint field experiment would be delegated to the Commander, U.S. Joint Forces Command.

Recent experience in Iraq and Afghanistan has highlighted the importance of planning and training U.S. personnel to prepare for the conduct and support of stability operations in post-conflict situations. The Defense Science Board 2004 Summer Study entitled "Transition to and from Hostilities" identified the challenges the United States will face in its future stabilization and reconstruction efforts, and offered recommendations for enhancing U.S. effectiveness across the spectrum of activities from peacetime through stabilization and reconstruction. These recommendations focused on management discipline and on building and maintaining certain fundamental capabilities, now lacking, that are critical to success in stability and support operations.

In response to recent experience and the Defense Science Board study, the Secretary is taking steps to place greater emphasis on the stability operations mission in the Department of Defense plan-

ning and guidance so that the mission is fully integrated across all Department of Defense activities. The committee commends the initiative the Secretary has taken to date and urges him to continue to give this effort a high priority, to include sufficient resources, senior-level management attention, and outreach efforts to other agencies and departments of the U.S. Government who play important roles in stability and support activities.

The committee notes the establishment within the Department of State of the Office of the Coordinator for Reconstruction and Stabilization whose mission is to lead, coordinate, and institutionalize U.S. Government civilian capacity to prevent or prepare for post-conflict situations; and to help stabilize and reconstruct societies in transition from conflict or civil strife, so these societies can reach a sustainable path toward peace, democracy, and a market economy. The committee commends the Department of Defense's active support of and cooperation with this new office in the Department of State, and urges the Department of Defense to continue to deepen its coordination with the Department of State on planning for and participating in post-conflict stability operations and reconstruction efforts.

The committee believes that a joint field experiment will provide valuable insights for the Department of Defense as it endeavors to integrate stability and support operations into mainstream military operations and doctrine. The committee is concerned, however, that the Department of Defense is only one element of stability and support activities in the post-conflict environment. The committee strongly urges the participation of other departments and agencies of the U.S. Government, as well as coalition partners, in both the conduct of the joint field experiment and the formulation of recommendations to ensure that a comprehensive U.S. Government and coalition approach to future stability and support activities is developed.

The committee directs that costs associated with the conduct of this joint field experiment shall be paid from the amount authorized to be appropriated for joint experimentation, PE63727N, in fiscal year 2006.

Subtitle C—Ballistic Missile Defense

One-year extension of Comptroller General assessments of ballistic missile defense programs (sec. 221)

The committee recommends a provision that would extend until fiscal year 2007 the requirement for the Comptroller General to provide an assessment of the extent to which the Missile Defense Agency achieved the goals established for that fiscal year for each ballistic missile defense program of the Department of Defense. The provision would also modify the submittal date from February 15 to March 15 to provide additional time to complete this requirement.

Fielding of Ballistic Missile Defense Capabilities (sec. 222)

The committee recommends a provision that would authorize the use of funds, authorized to be appropriated for fiscal year 2006 or 2007 for research, development, test, and evaluation for the Missile

Defense Agency, for the development and fielding of ballistic missile defense capabilities.

Plans for test and evaluation of operational capability of the ballistic missile defense system (sec. 223)

The committee recommends a provision that would direct the appropriate joint and service operational test and evaluation components of the Department of Defense, in coordination with the Missile Defense Agency, to prepare a plan to test, evaluate, and characterize the operational capability of block 2006 and subsequent blocks of the ballistic missile defense system. Each plan prepared under this provision shall be appropriate for the level of technological maturity of the block to be tested, and shall be subject to the review and approval of the Director of Operational Test and Evaluation (DOT&E). Additionally, DOT&E shall provide a report at the conclusion of testing for each block of the ballistic missile defense system containing an assessment as to whether or not such testing was adequate to evaluate the operational capability of the block and a characterization as to the operational effectiveness, suitability, and survivability of the block capability, as appropriate for the level of technological maturity of the block to be tested.

Subtitle D—High-Performance Defense Manufacturing Technology Research and Development

High performance defense manufacturing technology research and development (sec. 230)

The committee recommends a set of provisions that would require the Under Secretary of Defense for Acquisition, Technology and Logistics to identify advanced manufacturing processes and techniques whose utilization would result in significant productivity and efficiency gains in the defense manufacturing base. The provision would direct the Under Secretary to pursue the development of innovative manufacturing processes and advanced technologies and to facilitate the creation of extended production enterprises, which leverage information technology and innovative organizational models.

In addition, the provision would direct the Under Secretary to take appropriate actions, such as establishment of agreements with relevant Department of Defense components, including the Joint Defense Manufacturing Technology Panel, to accelerate transition of transformational processes and technologies from science and technology to the defense manufacturing base. The provision would also direct the Under Secretary to develop and implement a set of activities to continuously identify and utilize improvements in innovative manufacturing processes and to diffuse best practices to industry. This may include taking steps to identify incentives for adoption of manufacturing advances in the industrial base.

Finally, to ensure that technology efforts in industry are well coordinated with future defense technology requirements, the Under Secretary may initiate one or more technology roadmapping exercises. These roadmaps would be developed jointly with industry, and would plan the development and adoption of manufacturing processes and technologies needed for future defense capabilities.

Subtitle E—Other Matters**Expansion of eligibility for leadership of Department of Defense Test Resource Management Center (sec. 241)**

The committee recommends a provision that would eliminate the requirement that the director and the deputy director of the Defense Test Resource Management Center be selected by the Secretary of Defense from among current and former civilian and military employees of the Department of Defense. Under this provision, candidates should be chosen based on their experience with test and evaluation programs regardless of employment history with the Department.

Technology transition (sec. 242)

The committee recommends a provision that would clarify the role of the Technology Transition Council, which was established in the Bob Stump National Defense Authorization Act for Fiscal Year 2003 (Public Law 107-314) to provide advice and assistance to the manager of the Technology Transition Initiative. The provision would stipulate the duty of the council to support the Undersecretary of Defense for Acquisition, Technology and Logistics in the development of policies to facilitate the rapid transition of technologies from the science and technology base into acquisition programs. The Council would provide advice and support to all technology transition efforts. The provision would require the Secretary of Defense, working through the Technology Transition Council, to submit a report to the congressional defense committees outlining a strategy for technology transition and detailing the impact of internal Department of Defense processes and regulations on technology transition efforts. The report would also make recommendations for improvement of technology transition and for elimination of any identified impediments. The report shall be submitted with the fiscal year 2007 budget request.

The committee is concerned that the council has been focused on one transition program, and has not met at the principal-level frequently enough to provide advice and leadership on technology transition programs across the Department. The committee believes the council should meet at least semi-annually at the principal-level, if it is to adequately fulfill its mission.

The budget for technology transition has grown by 23 percent in the last four years. During this same time period, the Department created additional programs to rapidly field new capabilities and equipment. Test and evaluation has been accelerated to accommodate immediate needs. Taken together, these developments underscore the importance of an active, senior Technology Transition Council. Senior leadership attention should focus on ensuring success of these technology transition programs, identifying and overcoming barriers to utilization of the most innovative solutions and recommending any needed policy direction for the test and evaluation process.

Prevention, mitigation, and treatment of blast injuries (sec. 243)

The committee recommends a provision that would require the Secretary of Defense to designate a senior official as the executive agent to coordinate and manage a joint service comprehensive blast injury prevention, mitigation, and treatment program. The provision would require review and assessment of a coordinated, department-wide research effort to include: blast characterization; modeling and simulation of safe stand-off distances; “detect and defeat” capabilities; and armor design and material testing for blast, ballistic, and fire protection. The provision would also require design of a comprehensive flexible armor system and support for emerging military medical technologies, devices, and treatments specific to blast injuries.

The provision would require the executive agent to:

- (1) conduct studies of blast injury, with an emphasis on traumatic brain injury;
- (2) develop improved clinical treatment and diagnostic protocols;
- (3) develop integrated treatment approaches for service members who suffer multiple injuries from blast;
- (4) conduct three or more pilot projects to study the incidence in returning soldiers of traumatic brain injury;
- (5) develop protocols for medical tracking of members for up to five years following blast injury; and
- (6) refine and improve educational interventions for blast injury survivors and their families.

It is the committee’s intent that the Departments of Defense and Veterans Affairs’ Head Injury Project at Walter Reed Army Medical Center lead clinical and diagnostic services required by this provision.

The provision would also require: (1) the establishment of a training program for medical and non-medical personnel on the prevention, mitigation, and treatment of blast injuries intended to improve field and clinical training on early identification of blast injury; and (2) the expansion of treatment programs, including those at the Departments of Defense and Veterans Affairs’ Brain Injury Center, intended to enhance the evaluation and care of members of the Armed Forces with consequence of blast injury, especially traumatic brain injury.

The provision would further require the Secretary to submit a report to the congressional defense committees by February 15, 2007. The report would include: (1) a description of Department of Defense activities and efforts to improve the prevention, mitigation, and treatment of blast injuries; (2) a consolidated budget presentation on these programs; (3) a description of capability gaps in addressing blast injuries; (4) an explanation of collaborative work with other agencies, departments, and governments; (5) a description of efforts to disseminate blast injury research and treatment efforts; and (6) an update on the development status of comprehensive personnel protection systems.

The committee notes the change in historical patterns of wounding in the global war on terrorism due to the proliferation of blast weapons. High velocity gun shot wounds, once the predominant

cause of military casualties, represent less than 10 percent of wounds today. Advances in military medicine, protective equipment, and highly successful training efforts have led to the highest survival rates in military history, making treatment and care, especially for new or poorly understood injuries, important.

Over one-third of all U.S. injuries in Operation Iraqi Freedom and close to half of fatalities are the result of blasts. Multiple site injuries from blasts are common. Over 60 percent of head and neck injuries are the result of blasts. The committee believes it is time to focus attention and resources on a coordinated approach to addressing the blast threat from the beginning—pre-detonation defeat—through the end—full understanding of blast injuries and appropriate diagnosis, treatment, and care.

The committee recommends an increase of over \$40.0 million in targeted research, development, test and evaluation program elements for accelerated work specific to confronting blast injury prevention, mitigation, and treatment challenges. The committee also recommends an increase of \$20.0 million in the Defense Health Program to facilitate expansion of clinical trials, treatments, and studies required by this provision.

Additional Matters of Interest

Army

Title II-RDT and E
(Dollars in Thousands)

<u>Acct</u>	<u>Account</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2006</u>	<u>Senate</u>	<u>Senate</u>
				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
			RESEARCH, DEVELOPMENT, TEST & EVALUATION, ARMY			
2040	0601101A	1	IN-HOUSE LABORATORY INDEPENDENT RESEARCH	20,542		20,542
2040	0601102A	2	DEFENSE RESEARCH SCIENCES	137,898	17,500	155,398
			Advanced ground vehicle reliability research		[1,000]	
			Functionally integrated reactive surface technologies (FIRST)		[2,000]	
			Integrated desert terrain analysis research		[3,000]	
			Brain imaging deception detection		[2,500]	
			Moldable fabric armor		[2,000]	
			Low temperature vehicle research		[2,000]	
			Document exploitation		[5,000]	
2040	0601103A	3	UNIVERSITY RESEARCH INITIATIVES	67,201		67,201
2040	0601104A	4	UNIVERSITY AND INDUSTRY RESEARCH CENTERS	81,953	6,500	88,453
			Integrated systems in sensing, imaging and communications		[2,000]	
			NOLES composite materials		[2,500]	
			Strategic defense systems manufacturing		[2,000]	
2040	0601105A	5	FORCE HEALTH PROTECTION			
2040	0602105A	6	MATERIALS TECHNOLOGY	17,559	5,000	22,559
			Mine detection and blast mitigation		[3,000]	
			Lightweight blast containment vessel		[2,000]	
2040	0602120A	7	SENSORS AND ELECTRONIC SURVIVABILITY	32,147	5,000	37,147
			Army small airship		[3,000]	
			Advanced detection of explosives		[2,000]	
2040	0602122A	8	TRACTOR HIP			
2040	0602211A	9	AVIATION TECHNOLOGY	7,804		7,804
				34,295		34,295

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				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
2040	0602270A	10	ELECTRONIC WARFARE TECHNOLOGY	19,129	4,000	23,129
			Real-time laser threat warning development		[4,000]	
2040	0602303A	11	MISSILE TECHNOLOGY	62,524	10,000	72,524
			Tech enhancement for area protection		[5,000]	
			Unmanned systems initiative		[5,000]	
2040	0602307A	12	ADVANCED WEAPONS TECHNOLOGY	21,139		21,139
2040	0602308A	13	ADVANCED CONCEPTS AND SIMULATION	16,013	3,000	19,013
			Surveillance and targeting robotics platform (Red Owl)		[3,000]	
2040	0602601A	14	COMBAT VEHICLE AND AUTOMOTIVE TECHNOLOGY	64,883	9,500	74,383
			Advanced electric drive		[3,500]	
			Defense transportation energy research		[3,000]	
			Unmanned vehicle control technologies		[3,000]	
2040	0602618A	15	BALLISTICS TECHNOLOGY	49,163	2,000	51,163
			Gun barrel coatings		[2,000]	
2040	0602622A	16	CHEMICAL, SMOKE AND EQUIPMENT DEFEATING TECHNOLOGY	2,519		2,519
2040	0602623A	17	JOINT SERVICE SMALL ARMS PROGRAM	5,703		5,703
2040	0602624A	18	WEAPONS AND MUNITIONS TECHNOLOGY	37,824	8,000	45,824
			Active coatings technology		[3,500]	
			Ultra wideband sensors		[2,000]	
			Rarefaction wave gun		[2,500]	

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2040	0602705A	19	ELECTRONICS AND ELECTRONIC DEVICES Flexible display initiative	39,554	12,000	51,554
			Portable solid oxide fuel cell demonstrator		[4,000]	
			Hybrid advanced soldier power		[2,000]	
			Zinc air battery research		[3,000]	
2040	0602709A	20	NIGHT VISION TECHNOLOGY	23,823		23,823
2040	0602712A	21	COUNTERMINE SYSTEMS	19,293		19,293
2040	0602716A	22	HUMAN FACTORS ENGINEERING TECHNOLOGY	17,482		17,482
2040	0602720A	23	ENVIRONMENTAL QUALITY TECHNOLOGY	16,417		16,417
2040	0602782A	24	COMMAND, CONTROL, COMMUNICATIONS TECHNOLOGY Ultra wideband chip set	21,787	2,000	23,787
					[2,000]	
2040	0602783A	25	COMPUTER AND SOFTWARE TECHNOLOGY	3,590		3,590
2040	0602784A	26	MILITARY ENGINEERING TECHNOLOGY	47,046		47,046
2040	0602785A	27	MANPOWER/PERSONNEL/TRAINING TECHNOLOGY	15,207		15,207
2040	0602786A	28	WARFIGHTER TECHNOLOGY Biosecurity research for food safety	21,707	2,500	24,207
					[2,500]	

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2040	0602787A	29	MEDICAL TECHNOLOGY	74,694	17,800	92,494
			Bio-foam sealant protein hydrogel		[2,600]	
			Non-limiting silver dressing		[1,200]	
			Armor characterization for blast, ballistic and fire protection		[3,000]	
			Hemorrhage control dressing		[2,000]	
			Warfighter face and eye protection		[1,000]	
			Surgical safety system		[2,000]	
			Bio-defense gene knockout technology		[2,000]	
			Colorimetric biosensor		[3,000]	
			Post traumatic stress disorder research		[1,000]	
2040	0603001A	30	WARFIGHTER ADVANCED TECHNOLOGY	63,754	30,400	63,754
2040	0603002A	31	MEDICAL ADVANCED TECHNOLOGY	45,160	[1,000]	75,560
			Untethered health care program		[2,000]	
			Expanded diagnosis digital imaging		[1,400]	
			Wireless medical network		[3,000]	
			Tissue engineering development on elastin biomaterials		[4,000]	
			Acute care of blast effects and head injuries		[2,000]	
			Soldier treatment and regeneration		[3,000]	
			Recombinant activated factor VII		[3,000]	
			Composite face and eye protection		[1,000]	
			Fibrogen bandage development		[3,000]	
			Applied emergency hypothermia research		[2,000]	
			Human operator performance research		[3,000]	
			Surgical wound disinfection and biological agents		[2,000]	
			Alternative vaccine delivery methods		[3,000]	

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2040	0603003A	32	AVIATION ADVANCED TECHNOLOGY Excalibur UAV Rotorcraft system monitoring Universal control - FADEC	48,318	15,400 [7,900] [1,500] [4,000] [2,000]	63,718
2040	0603004A	33	WEAPONS AND MUNITIONS ADVANCED TECHNOLOGY Reconfigurable tooling systems Nanotechnology manufacturing	74,927	9,000 [3,000] [6,000]	83,927
2040	0603005A	34	COMBAT VEHICLE AND AUTOMOTIVE ADVANCED TECHNOLOG Abrams track improvement Power electronic systems research Hydraulic hybrid vehicle technology Advanced thermal management controls Solid oxide fuel cell materials and manufacturing Fastening and joining research Next generation non-tactical vehicle propulsion Armored composite cab development program Antiballistic windshield armor Non-line of sight cannon	142,866	29,000 [3,000] [2,000] [5,000] [4,000] [3,000] [2,000] [2,000] [3,000] [3,000] [2,000]	171,866
2040	0603006A	35	COMMAND, CONTROL, COMMUNICATIONS ADVANCED TECHNC	12,066		12,066
2040	0603007A	36	MANPOWER, PERSONNEL AND TRAINING ADVANCED TECHNOL Coordinated training	6,783	3,000 [3,000]	9,783
2040	0603008A	37	ELECTRONIC WARFARE ADVANCED TECHNOLOGY	45,322		45,322
2040	0603009A	38	TRACTOR HIKE	8,777		8,777

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2040	0603015A	39	NEXT GENERATION TRAINING & SIMULATION SYSTEMS Automated virtual environment	19,982	7,000 [3,500]	26,982
			ICT joint fires and effects trainer		[3,500]	
2040	0603020A	40	TRACTOR ROSE	4,956		4,956
2040	0603103A	41	EXPLOSIVES DEMILITARIZATION TECHNOLOGY Explosive demilitarization	9,865	1,000 [1,000]	10,865
2040	0603105A	42	MILITARY HIV RESEARCH	6,842		6,842
2040	0603125A	43	COMBATING TERRORISM, TECHNOLOGY DEVELOPMENT Advanced mobile microgrid liquid fueler	6,306	4,000 [4,000]	10,306
2040	0603238A	44	GLOBAL SURVEILLANCE/AIR DEFENSE/PRECISION STRIKE TECH	12,111		12,111
2040	0603270A	45	ELECTRONIC WARFARE TECHNOLOGY	16,801		16,801
2040	0603313A	46	MISSILE AND ROCKET ADVANCED TECHNOLOGY Stryker active protection system demonstration	70,066	12,000 [12,000]	82,066
2040	0603322A	47	TRACTOR CAGE	15,406		15,406
2040	0603606A	48	LANDMINE WARFARE AND BARRIER ADVANCED TECHNOLOGY	25,327		25,327
2040	0603607A	49	JOINT SERVICE SMALL ARMS PROGRAM	6,581		6,581
2040	0603654A	50	LINE-OF-SIGHT TECHNOLOGY DEMONSTRATION			
2040	0603710A	51	NIGHT VISION ADVANCED TECHNOLOGY	51,761		51,761
2040	0603728A	52	ENVIRONMENTAL QUALITY TECHNOLOGY DEMONSTRATIONS	12,606		12,606
2040	0603734A	53	MILITARY ENGINEERING ADVANCED TECHNOLOGY Advanced structures and composites	7,301	3,000 [3,000]	10,301
2040	0603772A	54	ADVANCED TACTICAL COMPUTER SCIENCE AND SENSOR TECH	42,475		42,475
2040	0603024A	55	UNIQUE ITEM IDENTIFICATION (UID)	1,500		1,500

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2040	0603305A	56	ARMY MISSILE DEFENSE SYSTEMS INTEGRATION(NON SPACE) Army command and control visualization system	14,573	10,000	24,573
			Army MD interactive M&S management cap		[3,000]	
			Next generation interceptor materials		[2,000]	
2040	0603308A	57	ARMY MISSILE DEFENSE SYSTEMS INTEGRATION (SPACE)	9,284	[5,000]	14,284
			Sensor and communications platform		5,000	
2040	0603327A	58	AIR AND MISSILE DEFENSE SYSTEMS ENGINEERING	83,063	[5,000]	87,063
			ASMD architecture analysis program		4,000	
			Single integrated space picture		[2,000]	
2040	0603619A	59	LANDMINE WARFARE AND BARRIER - ADV DEV	5,733		5,733
2040	0603627A	60	SMOKE, OBSCURANT AND TARGET DEFEATING SYS-ADV DEV			
2040	0603639A	61	TANK AND MEDIUM CALIBER AMMUNITION	26,712		26,712
2040	0603653A	62	ADVANCED TANK ARMAMENT SYSTEM (ATAS)	3,393		3,393
2040	0603747A	63	SOLDIER SUPPORT AND SURVIVABILITY	18,907		18,907
2040	0603766A	64	TACTICAL ELECTRONIC SURVEILLANCE SYSTEM - ADV DEV	6,885		6,885
2040	0603774A	65	NIGHT VISION SYSTEMS ADVANCED DEVELOPMENT	5,166		5,166
2040	0603779A	66	ENVIRONMENTAL QUALITY TECHNOLOGY		6,200	11,366
			Casting emissions reduction program		[6,200]	
2040	0603782A	67	WARFIGHTER INFORMATION NETWORK-TACTICAL	131,081		131,081
2040	0603790A	68	NATO RESEARCH AND DEVELOPMENT	4,902		4,902
2040	0603801A	69	AVIATION - ADV DEV	6,249		6,249
2040	0603802A	70	WEAPONS AND MUNITIONS - ADV DEV			
2040	0603804A	71	LOGISTICS AND ENGINEER EQUIPMENT - ADV DEV	13,375		13,375
2040	0603805A	72	COMBAT SERVICE SUPPORT CONTROL SYSTEM EVALUATION A	10,659		10,659

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				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
2040	0603807A	73	MEDICAL SYSTEMS - ADV DEV Extended shelf life red blood cells IV fluid warming system Lightweight portable oxygen	10,134	4,500 [1,000] [1,000] [2,500]	14,634
2040	0603827A	74	SOLDIER SYSTEMS - ADVANCED DEVELOPMENT	10,595		10,595
2040	0603850A	75	INTEGRATED BROADCAST SERVICE (JMIP)	2,762		2,762
2040	0603856A	76	SCAMP BLOCK II			
2040	0603869A	77	MEDIUM EXTENDED AIR DEFENSE SYSTEM (MEADS) CONCEPTS	23,451		23,451
2040	0604201A	78	AIRCRAFT AVIONICS	13,964		13,964
2040	0604220A	79	ARMED, DEPLOYABLE OH-58D	32,179		32,179
2040	0604223A	80	COMANCHE	156,665	-39,400 [-39,400]	117,265
2040	0604270A	81	ELECTRONIC WARFARE DEVELOPMENT			
2040	0604280A	82	JOINT TACTICAL RADIO JTRS program execution	7,973		7,973
2040	0604321A	83	ALL SOURCE ANALYSIS SYSTEM	16,099		16,099
2040	0604328A	84	TRACTOR CAGE			
2040	0604329A	85	COMMON MISSILE	34,627		34,627
2040	0604601A	86	INFANTRY SUPPORT WEAPONS	1,886		1,886
2040	0604604A	87	MEDIUM TACTICAL VEHICLES			
2040	0604609A	88	SMOKE, OBSCURANT AND TARGET DEFEATING SYS-SDD			
2040	0604611A	89	JAVELIN			
2040	0604622A	90	FAMILY OF HEAVY TACTICAL VEHICLES Future tactical truck system advanced concept technology demo	3,415	10,000 [10,000]	13,415
2040	0604633A	91	AIR TRAFFIC CONTROL	4,508		4,508

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2040	0604642A	92	LIGHT TACTICAL WHEELED VEHICLES HMMWV bloc improvement program		5,000 [5,000]	5,000
2040	0604645A	93	ARMORED SYSTEMS MODERNIZATION (ASM)-SDD	3,065,629		3,065,629
2040	0604646A	94	NON-LINE OF SIGHT LAUNCH SYSTEM	231,554		231,554
2041	0604647A	95	NON-LINE OF SIGHT CANNON	107,587		107,587
2040	0604710A	96	NIGHT VISION SYSTEMS - SDD	26,449		26,449
2040	0604713A	97	COMBAT FEEDING, CLOTHING, AND EQUIPMENT	3,383		3,383
2040	0604715A	98	NON-SYSTEM TRAINING DEVICES - SDD	61,090		61,090
2040	0604716A	99	TERRAIN INFORMATION - SDD			
2040	0604726A	100	INTEGRATED METEOROLOGICAL SUPPORT SYSTEM			
2040	0604741A	101	AIR DEFENSE COMMAND, CONTROL AND INTELLIGENCE - SDD	29,012		29,012
2040	0604742A	102	CONSTRUCTIVE SIMULATION SYSTEMS DEVELOPMENT	40,572		40,572
2040	0604746A	103	AUTOMATIC TEST EQUIPMENT DEVELOPMENT	54		54
2040	0604760A	104	DISTRIBUTIVE INTERACTIVE SIMULATIONS (DIS) - SDD	22,057		22,057
2040	0604766A	105	TACTICAL SURVEILLANCE SYSTEMS - SDD			
2040	0604768A	106	ARMY TACTICAL MISSILE SYSTEM (ATACMS)			
2040	0604770A	107	JOINT SURVEILLANCE/TARGET ATTACK RADAR SYSTEM (JSTAR)			
2040	0604778A	108	POSITIONING SYSTEMS DEVELOPMENT (SPACE)			
2040	0604780A	109	COMBINED ARMS TACTICAL TRAINER (CATT) CORE			
2040	0604783A	110	JOINT NETWORK MANAGEMENT SYSTEM	37,471		37,471
2040	0604801A	111	AVIATION - SDD	5,092		5,092
2040	0604802A	112	WEAPONS AND MUNITIONS - SDD	87,034		87,034
2040	0604804A	113	LOGISTICS AND ENGINEER EQUIPMENT - SDD	13,353		13,353

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2040	0604805A	114	COMMAND, CONTROL, COMMUNICATIONS SYSTEMS - SDD	393,062	-268,900	124,162
			JTRS program execution		[-268,900]	
2040	0604807A	115	MEDICAL MATERIEL/MEDICAL BIOLOGICAL DEFENSE EQUIPME	5,627		5,627
2040	0604808A	116	LANDMINE WARFARE/BARRIER - SDD	80,560		80,560
2040	0604814A	117	ARTILLERY MUNITIONS	113,368		113,368
2040	0604817A	118	COMBAT IDENTIFICATION	2,973		2,973
2040	0604818A	119	ARMY TACTICAL COMMAND & CONTROL HARDWARE & SOFTW	66,980		66,980
2040	0604819A	120	LOSAT			
2040	0604820A	121	RADAR DEVELOPMENT	5,080		5,080
2040	0604822A	122	GENERAL FUND ENTERPRISE BUSINESS SYSTEM (GFEBSS)	71,119		71,119
2040	0604823A	123	FIREFINDER	46,061		46,061
2040	0604827A	124	SOLDIER SYSTEMS - WARRIOR DEM/VAL	57,818		57,818
2040	0604854A	125	ARTILLERY SYSTEMS	5,476		5,476
2040	0604865A	126	PATRIOT PAC-3 THEATER MISSILE DEFENSE ACQUISITION			
2040	0604869A	127	PATRIOT/MEADS COMBINED AGGREGATE PROGRAM (CAP)	288,785	1,000	289,785
			Patriot/MEADS protected sim and test link		[1,000]	
2040	0605013A	128	INFORMATION TECHNOLOGY DEVELOPMENT	63,662		63,662
2040	0604256A	129	THREAT SIMULATOR DEVELOPMENT	23,796		23,796
2040	0604258A	130	TARGET SYSTEMS DEVELOPMENT	10,855	3,000	13,855
			UAV ice protection		[3,000]	
2040	0604759A	131	MAJOR T&E INVESTMENT	64,498		64,498
2040	0605103A	132	RAND ARROYO CENTER	23,800		23,800
2040	0605301A	133	ARMY KWAJALEIN ATOLL	154,535		154,535
2040	0605326A	134	CONCEPTS EXPERIMENTATION PROGRAM	31,653		31,653

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2040	0605502A	135	SMALL BUSINESS INNOVATIVE RESEARCH	369,943		369,943
2040	0605601A	136	ARMY TEST RANGES AND FACILITIES	62,687		62,687
2040	0605602A	137	ARMY TECHNICAL TEST INSTRUMENTATION AND TARGETS	38,306		38,306
2040	0605604A	138	SURVIVABILITY/LETHALITY ANALYSIS	17,688		17,688
2040	0605605A	139	DOD HIGH ENERGY LASER TEST FACILITY	2,748		2,748
2040	0605606A	140	AIRCRAFT CERTIFICATION	8,829		8,829
2040	0605702A	141	METEOROLOGICAL SUPPORT TO RDT&E ACTIVITIES	15,517		15,517
2040	0605706A	142	MATERIEL SYSTEMS ANALYSIS	4,710		4,710
2040	0605709A	143	EXPLOITATION OF FOREIGN ITEMS	75,993		75,993
2040	0605712A	144	SUPPORT OF OPERATIONAL TESTING	57,305		57,305
2040	0605716A	145	ARMY EVALUATION CENTER	9,437		9,437
2040	0605718A	146	SIMULATION & MODELING FOR ACQ, RQTS, & TNG (SMART)	54,269		54,269
2040	0605801A	147	PROGRAMWIDE ACTIVITIES	32,237	6,000	38,237
2040	0605803A	148	TECHNICAL INFORMATION ACTIVITIES		[6,000]	
			High performance computing research			
2040	0605805A	149	MUNITIONS STANDARDIZATION, EFFECTIVENESS AND SAFETY	16,922		16,922
2040	0605857A	150	ENVIRONMENTAL QUALITY TECHNOLOGY MGMT SUPPORT	4,014		4,014
2040	0605898A	151	MANAGEMENT HQ - R&D	12,908		12,908
2040	0603778A	152	MLRS PRODUCT IMPROVEMENT PROGRAM	114,297		114,297
2040	0102419A	153	AEROSTAT JOINT PROJECT OFFICE	106,420		106,420
2040	0203610A	154	DOMESTIC PREPAREDNESS AGAINST WMD			
2040	0203726A	155	ADV FIELD ARTILLERY TACTICAL DATA SYSTEM	16,064		16,064
2040	0203735A	156	COMBAT VEHICLE IMPROVEMENT PROGRAMS	12,030		12,030
2040	0203740A	157	MANEUVER CONTROL SYSTEM	44,903		44,903

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2040	0203744A	158	AIRCRAFT MODIFICATIONS/PRODUCT IMPROVEMENT PROGRAM	409,103		409,103
2040	0203752A	159	AIRCRAFT ENGINE COMPONENT IMPROVEMENT PROGRAM	2,066		2,066
2040	0203758A	160	DIGITIZATION	12,343		12,343
2040	0203759A	161	FORCE XXI BATTLE COMMAND, BRIGADE AND BELOW (FBCB2)	20,201		20,201
2040	0203801A	162	MISSILE/AIR DEFENSE PRODUCT IMPROVEMENT PROGRAM	16,188		16,188
2040	0203802A	163	OTHER MISSILE PRODUCT IMPROVEMENT PROGRAMS	23,560		23,560
2040	0203806A	164	TRACTOR RUT			
2040	0203808A	165	TRACTOR CARD	6,797		6,797
2040	0208010A	166	JOINT TACTICAL COMMUNICATIONS PROGRAM (TRI-TAC)	24,906		24,906
2040	0208053A	167	JOINT TACTICAL GROUND SYSTEM	12,854		12,854
2040	0208058A	168	JOINT HIGH SPEED VESSEL (JHSV)	3,261		3,261
2040	0301359A	169	SPECIAL ARMY PROGRAM	[]		[]
2040	0301555A	170	CLASSIFIED PROGRAMS	[]		[]
2040	0301556A	171	SPECIAL PROGRAM	[]		[]
2040	0303028A	172	SECURITY AND INTELLIGENCE ACTIVITIES	2,992		2,992
2040	0303140A	173	INFORMATION SYSTEMS SECURITY PROGRAM	22,903	1,000	23,903
			Retinal/iris multimodal biometrics		[1,000]	
2040	0303141A	174	GLOBAL COMBAT SUPPORT SYSTEM	79,752		79,752
2040	0303142A	175	SATCOM GROUND ENVIRONMENT (SPACE)	58,659		58,659
2040	0303150A	176	WWMCCS/GLOBAL COMMAND AND CONTROL SYSTEM	13,647		13,647
2040	0303158A	177	JOINT COMMAND AND CONTROL PROGRAM (JC2)	1,696		1,696
2040	0305114A	178	TRAFFIC CONTROL, APPROACH AND LANDING SYSTEM			
2040	0305204A	179	TACTICAL UNMANNED AERIAL VEHICLES (JMIP)	139,610		139,610
2040	0305206A	180	AIRBORNE RECONNAISSANCE SYSTEMS (JMIP)	5,398		5,398

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2040	0305208A	181	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS (JMIP)	91,587		91,587
2040	0702239A	182	AVIONICS COMPONENT IMPROVEMENT PROGRAM	994		994
2040	0708045A	183	END ITEM INDUSTRIAL PREPAREDNESS ACTIVITIES	68,505	17,000	85,505
			Advanced modeling technology for titanium machining		[4,500]	
			Manufacturing systems demonstration		[4,000]	
			Super-pulse laser processing technology		[3,500]	
			Packaging and interconnection technology		[3,000]	
			Virtual parts engineering research		[2,000]	
2040	1001018A	184	NATO JOINT STARS	569		569
2040	XXXXXXXX	999	CLASSIFIED PROGRAMS	3,966		3,966
			Total, RDT&E Army	9,733,824	-17,000	9,716,824

Army basic research

The budget request included \$137.9 million in PE 61102A, for defense research sciences. The committee is concerned with the long term viability of the defense research program, especially those efforts geared at developing innovative solutions to address emerging and future challenges. Ongoing work in the areas of materials and composites for flexible armor, neuroscience, textiles with embedded sensors, efficient vehicle operations, and basic terrain analysis modeling and simulation are a few of the many research examples that contribute to meeting the needs of the warfighter. The committee recommends an increase of \$12.5 million in PE 61102A for expansion of Army basic science, including \$2.5 million for research in brain imaging deception detection; \$2.0 million for moldable fabric armor to increase force protection options; \$2.0 million for functionally integrated reactive surface technologies to develop protective, intelligent, and adaptive textiles; \$2.0 million to enable transition of low temperature vehicle research; \$3.0 million for desert terrain analysis research; and \$1.0 million for advanced ground vehicle reliability research.

Document exploitation

The budget request included no funding for Research, Development, Test, and Evaluation, Army, for Security Defense Research Sciences, in PE 61102A, for development of advanced document exploitation equipment.

Portable, rugged document exploitation equipment is currently not widely available to military personnel operating in deployed, austere environments. The technology exists to develop lightweight equipment that can scan documents, quickly search for important information in native languages, and transmit potentially valuable documents back to exploitation facilities quickly, thus providing battlefield commanders with rapid exploitation of captured information. Recent experiences in Afghanistan and Iraq have demonstrated the value of such capabilities and the requirement for additional, improved capabilities.

The committee recommends an increase of \$5.0 million in PE 61102A, to continue development, product improvement, and fielding of portable document exploitation systems.

Army university research

The budget request included \$82.0 million in PE 61104A, for university and industry research centers. Significant advances in materials technologies, materials processing, and secure communications require continued fundamental research to serve as the building blocks for Army future combat systems. The committee recommends an increase of \$6.5 million in PE 61104A for university research, including \$2.0 million for strategic defense systems manufacturing technology basic research; \$2.5 million for expanded continuation of the nanotubes optimized for lightweight exceptional strength composite project; \$2.0 million for integrated systems in sensing, imaging, and communications research to provide secure optical connections.

Advanced mine detection and blast mitigation

The budget request included \$17.6 million in PE 62105A, for materials technology. Army materials research efforts in blast resistant structures, composites, and the equipment to test them contribute to immediate and long term force protection needs. The committee recommends an increase of \$5.0 million in PE 62105A for expansion of promising materials technology research, including \$3.0 million for advanced mine detection and blast mitigation and \$2.0 million for lightweight blast containment vessel development, improved computational simulation capabilities, and early testing of optimized vessel designs.

Army small airship

The budget request included \$32.1 million in PE 62120A, for sensors and electronic survivability. Asymmetric threats and unpredictable battlefields increase the importance of sensors in spotting and preventing hostile action and in targeting assets. An adaptive, modular, autonomous vehicle capable of operating in a variety of environments and performing various functions during a single mission should provide the warfighter with an important stand off tool.

The committee recommends an increase of \$3.0 million in PE 62120A to provide focused attention on solving some of the technical challenges involved in autonomous control, adaptability between tethered and untethered flight, and load exchange for a small airship surveillance system.

Detection and neutralization of improved explosive devices

The budget request included \$32.1 million in PE 62120A, for sensors and electronics survivability and \$49.5 million in PE 62782N, for mine and expeditionary warfare applied research. The Department of Defense is pursuing a broad short and long term research effort to confront the threat posed by improvised explosive devices (IEDs). Substantial achievements made in the areas of sensors, jammers, and pre detonation devices support current operations. As efforts continue to move solutions to the field as quickly as possible, an additional avenue of exploration is underway to invent more comprehensive tools for IED neutralization. Many IEDs are remotely initiated using inexpensive commercial electronics. These control mechanisms may all be subject to a low level of electricity leakage, which could be detected at a considerable distance with special equipment.

The committee supports the Department's efforts to explore alternative and imaginative approaches to combating the IED threat in the long-term. The committee recommends an increase of \$2.0 million in PE 62120A to accelerate development of an innovative remote sensor monitoring technology designed to lead to a mobile test bed for advanced stand-off detection of explosives. The committee further recommends an increase of \$3.0 million in PE 62782N for development of a field prototype detection and neutralization device.

Real-time laser threat warning development

The budget request included \$19.1 million in PE 62270A, for electronic warfare technology. The Army supports key goals in the area of battlespace survivability and acquisition of enemy targets under this account. The ability to detect heat seeking missiles and those guided by lasers with real-time location of the laser source and identification of the source characteristics would enhance missile countermeasure efforts. The committee recommends an increase in PE 62270A of \$4.0 million to continue development of a prototype to field test a high performance, low cost laser threat warning and missile countermeasure system utilizing MEMS-based beam steering technology.

Army unmanned systems initiative

The budget request included \$62.5 million in PE 62303A, for missile technology. As use of unmanned aerial vehicles increases, integration tools, testing processes, and training procedures must keep pace. The committee recommends an increase of \$5.0 million in PE 62303A for an unmanned systems initiative and expanded testing of unmanned vehicles and teams of vehicles during long, autonomous flights. The program would also develop airspace management procedures for vehicles with different payloads, and would provide joint training for control of vehicle weapons assignments and on the use of communication protocols.

Technology enhancement for area protection

The budget request included \$62.5 million in PE 62303A for missile technology. The committee is aware that the Army has identified the enhanced area air defense system (EAADS) as the key element in defending against rockets, artillery and mortars, as well as unmanned aerial vehicles and cruise missiles. While the Army continues to develop radar elements to support EAADS, the committee is aware of the need to evolve the systems integration tools and technologies necessary to operate a comprehensive battlefield system to address the threat.

The committee recommends an increase of \$5.0 million in PE 62303A for the enhanced area protection and survivability science and technology program to develop technologies to be integrated into force protection systems to support EAADS requirements, as well as near-term force protection for Operation Iraqi Freedom.

Multifunctional robot platform

The budget request included \$16.0 million in PE 62308A, for advanced concepts and simulations. Various robotic platforms with force protection applications under development by the Army show promise in addressing sniper, mortar, and rocket propelled grenade threats. The committee recommends an increase of \$3.0 million in PE 62308A for rapid integration of optical technology and advanced acoustic detection and direction finding hardware into the robot enhanced detection outpost with lasers platform (RedOwl).

Combat vehicle and automotive technology

The budget request included \$64.9 million in PE 62601A, for combat vehicle and automotive technology. Component technologies

explored under this account support the Army's current and future combat and tactical vehicle fleets. Present engine systems fail to provide adequate measurement and data retrieval necessary to increase engine efficiency, resulting in faster fuel burn rates.

The committee recommends an increase of \$3.5 million in PE 62601A for development of advanced electric drives designed to result in easily replaceable, quiet, robust engines with greater power density and torque.

The committee further recommends an increase of \$6.0 million in PE 62601A to address the needs of the Department of Defense for alternative fuels and fundamental research on robotic ground vehicles. Specifically, the committee recommends increases of \$3.0 million for a defense transportation energy research project focused on military use of advanced fuels; and \$3.0 million for unmanned vehicle control technologies to increase control, vision, and navigation systems in robotic ground vehicles.

Gun barrel coatings

The budget request included \$49.2 million in PE 62618A, for ballistics technology. Gun barrel wear accounts for nearly 80 percent of annual armament costs. Hard ceramic coatings such as titanium nitride could increase the wear and the life of such armaments by as much as five to eight times over current processes, with a projected proportionate reduction in armament costs. The committee recommends an increase of \$2.0 million in PE 62618A for the development of hard, wear-resistant coatings for the inside surfaces of gun barrels.

Active coatings technology

The budget request included \$37.8 million in PE 62624A, for weapons and munitions technology. Selected research in the areas of advanced, adaptable armor and coatings to protect personnel and equipment from ballistic and blast threats is approaching the testing phase. The committee recommends an increase of \$3.5 million in PE 62624A for research and development of longer lasting, cost-effective coatings that adapt to conditions in real-time.

Sonic rarefaction wave gun technology

The budget request included \$37.8 million in PE 62624A, for weapons and munitions technology. The Army's plan to acquire lighter, faster, more expeditionary vehicles affects requirements for vehicle-mounted weapons systems. The committee recommends an increase of \$2.5 million in PE 62624A for the rarefaction wave gun. This gun shows potential for 50 percent weight and heat reductions and 75 percent reduced recoil while at the same time maintaining current muzzle energy.

Ultra wideband sensors

The budget request included \$37.8 million in PE 62624A, for weapons and munitions technology. Today's military faces battlefields in neighborhoods, small towns, and cities as often as in open deserts, forests, or jungles. Advanced sensors and imaging resolution combined with unmanned platforms make possible extended visibility and situational awareness. One current challenge to

achieving full battlespace awareness involves through-the-wall sight. The committee recommends an increase of \$2.0 million in PE 62624A for advanced research on a hand-portable through-wall radar system.

Army man-portable power

The budget request included \$39.6 million in PE 62705A, for electronics and electronic devices. The Army needs battery systems to deliver reliable, lightweight, constant and, when needed, high surge power, especially for the dismounted soldier. The zinc air battery system has the potential to provide at least twice the energy density as other battery systems and up to 4 times or more the high discharge or constant power rate as common battery systems.

The committee recommends an increase of \$8.0 million in PE 62705A for accelerated advances in man-portable power, including \$3.0 million to develop prototype designs for the zinc air battery; \$2.0 million for a portable solid oxide fuel cell power generation demonstrator capable of using JP-8 fuel; and \$3.0 million for a hybrid advanced soldier power system that, when coupled with device-specific adapters, would power existing and legacy gear for 72-hour autonomous missions.

Flexible Display Initiative

The budget request includes \$39.6 million in PE 62705A, for electronics and electronic devices, including \$5.0 million, for the Flexible Display Center. Equipment, materials, and technology on flexible displays and microelectronics facilitate creation of next generation communication products, which are key to the Army's transformation efforts. The Army's planned funding for flexible display research is insufficient for the manufacturing capability necessary to support the Army's stated goals for displays and does not include a tools and materials component. The competitively bid, peer-reviewed Flexible Display Initiative achieves a 62 percent industry cost share in leveraging the Army's research funding. The committee recommends an increase of \$4.0 million in PE 62705A for the Flexible Display Initiative to undertake additional materials and manufacturing technology projects aimed at ensuring the Army meets flexible display goals in a timely manner.

Ultra wideband chipset

The budget request included \$21.8 million in PE 62782A, for command, control, and communications technology. The Army invested in ultra wideband radio technology with the potential to provide extremely covert communications platforms, situational awareness, and through-wall and ground penetrating radar. The developed technology, which is compatible with, but not dependent on current and future communication systems, requires transition funds for integration and pre-production prototyping. The committee recommends an increase of \$2.0 million in PE 62782A for transition of the ultra wideband radio frequency chipset to meet Army power consumption, range, and bit rate requirements.

Biosecurity research for food safety

The budget request included \$21.7 million in PE 62786A, for warfighter technology, but no funding for food security and safety monitoring capabilities. The Army must protect the U.S. military's food supply and associated supply chain infrastructures. Technologies to rapidly and reliably detect food contaminants would positively impact soldier health, performance, and effectiveness. The committee recommends an increase of \$2.5 million in PE 62786A for development of methods and equipment to detect real-time biohazards in the food supply.

Army medicine for mitigation and treatment of blast injuries

The budget request included \$74.7 million in PE 62787A, for medical technology and \$45.2 million in PE 63002A, for medical advanced technology. Care for uniformed personnel, including adaptation to changing wound patterns and long-term quality of life for injured combat veterans, are key priorities for the committee and are the focus of a Blast Injury Prevention, Mitigation, and Treatment Initiative under section 243 of this Act.

The committee recommends a series of increases in PE 62787A and PE 63002A to advance emerging, life saving medical technologies and to accelerate testing, trials, and production of new devices and treatments. Specifically, the committee recommends project increases in PE 62787A totaling \$9.8 million and in PE 63002A totaling \$18.0 million for the following projects.

Under PE 62787A, the committee recommends:

- (1) \$2.6 million for a biofoam bleeding sealant for battlefield trauma for further development of existing protein hydrogel technology and acceleration of approval to field the product to forward surgical teams;
- (2) \$1.2 million for non-linting silver antimicrobial wound dressing technology that would combine infection protection and fluid transport over a period of days for use in forward locations or in the event that medical care is not readily available;
- (3) \$2.0 million for the hemorrhage control (Chitosan) dressing, to support an Army unfunded need to conduct research on internal application of the bandage;
- (4) \$1.0 million for warfighter face and eye injury protection and a two-year accelerated development process to test performance of a new composite face shield; and
- (5) \$3.0 million to augment Army work in characterization of armor for blast, ballistic, and fire protection.

Under PE 63002A, the committee recommends:

- (1) \$3.0 million for advanced tissue engineering techniques to rapidly deploy replacement blood vessels and other tissues, which have been demonstrated to form new cell layers in a matter of hours, compared to days or weeks under current treatments;
- (2) \$2.0 million for advances in solid treatment regeneration and the science of regenerative medicine to explore novel approaches to restoration of biological function after injury and the science of tissue engineering, cellular therapies, bio-sur-

gery, and artificial and bio-hybrid organ devices to reduce mortality and morbidity from battlefield injuries;

(3) \$4.0 million for acute care of blast effects and head injuries including a focused effort on research and data collection specific to blast injuries involving concussions and persistent symptoms;

(4) \$3.0 million for accelerated research and approval of forward use of recombinant activated factor VII by medics at the point of injury to greatly increase survival times prior to surgery;

(5) \$1.0 million for the advanced development of the composite warfighter face and eye protection;

(6) \$2.0 million for applied emergency hypothermia research to support innovative suspended animation and delayed resuscitation treatment directed at saving those severely injured in combat; and

(7) \$3.0 million for continued development of the fibrogen bandage.

Bio-defense detection and treatment

The budget request included \$74.7 million in PE 62787A, for medical technology and \$45.2 million in PE 63003A, for medical advanced technology. The Army needs easy-to-use devices to reliably detect the presence of bio-warfare agents. Upon detection and identification, the Army also requires new medicines to protect military personnel from biological agents. The committee recommends an increase of \$3.0 million in PE 62787A for accelerated research and development of a colorimetric biosensor device that would provide deployed units with a rapid, one-step, disposable bacterial pathogen detector.

The committee further recommends an increase of \$2.0 million in PE 62787A for enhanced research on a bio-defense gene knockout technology designed to enable treatment and prevention regimes against bio-warfare agents. The proposed technology would improve current, single-agent defenses and would counter agents possessing drug resistant or other bio-engineered features.

Finally, the committee recommends an increase of \$5.0 million in PE 63002A for bio-defense medical technologies; \$3.0 million for expansion of research to apply alternative vaccine delivery technologies to combination treatments against anthrax, plague, toxic shock, and botulism; and \$2.0 million for continued research and timely clinical trials on the surgical wound disinfection and biological agents project.

Posttraumatic stress disorder diagnostic tools

The budget request included \$74.7 million in PE 62787A, for medical technology. Accurate and timely diagnosis of posttraumatic stress disorder (PTSD) supports recovery and a higher quality of life for combat veterans. Additional basic research, early clinical trials, and development of predictive tools lead to accurate identification of PTSD conditions and would assist medical personnel in distinguishing posttraumatic stress from traumatic brain injuries. The committee recommends an increase of \$1.0 million in PE 62787A for PTSD research.

Surgical safety system

The budget request included \$74.7 million in PE 62787A, for medical technology. One of many areas of exploration for improved combat medical care involves advanced information technologies for remote monitoring and improved patient management in deployed surgical environments. The committee recommends an increase of \$2.0 million in PE 62787A for the surgical safety system to support goals of the Army's Operating Room of the Future concept.

Human operator performance research

The budget request included \$45.2 million in PE 63003A, for medical advanced technology. Soldiers confront numerous risk factors and toxic agents present in military environments. The committee recommends an increase of \$3.0 million in PE 63003A for a program to assess, develop, and advance computer-based testing technologies. The resulting diagnostic capabilities would determine human reactions to proposed toxic agent treatments and countermeasures.

Wireless and digital medical improvements

The budget request included \$45.2 million in PE 63002A, for medical advanced technology, but no funding for acceleration of wireless capabilities and records digitization. The use of wireless networks and computerized medical files reduces time spent by military medical personnel in processing, accessing, and updating medical records. Development of a wireless, adaptable network would accelerate accurate and efficient patient care, reduce errors, and facilitate transfer of medical records.

The committee recommends an increase in PE 63002A of \$1.4 million for a pilot program to implement use of wireless medical records at Walter Reed Medical Center. The committee further recommends increases of \$1.0 million in PE 63002A for the untethered healthcare project and development of technologies to facilitate remote triage and improve casualty status and assessment and \$2.0 million for expanded diagnosis through digital imaging recognition. This research will produce digitally accessible files to help attending physicians accelerate the diagnosis and treatment of service members in-theater and in medical care facilities.

Reconfigurable tooling systems

The budget request included \$48.3 million in PE 63003A, for advanced aviation technology. Many Army aircraft and unmanned aerial vehicles contain components composed of fiber-reinforced materials. When these parts require repair, delays in maintenance and availability of replacements adversely affect readiness. The committee recommends an increase of \$2.0 million in PE 63003A for completion of a portable, reconfigurable tooling system capable of creating the specific repair tools and aviation composite materials at the maintenance site.

Rotorcraft system monitoring

The budget request included \$48.3 million in PE 63003A, for aviation advanced technology. Helicopters play an important role in support, relief, and combat missions throughout the world. Timely

improvement of maintenance techniques, procedures, and automatic optimized digital engine controls are critical to supporting the increased use of and reliance on these platforms. The committee recommends an increase of \$5.5 million in PE 63003A, including \$1.5 million for integrated rotorcraft system monitoring and \$4.0 million for the universal control-full authority digital engine control project.

Unmanned tactical combat vehicles

The budget request included \$48.2 million in PE 63003A, for aviation advanced technology and \$82.5 million in PE 63114N, for power projection advanced technology, but no funding for a prototype unmanned combat aerial vehicle designed specifically for emergency rapid response. The committee is aware of the near-term requirement for a cost-effective, survivable, tactical unmanned combat aerial vehicle (UCAV) capable of reaching conflict areas in a timely manner, engaging and destroying targets of opportunity, providing overhead coverage at trouble spots, such as roadside ambushes, and operating without runways or launch mechanisms. The committee recommends an increase in PE 63003A of \$7.9 million and in PE 63114N of \$1.0 million to address this requirement through construction of two proof of principle Excalibur demonstrators.

Mid-range munition

The budget request included \$74.9 million in PE 63004A, for weapons and munitions advanced technology, including \$10.0 million for the mid-range munition. The committee recommends an increase of \$6.0 million in PE 63004A to accelerate development of the mid-range munition to meet targeted prototyping, demonstration, and fielding time frames.

Nanotechnology manufacturing

The budget request included \$74.9 million in PE 63004A, for weapons and munitions advanced technology. Research efforts to produce composite structures and new materials constructed from the nano-scale for weapons, munitions, and fire control applications will require unique, efficient manufacturing processes. The committee recommends an increase of \$3.0 million in PE 63004A for nanotechnology manufacturing.

Abrams track improvement

The budget request included \$142.9 million in PE 63005A, for combat vehicle and automotive advanced technology. The Army strives to reduce life cycle costs and maintenance requirements while increasing reliability for mission critical hardware such as the Abrams tank, even as operations in current theaters tax mechanical limits. The committee recommends an increase of \$3.0 million in PE 63005A for production and qualification testing of a new Abrams track, which could reduce life cycle costs by 20 percent while increasing reliability, availability, and maintainability of the component and the equipment.

Combat vehicle advanced development

The budget request included \$142.9 million in PE 63005A, for combat vehicle and automotive advanced technology. The committee recommends an increase of \$26.0 million in PE 63005A for the expanded development of automotive technologies in support of Army transformation goals for a lighter, more lethal force with heightened security and survivability. Specifically, the committee recommends increases of: \$4.0 million for advanced thermal management; \$2.0 million for a collaborative approach to a non-line-of-sight cannon and mortar; \$3.0 million for a composite armored cab; \$2.0 million for fastening and joining research; \$2.0 million for power electronic systems research; \$5.0 million for hydraulic hybrid vehicle technology; \$2.0 million for next generation nontactical vehicle propulsion; \$3.0 million for solid oxide fuel cell materials and manufacturing; and \$3.0 million for an anti-ballistic windshield armor designed for rapid installation, better operator visibility, and higher levels of projectile protection.

Coordinated training

The budget request included \$6.8 million in PE 63007A, for manpower, personnel, and training advanced technology. The Army is working to ensure that the “human component” of warfighting keeps pace with the transformation in systems, weapons, equipment, and requirements. Development of more effective collective training methods, which include a standardized program to capture the latest lessons learned from current combat operations, would reduce the time required for training and practicing critical new skills. The committee recommends an increase of \$3.0 million in PE 63007A for continued development of the battle command team training program and incorporation of realistic, relevant, and timely practice events for use by commanders and battle staff.

Advanced simulated training

The budget request included \$20.0 million in PE 63015A, for next generation training and simulation systems. The joint fires and effects training system typifies leading edge simulator technology currently in use. The committee commends the Army for its innovative approach to highly immersive and successful training and simulation environments. Realistic training has been credited in part with a reduction in casualty rates as troops preparing for deployment learn from those who are in theater or who are just returning.

The committee recommends an increase of \$3.5 million in PE 63015A for development of additional, deployable modules for the joint fires and effects training system. The committee further recommends an increase of \$3.5 million in PE 63015A for the final phase of the CAVE automatic virtual environment project to produce a fully self-sustaining visualization laboratory in support of environmental science research and military training for desert conditions.

Explosive demilitarization

The budget request included \$9.9 million in PE 63103A, for explosive demilitarization technology. The Army supports programs

under this account to develop safe, efficient, environmentally-compliant technologies to enhance existing methods for munitions resource recovery, recycling, and treatment. The committee recommends an increase of \$1.0 million in PE 63103A for development of a demilitarization approach that incorporates an innovative solid fuel feed technology with a modified reactor.

Alternative fuel supplies

The budget request included \$6.3 million in PE 63125A, for combating terrorism technology development. Adequate, reliable, and cost-efficient fuel supplies are important for military operations in changing environments with logistical supply chain challenges. Portable, alternative fuel systems continue to offer possible long-term solutions, if successfully configured to meet military requirements. The committee recommends an increase of \$4.0 million in PE 63125A for continued development of advanced mobile microgrid fueler systems to demonstrate innovations in converting biomass to synthetic gas or synfuel. The advanced fueler system would complement the ongoing Army Advanced Mobile Microgrid program, and would provide a reduced logistical footprint when deployed and backup power in case of grid failure.

Stryker vehicle active protection system demonstration

The budget request included \$70.1 million in PE 63313A for missile and rocket advanced technology development, including \$5.0 million for integration of the close-in active protection system (CIAPS) into the High Mobility Multipurpose Wheeled Vehicle (HMMWV), but no funding for CIAPS integration into a Stryker vehicle. In fiscal year 2005, the Army demonstrated that a prototype CIAPS mounted on a light armored vehicle could defeat rocket propelled grenades (RPGs). The committee supports any initiative that fields systems that provides additional force protection capabilities to our troops. HMMWVs and Stryker vehicles deployed to Operation Iraqi Freedom require RPG protection. The committee understands that the need and opportunity for integrating CIAPS technology on Stryker emerged after planning for the fiscal year budget request was completed. The committee recommends an increase of \$12.0 million in PE 63313A for a Stryker active protection system, for a total authorization of \$82.1 million in PE 63313A.

Advanced structures and composites

The budget request included \$7.3 million in PE 63734A, for military engineering advanced technology. Early in a military deployment, the majority of military personnel live in soft shelters or tents. In current conflicts, nearly every position is vulnerable to attack. The Army is exploring lightweight, affordable, rapidly deployable, forward construction methods that provide ballistic protection. The committee recommends an increase of \$3.0 million in PE 63734A to accelerate solutions that employ hybrid wood and advanced fiber material and structure systems to combine cost efficiency, ease of assembly, and ballistic protection.

Army command and control visualization system

The budget request included \$14.6 million in PE 63305A for Army system integration (non space), but no funding for interactive modeling and simulation management capabilities.

The committee notes that effective modeling and simulation is necessary for the development of missile defense and other military capabilities. Next generation architectural solutions for command and control and situational awareness are now being developed. The committee recognizes that funding could be used to mature technology and continue to combine government furnished components and commercial, off-the-shelf products to support the warfighter from the classroom to the field.

The committee recommends an increase of \$3.0 million in PE 63305A to support continued development of interactive modeling and simulation management capabilities of the Army Space and Missile Defense Command to support the warfighter.

Interactive modeling and simulation management

The budget request included \$14.6 million in PE 63305A for missile defense systems integration, but no funding for interactive modeling and simulation management capability.

The committee notes that effective modeling and simulation is essential to the development of missile defense and other military capabilities. Likewise, a process to coordinate and manage activities related to the verification and validation of modeling and simulation tools is needed to support these capabilities.

The committee recommends an increase of \$2.0 million in PE 63305A for development of technologies and processes to support verification and validation of modeling and simulation.

Next generation interceptor materials

The budget request included \$14.6 million in PE 63305A for Army missile defense system integration, but no funding for next generation interceptor (NGI) materials research.

Next generation ballistic missile interceptors will be designed to intercept longer range and more complex threats. To intercept complex threats, lightweight and highly maneuverable kill vehicles are required. The NGI materials research program proposes developing both a lightweight composite missile launcher and an advanced composite kill vehicle airframe. The Department of the Army and the Missile Defense Agency has assessed this item to have high military value.

The committee recommends an increase of \$5.0 million in PE 63305A for next generation interceptor materials research for development of lightweight composite missile launchers and advanced composite kill vehicle airframes.

Long loiter sensor and communications platform

The budget request included \$9.3 million in PE 63308A for Army missile defense system integration, but no funding for near-space long loiter sensor and communications.

The Army currently maintains a fleet of unmanned aerial vehicles (UAVs) that utilize Air Force space-borne sensors and communications devices to provide direct surveillance and reconnaissance

support to the warfighter in theater. The committee understands that a near-space long loiter craft able to continually view the entire theater of operations could provide significant operational cost savings by decreasing the numbers of UAVs and other sensors necessary for reconnaissance, surveillance, and blue force tracking.

The committee recommends an increase of \$5.0 million in PE 63308A to refine the requirements, conduct concept evaluations, and develop integrated test beds to assess the capabilities of programs related to sensor payloads for near-space long loitering craft.

Architecture Analysis Program

The budget request included \$81.0 million in PE 63327A for air and missile defense system engineering, but no funding for the Air, Space, and Missile Defense Architecture Analysis Program (A3P).

A3P is a modeling and simulation effort to assist in the systems analysis of air, space, and missile defense capabilities to provide an effective defense against cruise missiles, unmanned aerial vehicles, aircraft, rockets, artillery, and ballistic missiles of all ranges. The committee recognizes that these simulation capabilities are necessary to support air, space, and missile defense efforts across a broad spectrum of military operations from major theater wars to homeland security.

The committee recommends an increase of \$2.0 million in PE 63327A for A3P to support air, space, and missile defense modeling and simulation.

Single Integrated Space Picture

The budget request included \$83.1 million in PE 63327A for Air and Missile Defense Systems Engineering, of which \$15.0 million is for the Single Integrated Space Picture (SISP) program.

SISP is an initiative within the Combatant Commanders Integrated Command and Control System program to provide an integrated picture of space capabilities, threats, and operations. The committee notes that the Army Missile and Space initiative has included work to develop decision support software for use by space operators in support of joint operations center commanders. The software is designed to receive and integrate information from multiple sources, providing a consolidated picture to improve space situational awareness. The committee recommends an addition of \$2.0 million in PE 63327A for the continued development, production, and field demonstration of this software.

Casting Emissions Reduction Program

The budget request included \$5.17 million in PE 63779A for environmental quality technology demonstration/validation, but no funding for the Casting Emissions Reduction Program (CERP). The CERP is validating advanced materials and processes for the reduction of hazardous emissions from foundry operations, advancing emission measurement methods for the Department of Defense and related industries, and is supporting lightweight metals technology transfer to fulfill military requirements. The committee recommends funding CERP to continue to improve manufacturing technologies used to produce casting materials such as aluminum

and titanium to assist the Army in achieving its goal of becoming a lighter, more highly-mobile fighting force.

The committee recommends an increase of \$6.2 million in PE 63779A for the CERP.

Advanced Army medical systems

The budget request included \$10.1 million in PE 63807A, for medical systems advanced development. The committee recommends an increase of \$4.5 million in PE 63807A to accelerate deployment of medical treatments to mitigate blast injuries. Specifically, the committee recommends an increase of \$1.0 million for an Army requirement to pursue approval of the intravenous fluids warming system; \$2.5 million to produce a safe, portable oxygen system for patients during evacuations; and \$1.0 million to extend the shelf life of red blood cells by 6 weeks.

Joint Tactical Radio System

The budget request included a total of \$923.7 million for the Joint Tactical Radio System (JTRS) development across the Department of Defense. JTRS is intended to provide seamless, real-time communications among warfighters—through voice, data, and video—within and across the services through software programmable radio technology. Service requirements are “clustered” so that similar requirements can be met with a single acquisition effort. The lead service for each acquisition effort serves as the cluster manager. The Army is the manager for JTRS clusters 1 and 5 radios; the Special Operations Command is the manager for cluster 2 radios; and the Navy and Air Force are the managers for cluster 3 and 4 radios, respectively. In March 2005, the Department restructured the JTRS program to include a new Joint Program Executive Office (PEO), which will coordinate JTRS development.

The budget request included \$156.7 million in PE 64280A, for JTRS waveform development and Program Management Office (PMO) activities; \$393.1 million in PE 64805A, including \$375.0 million for JTRS cluster 1 and JTRS cluster 5 hardware development; and \$23.5 million in PE 64201A for JTRS aviation hardware development and integration. This funding supports Army JTRS responsibilities as the Joint Program Management Office and clusters 1 and 5 manager.

The committee has supported the JTRS program in the past and continues to believe that a software programmable radio is achievable despite the technical challenges associated thus far with JTRS program development. However, the committee is concerned about recent events regarding JTRS.

a. The program faces a 30-month delay due to a JTRS hardware redesign to meet National Security Agency certification requirements.

b. On January 14, 2005, the Deputy Under Secretary of Defense for Acquisition, Technology and Logistics, issued a partial “stop work” order to the JTRS cluster 1 contractor so that the contractor could focus the program on the early operational assessment of the program’s maturity and capabilities.

c. On April 25, 2005, the JTRS cluster 1 contractor was issued a “show cause” letter indicating the JTRS program

would be terminated in 30 days unless the contractor could satisfactorily answer questions regarding cost, performance, and schedule.

The committee believes that the stop work and potential contract termination actions will require a significant amount of time for resolution and will require a JTRS program restructure or rebase-line. Therefore, the committee recommends a decrease of \$39.4 million in PE 64280A for a total authorization of \$117.3 million; a decrease of \$193.9 million in PE 64805A for cluster 1 and cluster 5 radio development to reflect a “stop work” order; and a decrease of \$75.0 million in PE 64805A for cluster 1 radio development, for a total authorization of \$124.2 million for PE 64805A, including \$106.1 million for JTRS cluster 1 and JTRS cluster 5 hardware development.

The Department of Defense Appropriations Act for Fiscal Year 2005 (Public Law 108–287) appropriated \$111.5 million for the procurement of JTRS cluster 1 radios, originally intended to be procured under a low rate initial procurement contract for a first quarter fiscal year 2007 multi-service operational test and evaluation. Based on recent events, these funds cannot be executed as appropriated. The committee encourages the Department of Defense to request reprogramming of fiscal year 2005 JTRS procurement funding into PE 64280A to continue development of the JTRS waveform and common operating environment and architecture so as not to affect the development and fielding of other JTRS clusters. The committee is concerned that the Department has not placed sufficient emphasis and funding on developing new antenna technologies and should make this a priority when the JTRS program is restructured.

Tactical vehicle modifications

The budget request included no funding in PE 64642A, for light tactical wheeled vehicle development. The Army’s current operation tempo demands that advances in lightweight materials, advanced load handling, intelligent control systems, ballistic protection systems, embedded diagnostics, and suspension systems be developed and spiraled into the field as soon as possible. The committee recommends an increase of \$5.0 million in PE 64642A for the research and development of spiral technologies for the wheeled tactical vehicle fleet, for a total authorization of \$5.0 million.

Future tactical truck system

The budget request included \$3.4 million in PE 64622A, for family of heavy tactical vehicle development, which conducts system development and demonstration of heavy tactical vehicles to support combat and combat support missions.

The budget request included \$1.0 million in PE 62601A, for the Future Tactical Truck System (FTTS). The committee understands that a key enabler of the Army’s tactical wheeled vehicle strategy is the Expedited Modernization Initiative Procedure process, an initiative designed to identify and use industry’s investments in advanced technologies. The EMIP process will be conducted in parallel with the FTTS Advanced Concept Technology Demonstration (ACTD) that will assess key technologies and emerging service

sustainment concepts to help develop the requirements for Army and Marine Corps trucks of the future, as well as to identify advanced technologies that also address current tactical wheeled vehicle needs. The committee recommends an increase of \$10.0 million in PE 64622A for the FTTS ACTD, for a total authorization of \$13.4 million.

Protected simulation and test link

The budget request included \$288.8 million in PE 64869A for Patriot/MEADS combined aggregate program, but no funding for the protected simulation and test link (PSTL).

The United States is currently engaged in a cooperative developmental effort with Germany and Italy to modernize the Patriot/MEADS missile defense system. Current United States technology protection rules dictate that simulation models associated with critical U.S. technology not be released to foreign partners. The committee notes that PSTL is a software application that will provide the capability for protected simulation models to interact with those models that can be shared with international partners, thereby facilitating the design and development of the Patriot/MEADS system as an international joint venture.

The committee recommends an increase of \$1.0 million in PE 64869A for PSTL.

Unmanned aerial vehicle ice protection

The budget request included \$10.9 million in PE 64258A, for target systems development. As unmanned aerial vehicles (UAVs) fly further, longer, and higher, they confront some of the same challenges as manned aircraft. The committee supports programs designed to address current in-flight icing protection shortfalls with low-weight, low-cost, low-power options made specifically for installation on current and future UAV configurations. The committee recommends an increase of \$3.0 million in PE 64258A for fabrication and testing of a self-activated, automatic deicing system for UAVs.

High performance computing research

The budget request included \$32.3 million in PE 65803A, for technical information activities. Use of computer simulation tools allows for the rapid analysis of alternative designs for armor, structures, specialized weapons, and aircraft components. Faster and more accurate modeling of potential structural improvements and composite material performance could lead to stronger and more flexible force protection systems for personnel and equipment. The committee recommends an increase of \$6.0 million in PE 65803A for advances in high performance computing research and improved simulations to evaluate the blast resistance of structures and armor.

Retinal/iris multimodal biometrics technology for secure identification

The budget request included \$22.9 million in Research, Development, Test, and Evaluation, Army, in PE 33140A, for Information Systems Security Program, but included no funding for continued

research on retinal/iris multimodal biometrics (RIMB) technology for secure identification.

RIMB technology has shown promise as an enhanced form of secure identification to protect information systems from unauthorized users. The committee recommends an increase of \$1.0 million in PE 33140A, for the continued development of RIMB technology, consistent with the short- and long-term technology development, deployment, and integration goals of the Department of Defense for biometric identification systems.

Army manufacturing technologies

The budget request included \$68.5 million in PE 78045A, for end-item industrial preparedness activities. As the Army continues to transform to a flexible, expeditionary force, logistical support for existing systems must be maintained and improved. Methods and processes designed to ensure sustained operational capability of weapons and support systems must move into the “virtual” world as many original parts and maintenance suppliers no longer exist. The Army can not afford to cope with manpower and time drains imposed by long logistical chains. The committee recommends an increase of \$2.0 million in PE 78045A, to support the virtual parts program, which will form a one-stop virtual engineering production environment to assist in ensuring the sustained operational capability of weapons and support systems.

The committee further recommends an increase of \$10.5 million in PE 78045A, to accelerate packaging, processing, and manufacturing systems. Specific precision manufacturing requirements exist on turbine engines, which use advanced alloys and ceramic materials that conventional machine techniques and tools fail to process. The committee recommends an increase of \$3.5 million for the super-pulse laser processing technology. The committee recommends an increase of \$4.0 million for the manufacturing system demonstration, and \$3.0 million for packaging and interconnection technology to reduce the weight and cost of electronic and optoelectric subsystems and for the adaptation of emerging technologies.

And finally, the committee notes that the strength-weight ratio of titanium makes it an ideal material for use in Army manned ground vehicles. The committee recognizes that this material also poses challenges as it is difficult, time consuming, and expensive to process. The committee recommends an increase of \$4.5 million in PE 78045A for accelerated development of an advanced modeling technology for titanium machining. Use of advanced software to simulate a virtual machining environment could enable increased processing speeds and deeper cuts, resulting in faster production of titanium parts to meet Army requirements for survivable manned ground vehicles.

Navy

Title II-RDT and E
(Dollars in Thousands)

<u>Acct</u>	<u>Account</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2006</u> <u>Request</u>	<u>Senate</u> <u>Change</u>	<u>Senate</u> <u>Authorized</u>
1319	0601103N	1	RESEARCH, DEVELOPMENT, TEST & EVALUATION, NAVY UNIVERSITY RESEARCH INITIATIVES Blast impact resistant composites Remote sensing research Neural engineering research Multifunctional materials for naval structures	75,910	8,000 [1,000] [2,500] [2,000] [2,500]	83,910
1319	0601152N	2	IN-HOUSE LABORATORY INDEPENDENT RESEARCH Navy S&T outreach	15,500	3,000 [3,000]	18,500
1319	0601153N	3	DEFENSE RESEARCH SCIENCES	356,885	5,000	356,885
1319	0602114N	4	POWER PROJECTION APPLIED RESEARCH Free electron laser	94,148	[5,000]	99,148
1319	0602123N	5	FORCE PROTECTION APPLIED RESEARCH Nanomagnetic materials Small watercraft propulsion demonstrator High frequency acoustic signal processor Polymeric aircraft components Undersea perimeter security technology	101,650	11,300 [2,000] [3,000] [2,000] [2,000]	112,950
1319	0602131M	6	MARINE CORPS LANDING FORCE TECHNOLOGY Combat headborne system research	37,590	[2,300] 1,000 [1,000]	38,590
1319	0602233N	7	HUMAN SYSTEMS TECHNOLOGY			
1319	0602234N	8	MATERIALS, ELECTRONICS AND COMPUTER TECHNOLOGY			

Title II-RDT and E
(Dollars in Thousands)

<u>Acct</u>	<u>Account</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2006</u>	<u>Senate</u>	<u>Senate</u>
				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
1319	0602235N	9	COMMON PICTURE APPLIED RESEARCH Critical area protection systems SensorNet Space research	57,693	6,500 [2,000] [12,000]	64,193
1319	0602236N	10	WARFIGHTER SUSTAINMENT APPLIED RESEARCH Multifunction composites for next Navy seaframes Automated video threat recognition Rapid detection of bio warfare agents in water Seabasing research	82,856	4,000 [3,500] [2,500] [3,000] [-5,000]	86,856
1319	0602271N	11	RF SYSTEMS APPLIED RESEARCH Gallium nitride RF power	47,302	2,000 [2,000]	49,302
1319	0602435N	12	OCEAN WARFIGHTING ENVIRONMENT APPLIED RESEARCH Integrated littoral sensor network	49,793	2,500 [2,500]	52,293
1319	0602651M	13	JOINT NON-LETHAL WEAPONS APPLIED RESEARCH	6,000		6,000
1319	0602747N	14	UNDERSEA WARFARE APPLIED RESEARCH	71,362		71,362
1319	0602782N	15	MINE AND EXPEDITIONARY WARFARE APPLIED RESEARCH UAV team coordination	49,520	6,000 [3,000]	55,520
1319	0603114N	16	POWER PROJECTION ADVANCED TECHNOLOGY Information sharing for ISRTE Excalibur UAV	82,538	4,000 [3,000] [1,000]	86,538

Title II-RDT and E
(Dollars in Thousands)

<u>Acct</u>	<u>Account</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2006 Request</u>	<u>Senate Change</u>	<u>Senate Authorized</u>
1319	0603123N	17	FORCE PROTECTION ADVANCED TECHNOLOGY	71,488	29,900	101,388
			Wireless sensor system		[2,000]	
			Mobile manufacturing repair cell		[5,000]	
			Wide bandgap semiconductor substrate materials		[8,000]	
			Small arms acoustic and infrared flash detection		[3,900]	
			High temperature superconducting generators		[5,000]	
			Ship service fuel cell		[6,000]	
1319	0603235N	18	COMMON PICTURE ADVANCED TECHNOLOGY	60,589	4,000	64,589
			Improved shipboard combat information		[4,000]	
1319	0603236N	19	WARFIGHTER SUSTAINMENT ADVANCED TECHNOLOGY	68,540	7,000	75,540
			Full body protective apparel		[3,000]	
			Automated cargo and container handling systems		[4,000]	
1319	0603271N	20	RF SYSTEMS ADVANCED TECHNOLOGY	75,070	6,000	81,070
			Joint UAV electronic attack		[3,000]	
			APY-6 real time precision targeting radar		[3,000]	
1319	0603640M	21	USMC ADVANCED TECHNOLOGY DEMONSTRATION (ATD)	56,434	16,200	72,634
			Armored patrol vehicle		[3,000]	
			Laser integrated target engagement system		[5,200]	
			Expeditionary warfare water purification		[7,000]	
			Advanced combat headborne system		[1,000]	
1319	0603651M	22	JOINT NON-LETHAL WEAPONS TECHNOLOGY DEVELOPMENT	2,394		2,394
1319	0603706N	23	MEDICAL DEVELOPMENT			
1319	0603727N	24	NAVY TECHNICAL INFORMATION PRESENTATION SYSTEM	187,943	9,900	197,843
			Modeling and simulation for urban operations		[9,900]	

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				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
1319	0603729N	25	WARFIGHTER PROTECTION ADVANCED TECHNOLOGY	16,068		16,068
1319	0603747N	26	UNDERSEA WARFARE ADVANCED TECHNOLOGY	27,603		27,603
1319	0603757N	27	JOINT WARFARE EXPERIMENTS			
1319	0603758N	28	NAVY WARFIGHTING EXPERIMENTS AND DEMONSTRATIONS	49,288		49,288
1319	0603782N	29	MINE AND EXPEDITIONARY WARFARE ADVANCED TECHNOLOX	31,897		31,897
1319	0603207N	30	AIR/OCEAN TACTICAL APPLICATIONS	27,094		27,094
1319	0603216N	31	AVIATION SURVIVABILITY	6,255		6,255
1319	0603237N	32	DEPLOYABLE JOINT COMMAND AND CONTROL	41,464		41,464
1319	0603254N	33	ASW SYSTEMS DEVELOPMENT	7,050		7,050
1319	0603261N	34	TACTICAL AIRBORNE RECONNAISSANCE	3,938		3,938
1319	0603382N	35	ADVANCED COMBAT SYSTEMS TECHNOLOGY	30,166		30,166
1319	0603502N	36	SURFACE AND SHALLOW WATER MINE COUNTERMEASURES Surface Navy integrated undersea tactical technology	122,122	2,000 [2,000]	124,122
1319	0603506N	37	SURFACE SHIP TORPEDO DEFENSE	47,039		47,039
1319	0603512N	38	CARRIER SYSTEMS DEVELOPMENT	167,823		167,823
1319	0603513N	39	SHIPBOARD SYSTEM COMPONENT DEVELOPMENT Amorphous metal permanent magnet generator	22,150	9,500 [1,500] [8,000]	31,650
1319	0603525N	40	PILOT FISH High temperature superconductor AC synchronous motor	141,369		141,369
1319	0603527N	41	RETRACT LARCH	82,717		82,717
1319	0603536N	42	RETRACT JUNIPER	54,887		54,887
1319	0603542N	43	RADIOLOGICAL CONTROL	1,845		1,845
1319	0603553N	44	SURFACE ASW Improved surface vessel torpedo launcher	17,343	4,500 [4,500]	21,843

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1319	0603559N	45	SSGN CONVERSION UUV integration with SSGN	24,020	20,000 [20,000]	44,020
1319	0603561N	46	ADVANCED SUBMARINE SYSTEM DEVELOPMENT Undersea Superiority System - undefined	162,953	-40,000 [-40,000]	122,953
1319	0603562N	47	SUBMARINE TACTICAL WARFARE SYSTEMS	7,125		7,125
1319	0603563N	48	SHIP CONCEPT ADVANCED DESIGN	11,899		11,899
1319	0603564N	49	SHIP PRELIMINARY DESIGN & FEASIBILITY STUDIES	27,021		27,021
1319	0603570N	50	ADVANCED NUCLEAR POWER SYSTEMS	168,373		168,373
1319	0603573N	51	ADVANCED SURFACE MACHINERY SYSTEMS			
1319	0603576N	52	CHALK EAGLE	116,230		116,230
1319	0603581N	53	LITTORAL COMBAT SHIP (LCS)	576,454		576,454
1319	0603582N	54	COMBAT SYSTEM INTEGRATION	76,975		76,975
1319	0603609N	55	CONVENTIONAL MUNITIONS	36,940		36,940
1319	0603611M	56	MARINE CORPS ASSAULT VEHICLES Regenerative filtration technology	253,675	8,500 [8,500]	262,175
1319	0603612M	57	USMC MINE COUNTERMEASURES SYSTEMS - ADV DEV	3,265		3,265
1319	0603635M	58	MARINE CORPS GROUND COMBAT/SUPPORT SYSTEM Follow-on to multipurpose assault weapon (FOTS) Non-lethal urban ops laboratory	500	32,400 [14,000]	32,900
			Clearing facilities with novel technology		[5,500]	
			Non-lethal technology weaponization		[2,900]	
			Anti-sniper infrared targeting system		[2,600]	
1319	0603654N	59	JOINT SERVICE EXPLOSIVE ORDNANCE DEVELOPMENT	34,418	[7,400]	34,418
1319	0603658N	60	COOPERATIVE ENGAGEMENT	88,135		88,135

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1319	0603713N	61	OCEAN ENGINEERING TECHNOLOGY DEVELOPMENT	24,620		24,620
1319	0603721N	62	ENVIRONMENTAL PROTECTION	21,977	5,000	26,977
			Marine mammal detection and mitigation		[5,000]	
1319	0603724N	63	NAVY ENERGY PROGRAM	1,595		1,595
1319	0603725N	64	FACILITIES IMPROVEMENT	4,158		4,158
1319	0603734N	65	CHALK CORAL	52,769		52,769
1319	0603739N	66	NAVY LOGISTIC PRODUCTIVITY	8,909		8,909
1319	0603746N	67	RETRACT MAPLE	308,708		308,708
1319	0603748N	68	LINK PLUMERIA	81,723		81,723
1319	0603751N	69	RETRACT ELM	57,036		57,036
1319	0603755N	70	SHIP SELF DEFENSE	9,592		9,592
1319	0603764N	71	LINK EVERGREEN	58,153		58,153
1319	0603787N	72	SPECIAL PROCESSES	47,908		47,908
1319	0603790N	73	NATO RESEARCH AND DEVELOPMENT	10,335		10,335
1319	0603795N	74	LAND ATTACK TECHNOLOGY	14,195		14,195
1319	0603851M	75	NONLETHAL WEAPONS	43,981		43,981
1319	0603857N	76	ALL SERVICE COMBAT IDENTIFICATION EVALUATION TEAM (A:	15,696		15,696
1319	0603860N	77	JOINT PRECISION APPROACH AND LANDING SYSTEMS	39,260		39,260
1319	0603879N	78	SINGLE INTEGRATED AIR PICTURE (SIAP) SYSTEM ENGINEER (S	36,721		36,721
1319	0603889N	79	COUNTERDRUG RDT&E PROJECTS			
1320	0604272N	80	TACTICAL AIR DIRECTIONAL INFRARED COUNTERMEASURES (C	9,956		9,956
1319	0604327N	81	HARD AND DEEPLY BURIED TARGET DEFEAT SYSTEM (HDBTDS			
1319	0604707N	82	SPACE AND ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENG	44,469		44,469
1319	0604787N	83	JOINT WARFARE TRANSFORMATION PROGRAMS	23,385		23,385

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1319	0604212N	84	OTHER HELO DEVELOPMENT	81,112		81,112
1319	0604214N	85	AV-8B AIRCRAFT - ENG DEV	15,556		15,556
1319	0604215N	86	STANDARDS DEVELOPMENT	84,308		84,308
1319	0604216N	87	MULTI-MISSION HELICOPTER UPGRADE DEVELOPMENT	48,144		48,144
1319	0604218N	88	AIR/OCEAN EQUIPMENT ENGINEERING	4,558		4,558
1319	0604221N	89	P-3 MODERNIZATION PROGRAM	7,401		7,401
1319	0604230N	90	WARFARE SUPPORT SYSTEM	2,275		2,275
1319	0604231N	91	TACTICAL COMMAND SYSTEM	51,177	2,000	53,177
			Logistics common operating picture		[2,000]	
1319	0604234N	92	ADVANCED HAWKEYE	629,682		629,682
1319	0604245N	93	H-1 UPGRADES	42,012		42,012
1319	0604261N	94	ACOUSTIC SEARCH SENSORS	29,522	3,000	32,522
			Automatic radar periscope detection and discrimination		[3,000]	
1319	0604262N	95	V-22A	206,376		206,376
1319	0604264N	96	AIR CREW SYSTEMS DEVELOPMENT	10,902		10,902
1319	0604269N	97	EA-18	409,097		409,097
1319	0604270N	98	ELECTRONIC WARFARE DEVELOPMENT	42,667		42,667
1319	0604273N	99	VHXX EXECUTIVE HELO DEVELOPMENT	935,932		935,932
1319	0604280N	100	JOINT TACTICAL RADIO SYSTEM - NAVY (JTRS-NAVY)	250,766		250,766
1319	0604300N	101	SC-21 TOTAL SHIP SYSTEM ENGINEERING	1,114,791	10,000	1,124,791
			DD(X) IPS - permanent magnet motor		[10,000]	
1319	0604307N	102	SURFACE COMBATANT COMBAT SYSTEM ENGINEERING	216,313		216,313
1319	0604311N	103	LPD-17 CLASS SYSTEMS INTEGRATION	11,443		11,443
1319	0604312N	104	TRI-SERVICE STANDOFF ATTACK MISSILE			

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1319	0604329N	105	SMALL DIAMETER BOMB (SDB)	9,965		9,965
1319	0604366N	106	STANDARD MISSILE IMPROVEMENTS	145,634		145,634
1319	0604373N	107	AIRBORNE MCM	54,659		54,659
1319	0604503N	108	SSN-688 AND TRIDENT MODERNIZATION	95,499	6,000	101,499
			Affordable towed array construction		[6,000]	
1319	0604504N	109	AIR CONTROL	10,151		10,151
1319	0604507N	110	ENHANCED MODULAR SIGNAL PROCESSOR	1,079		1,079
1319	0604512N	111	SHIPBOARD AVIATION SYSTEMS	33,029		33,029
1319	0604518N	112	COMBAT INFORMATION CENTER CONVERSION	6,908		6,908
1319	0604558N	113	NEW DESIGN SSN	155,807	44,000	199,807
			VA-class multi mission module		[30,000]	
			VA-class large aperture bow array		[10,000]	
			Network centric capability tech insertion		[4,000]	
1319	0604561N	114	SSN-21 DEVELOPMENTS	2,928		2,928
1319	0604562N	115	SUBMARINE TACTICAL WARFARE SYSTEM	40,690	7,000	47,690
			Submarine common open architecture tech insertion		[3,500]	
			Automated submarine command and control center		[3,500]	
1319	0604567N	116	SHIP CONTRACT DESIGN/ LIVE FIRE T&E	55,672		55,672
1319	0604574N	117	NAVY TACTICAL COMPUTER RESOURCES	2,220		2,220
1319	0604601N	118	MINE DEVELOPMENT	15,392		15,392
1319	0604603N	119	UNGUIDED CONVENTIONAL AIR-LAUNCHED WEAPONS			
1319	0604610N	120	LIGHTWEIGHT TORPEDO DEVELOPMENT			
1319	0604618N	121	JOINT DIRECT ATTACK MUNITION	31,826		31,826
1319	0604654N	122	JOINT SERVICE EXPLOSIVE ORDNANCE DEVELOPMENT	8,880		8,880

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1319	0604703N	123	PERSONNEL, TRAINING, SIMULATION, AND HUMAN FACTORS	3,097		3,097
1319	0604721N	124	BATTLE GROUP PASSIVE HORIZON EXTENSION SYSTEM	18,456		18,456
1319	0604727N	125	JOINT STANDOFF WEAPON SYSTEMS	13,517		13,517
1319	0604755N	126	SHIP SELF DEFENSE (DETECT & CONTROL)	45,931	5,200	51,131
			Autonomous unmanned surface vessel		[5,200]	
1319	0604756N	127	SHIP SELF DEFENSE (ENGAGE: HARD KILL)	46,026		46,026
1319	0604757N	128	SHIP SELF DEFENSE (ENGAGE: SOFT KILL/EW)	24,012	9,000	33,012
			NULKA decoy development		[9,000]	
1319	0604761N	129	INTELLIGENCE ENGINEERING	5,002		5,002
1319	0604771N	130	MEDICAL DEVELOPMENT	7,202		19,702
			Hemostatic therapy trials		12,500	
			Advanced research on QuikClot		[3,000]	
			Hemoglobin-based oxygen carrier research		[2,000]	
			Non-invasive vectored vaccine research		[4,000]	
			Non-invasive vectored vaccine research		[3,500]	
1319	0604777N	131	NAVIGATION/ID SYSTEM	52,717		52,717
1319	0604784N	132	DISTRIBUTED SURVEILLANCE SYSTEM	54,256		54,256
1319	0604800N	133	JOINT STRIKE FIGHTER (JSF)	2,393,013		2,393,013
1319	0604910N	134	SMART CARD	715		715
1319	0605013M	135	INFORMATION TECHNOLOGY DEVELOPMENT	19,150		19,150
1319	0605013N	136	INFORMATION TECHNOLOGY DEVELOPMENT	60,859		60,859
1319	0605014N	137	DEFENSE INTEGRATED MILITARY HUMAN RESOURCES SYSTEM			
1319	0605172N	138	MULTINATIONAL INFORMATION SHARING (MNIS)	33,557		33,557
1319	0605212N	139	CH-53X RDTE	271,941		271,941
1319	0605500N	140	MULTI-MISSION MARITIME AIRCRAFT (MMA)	964,067		964,067

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1319	0508713N	141	NAVY STANDARD INTEGRATED PERSONNEL SYSTEM (NSIPS)			
1319	0604256N	142	THREAT SIMULATOR DEVELOPMENT	23,918		23,918
1319	0604258N	143	TARGET SYSTEMS DEVELOPMENT	52,963		52,963
1319	0604759N	144	MAJOR T&E INVESTMENT	39,682		39,682
1319	0605152N	145	STUDIES AND ANALYSIS SUPPORT - NAVY	9,629		9,629
1319	0605154N	146	CENTER FOR NAVAL ANALYSES	49,891		49,891
1319	0605155N	147	FLEET TACTICAL DEVELOPMENT	2,266		2,266
1319	0605502N	148	SMALL BUSINESS INNOVATIVE RESEARCH			
1319	0605804N	149	TECHNICAL INFORMATION SERVICES	714		714
1319	0605853N	150	MANAGEMENT, TECHNICAL & INTERNATIONAL SUPPORT	44,847		44,847
1319	0605856N	151	STRATEGIC TECHNICAL SUPPORT	3,451		3,451
1319	0605861N	152	RDT&E SCIENCE AND TECHNOLOGY MANAGEMENT	63,508		63,508
1319	0605862N	153	RDT&E INSTRUMENTATION MODERNIZATION	1,632		1,632
1319	0605863N	154	RDT&E SHIP AND AIRCRAFT SUPPORT	77,131		77,131
1319	0605864N	155	TEST AND EVALUATION SUPPORT	320,133		320,133
1319	0605865N	156	OPERATIONAL TEST AND EVALUATION CAPABILITY	13,101		13,101
1319	0605866N	157	NAVY SPACE AND ELECTRONIC WARFARE (SEW) SUPPORT	2,829		2,829
1319	0605867N	158	SEW SURVEILLANCE/RECONNAISSANCE SUPPORT	13,030		13,030
1319	0605873M	159	MARINE CORPS PROGRAM WIDE SUPPORT	28,224		28,224
1319	0804758N	160	SERVICE SUPPORT TO JFCOM, JNTC	10,000		10,000
1319	0909999N	161	FINANCING FOR CANCELLED ACCOUNT ADJUSTMENTS	[]		[]
1319	0603660N	162	ADVANCED DEVELOPMENT PROJECTS	[]		[]
1319	0603661N	163	RETRACT VIOLET	[]		[]
1319	0101221N	164	STRATEGIC SUB & WEAPONS SYSTEM SUPPORT	90,022		90,022

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1319	0101224N	165	SSBN SECURITY TECHNOLOGY PROGRAM	44,063		44,063
1319	0101226N	166	SUBMARINE ACOUSTIC WARFARE DEVELOPMENT	8,527		8,527
1319	0101402N	167	NAVY STRATEGIC COMMUNICATIONS	31,443		31,443
1319	0203761N	168	RAPID TECHNOLOGY TRANSITION (RTT)	24,653		24,653
1319	0204136N	169	F/A-18 SQUADRONS	88,720	3,200	91,920
			Shared reconnaissance pod logistics support		[3,200]	
1319	0204152N	170	E-2 SQUADRONS	2,256		2,256
1319	0204163N	171	FLEET TELECOMMUNICATIONS (TACTICAL)	32,694		32,694
1319	0204229N	172	TOMAHAWK AND TOMAHAWK MISSION PLANNING CENTER (TM)	20,342		20,342
1319	0204311N	173	INTEGRATED SURVEILLANCE SYSTEM	23,453		23,453
1319	0204413N	174	AMPHIBIOUS TACTICAL SUPPORT UNITS (DISPLACEMENT CRAF	4,768		4,768
1319	0204571N	175	CONSOLIDATED TRAINING SYSTEMS DEVELOPMENT	42,248		42,248
1319	0204574N	176	CRYPTOLOGIC DIRECT SUPPORT	1,422		1,422
1319	0204575N	177	ELECTRONIC WARFARE (EW) READINESS SUPPORT	13,987		13,987
1319	0205601N	178	HARM IMPROVEMENT	90,832		90,832
1319	0205604N	179	TACTICAL DATA LINKS	86,364		86,364
1319	0205620N	180	SURFACE ASW COMBAT SYSTEM INTEGRATION	4,519		4,519
1319	0205632N	181	MK-48 ADCAP	21,619		21,619
1319	0205633N	182	AVIATION IMPROVEMENTS	81,546		81,546
1319	0205658N	183	NAVY SCIENCE ASSISTANCE PROGRAM	3,917		3,917
1319	0205675N	184	OPERATIONAL NUCLEAR POWER SYSTEMS	64,054		64,054

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1319	0206313M	185	MARINE CORPS COMMUNICATIONS SYSTEMS G/ATOR development USMC DCGS and Net Centric Center Critical Infrastructure Protection Center	237,081	11,800 [3,500] [4,800] [3,500]	248,881
1319	0206623M	186	MARINE CORPS GROUND COMBAT/SUPPORTING ARMS SYSTEM Expeditionary fire support system Multi-role intermediate support craft	48,409	24,500 [11,000] [9,500]	72,909
1319	0206624M	187	MARINE CORPS COMBAT SERVICES SUPPORT Ultrasonic consolidation of embedded sensors Battlefield management system	10,476	1,500 [4,000] [1,500]	11,976
1319	0207161N	188	TACTICAL AIM MISSILES	9,384		9,384
1319	0207163N	189	ADVANCED MEDIUM RANGE AIR-TO-AIR MISSILE (AMRAAM)	3,584		3,584
1319	0301303N	190	MARITIME INTELLIGENCE	[]		[]
1319	0301323N	191	COLLECTION MANAGEMENT	[]		[]
1319	0303217N	192	TECHNICAL RECONNAISSANCE AND SURVEILLANCE	[]		[]
1319	0303109N	193	SATELLITE COMMUNICATIONS (SPACE)	541,980		541,980
1319	0303140N	194	INFORMATION SYSTEMS SECURITY PROGRAM	28,660		28,660
1319	0303158N	195	JOINT COMMAND AND CONTROL PROGRAM (JC2)	5,000		5,000
1319	0304111N	196	SPECIAL ACTIVITIES	[]		[]
1319	0305149N	197	COBRA JUDY	121,261		121,261
1319	0305160N	198	NAVY METEOROLOGICAL AND OCEAN SENSORS-SPACE (METO)	9,122		9,122
1319	0305188N	199	JOINT C4ISR BATTLE CENTER (JBC)	55,326		55,326
1319	0305192N	200	JOINT MILITARY INTELLIGENCE PROGRAM - DEFENSE INTELLIC	4,290		4,290

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1319	0305204N	201	TACTICAL UNMANNED AERIAL VEHICLES (JMIP) Additional six Firescout VTUAVs and sensors	99,349	39,000 [39,000]	138,349
1319	0305205N	202	ENDURANCE UNMANNED AERIAL VEHICLES			
1319	0305206N	203	AIRBORNE RECONNAISSANCE SYSTEMS (JMIP)	27,918		27,918
1319	0305207N	204	MANNED RECONNAISSANCE SYSTEMS (JMIP)	21,322		21,322
1319	0305208N	205	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS (JMIP) DCGS integration with AFATDS	12,354	3,200 [3,200]	15,554
1319	0307207N	206	AERIAL COMMON SENSOR (ACS) (JMIP)	133,642		133,642
1319	0308601N	207	MODELING AND SIMULATION SUPPORT	6,812		6,812
1319	0702207N	208	DEPOT MAINTENANCE (NON-IF)	10,012		10,012
1319	0708011N	209	INDUSTRIAL PREPAREDNESS	57,753		57,753
1319	0708730N	210	MARITIME TECHNOLOGY (MARITECH) National shipbuilding research program - ASE		10,000 [10,000]	10,000
1319	XXXXXXXX	999	CLASSIFIED PROGRAMS	1,125,515		1,125,515
Total, RDT&E Navy				18,037,991	360,100	18,398,091

Navy university research

The budget request included \$75.9 million in PE 61103N, for university research initiatives. The committee is concerned with the low priority placed on long-term research on naval sciences by the Department of Defense. The development of faster, more efficient, and durable systems for the naval environment requires increases in targeted research on multifunctional advanced composites, innovative sensors technology, advanced engineered materials, and blast resistant composites. These research projects have the potential to address current threats by providing energy absorbing ship hulls, blast resistant grid and foam stiffened structures, and advanced remote sensing at higher resolutions. Additional basic science in the pursuit of breakthroughs at the intersection of engineering, computer science, and neuroscience shows promise in providing seamless control of unmanned systems.

The committee recommends an increase of \$8.0 million in PE 61103N for university basic defense research, including \$2.5 million to accelerate exploration of multifunctional materials; \$2.5 million for advanced remote sensing; \$1.0 million for blast and impact resistant composites; and \$2.0 million for neural engineering for human-machine interfaces.

Navy science and technology outreach

The budget request included \$15.5 million in PE 61152N, for In-House Laboratory Independent Research, which supports intramural Navy research and efforts to revitalize the workforce for key science and technology capabilities. As many future military systems continue to increase in technological complexity, a robust workforce with discipline-specific scientific skills and knowledge is necessary. The Navy's special needs in areas such as ocean sciences, advanced materials, and electronics will be met through the participation of current Navy laboratory personnel in training and mentoring the next generation of scientists and engineers. Training researchers and innovators is a long-term project requiring near-term attention.

The committee recommends an increase in PE 61152N of \$3.0 million to support continuation of a pilot program—Naval Research Science and Technology for America's Readiness (N-Star). N-Star leverages the resources and expertise available in Navy facilities to engage and mentor students who have science and engineering aptitude and interests.

Free electron laser

The budget request included \$94.4 million in PE 62114N, for power projection applied research, including \$10.0 million for directed energy and the free electron laser. The committee recommends an increase of \$5.0 million in PE 62114N for accelerated research and development of high power free electron laser (FEL) devices based on the successful demonstration of high power FELs using energy recovered from the super-conducting accelerator technology. The Navy identified free electron lasers as a possible future directed energy weapon for the defense of Navy assets.

Littoral and undersea security

The budget request included \$101.7 million in PE 62123N, for force protection applied research. Navy ships and infrastructure are vulnerable to attack from suicide divers and other asymmetric hazards. Existing systems to detect and defeat such threats require constant monitoring and fixed installations. Research programs exploring alternatives, such as high frequency passive acoustic arrays and special cameras and sensors, have the potential to provide automatically monitored, easily constructed, portable, and reliable systems. The committee recommends an increase of \$4.3 million in PE 62123N for exploration of undersea security options, including \$2.0 million for development of a prototype real-time high frequency acoustic processor and \$2.3 million for undersea perimeter security technologies.

Nanomagnetic materials

The budget request included \$101.7 million in PE 62123N, for force protection applied research. Future naval capabilities such as the electric warship require significant amounts of electric power for propulsion, on-board power consumption, and ship-based use of power by military aircraft. The Navy needs new technology solutions capable of meeting the demanding performance requirements of high power density machines and power electronics. Current electrical power systems use magnetic materials developed for lower power demand functions. The committee recommends an increase of \$2.0 million in PE 62123N for development of nano-engineered materials with unprecedented magnetic properties, mechanical strength, and temperature capabilities.

Polymeric aircraft components

The budget request included \$101.7 million in PE 62123N, for force protection applied research. Polymeric aircraft components provide the Navy with an option for lower cost, lightweight aircraft. The committee recommends an increase of \$2.0 million in PE 62123N to support the Navy's efforts to develop technologies for production of polymeric aircraft components.

Small watercraft propulsion demonstrator

The budget request included \$101.7 million in PE 62123N, for force protection applied research. The Navy requires a fast, unmanned watercraft to launch and recover unmanned underwater vehicles in hostile environments. The committee recommends an increase of \$3.0 million in PE 62123N for research on and fabrication of a small watercraft propulsion demonstrator with a 60-knot retrieval capability.

Advanced combat headborne system

The budget request included \$37.6 million in PE 62131M, for Marine Corps landing force technology and \$56.4 million in PE 63640M, for Marine Corps advanced technology demonstrations. As part of an initiative in blast injury prevention, mitigation, and treatment, the committee recommends an increase of \$1.0 million in PE 62131M and \$1.0 million in PE 63640M to meet a Marine Corps requirement to expand and accelerate the research and de-

sign of an advanced integrated combat headborne system. The redesigned system would improve form, fit, and function; and increase protection to the eye, face, neck, and head, while maintaining comfort, communications integration, and weight reduction.

Critical area protection systems

The budget request included \$57.7 million in PE 62235N, for common picture applied research. The committee recommends an increase of \$2.0 million in PE 63235N for critical area protection systems for high resolution situational awareness to support antiterrorism and force protection missions. These systems could provide land-based antiterrorism and force protection units with persistent surveillance capabilities and a common operating picture.

SensorNet

The budget request included \$57.7 million in PE 62235N, for common picture applied research. The U.S. Government, the nation's laboratories, and industry are showing progress in developing and improving sensing capabilities. Full utilization of these capabilities requires communication and research on and development of a prototype information architecture for connection of sensors. The committee recommends an increase of \$12.0 million in PE 62235N for continuation of SensorNet, a project to demonstrate sensor-linking within an installation and from facility to facility.

Space research

The budget request included \$57.7 million in PE 62235N, for common picture applied research. The committee recommends a reduction of \$7.5 million in this account for a newly initiated program of space research as part of the Innovative Naval Prototype program. The committee believes that new space research efforts should be carefully coordinated with other space programs in the Department of Defense and should be consistent with the overall Department Space Science and Technology Strategy.

Automated video threat recognition

The budget request included \$82.8 million in PE 62236N, for warfighter sustainment applied research. The accelerated need for persistent surveillance in a variety of situations led the Navy to increase emphasis on alternatives to active radars. Video, as a passive sensor, could serve threat detection needs for naval facilities, ports, and other areas in which even the most alert human sentry may fail to identify every approaching danger. The committee recommends an increase in PE 62236N of \$2.5 million for transition of a successfully completed Phase II Small Business Innovative Research program to develop an automated video surveillance threat recognition algorithm.

Multifunctional composite structures

The budget request included \$82.8 million in PE 62236N, for warfighter sustainment applied research. The Navy's increased interest in using advanced composites for ship construction is designed to produce components with reduced electronic and acoustic

signatures and lower total ownership costs. Existing and developing composite material technologies present an opportunity to enhance seaframe speed, agility, safety, and tactical advantage. The committee recommends an increase of \$3.5 million in PE 62236N for development of new systems and techniques for the rapid implementation of multifunctional composite structures.

Portable water bio-defense

The budget request included \$82.9 million in PE 62236N, for warfighter sustainment applied research. Current biological warfare detector technology applicable to water analysis is generally large, stationary, and time consuming. The committee recommends an increase of \$3.0 million in PE 62236N for a rapid, portable, accurate detection capability for biological warfare agents in water.

Seabasing research

The budget request included \$82.9 million in PE 62236N, for warfighter sustainment applied research, including a new start of \$13.9 million for seabasing research. The committee recommends a reduction of \$5.0 million in this account for the newly initiated research program on seabasing technologies. The committee is concerned that this new program is not well defined to support seabasing concepts of operation, which are still under development by the Navy.

Gallium nitride radio frequency power

The budget request included \$47.3 million in PE 62271N, for radio frequency (RF) systems applied research. The Department of Defense requires enhanced RF power performance for a range of current and next generation systems, including surface naval radars, airborne communications systems, airborne radars, and electronics. Gallium nitride RF power has the potential to provide higher power density, higher temperature operation, and increased bandwidth, compared to current RF technologies. The committee recommends an increase of \$2.0 million in PE 62271N for gallium nitride RF power technologies.

Integrated littoral sensor network

The budget request included \$71.5 million in PE 62435N, for force protection advanced technology, but no funding specifically for testing of a portable suite of sensors to counter water borne and other hazards in the littorals. Detection, characterization, and location of man-made and natural waterborne hazards and threats, including pathogens and toxins, is an immediate national security need. The committee recommends an increase in PE 62435N of \$2.5 million for generation of a set of tools with portable sensors designed to improve accuracy and timeliness of short- and long-term detection of hazards in coastal waters and ports.

Coordination and integration of unmanned system teams

The budget request included \$49.5 million in PE 62782N, for mine and expeditionary warfare applied research. As unmanned systems continue to evolve and perform more dangerous and time consuming tasks on behalf of the warfighter, such systems must

work individually, or in groups, in a manner that does not place an additional burden on the operator. Increased fundamental science and engineering focused on the tough problems of enabling autonomous cooperation within different groups of unmanned vehicles would ensure these tools reach expected potential as assets to the warfighter. The committee recommends an increase in PE 62782N of \$3.0 million for work to integrate and coordinate teams of unmanned vehicles.

Information sharing for intelligence, surveillance and reconnaissance

The budget request included \$82.5 million in PE 63114N, for power projection advanced technology. The Navy possesses the technology to effectively target and destroy fixed assets using global position system guided weapons. This capability is limited by target concealment or motion. Real-time tracking, precision location, and in-flight command and control of weapons systems continue to pose problems.

The committee recommends an increase of \$3.0 million in PE 63114N to accelerate research and development of a robust airborne and ground information processing architecture. The system would support multiple-source and simultaneous collection of data for aircraft on intelligence, surveillance, reconnaissance, targeting, and engagement (ISRTE) operations. The architecture would have the capacity to handle numerous and different electronic files such as large imagery files, geographical information, intelligence reports, and data received from multiple platforms and would advance an important aspect of the Navy intelligence, surveillance, and reconnaissance plan for engagement of mobile targets.

Force protection advanced technology

The budget request included \$71.5 million in PE 63123N for forced protection advanced technology. This program addresses applied research associated with providing the capability of platform and force protection technologies for all naval platforms.

The budget request included no funding for wireless sensor technology for the intelligent monitoring of the health of shipboard equipment and machinery. This is a key component to reduce workloads, and it could be inserted into one of the programmed sea trials for newly delivered ships. The committee recommends an increase of \$2.0 million in PE 63123N to develop, install, and support a number of intelligent component health monitoring systems in a sea trial.

The budget request included no funding for development of a mobile manufacturing and repair cell. This cell would reduce operating and support costs while maintaining equipment readiness in theater. It could be deployed by ship and large ground vehicles, and would provide precision, on-demand manufacturing of critical parts. The committee recommends an increase of \$5.0 million in PE 63123N for the development of a mobile manufacturing and repair cell.

The budget request included no funding for the continued development of wide bandgap semiconductor substrate materials. These materials offer capability for higher power and higher frequency

operation in high temperature environments across a broad spectrum of applications. The committee recommends an increase of \$8.0 million in PE 63123N for the continued development of wide bandgap semiconductor substrate materials.

The budget request included no funding for a small, light system for small arms acoustic and infrared flash detection and remote threat response to enemy small arms fire against our Marines. The committee recommends an increase of \$3.9 million in PE 63123N to develop a prototype and test such a system.

The budget request included no funding for the continued design and risk assessment and development of prototypes for high temperature superconducting (HTS) generators. The reduced size of HTS generators would increase flexibility in ship architecture, provide enhanced power density and transient response, and improve overall ship performance and survivability. The committee recommends an increase of \$5.0 million in PE 63123N for the continued development of HTS generators.

The budget request included no funding for the continued development of a ship service fuel cell (SSFC). An advanced prototype fuel cell power system demonstrator has been developed. Additional performance characterization of the demonstrator is required, followed by endurance and latent defect testing at the DD(X) land-based engineering site. The committee recommends an increase of \$6.0 million in PE 63123N for the continued development of a SSFC.

The committee recommends a total authorization of \$101.4 million in PE 63123N for force protection advanced technology.

Improved shipboard combat information center

The budget request included \$60.6 million in PE 63235N, for common picture advanced technology. Command Information Center (CIC) duty officers receive large quantities of critical data, especially during combat operations. They must comprehend and process this information quickly. The committee recommends an increase of \$4.0 million in PE 63235N for near-term development of an improved shipboard CIC and to demonstrate integration of emerging technologies in automation to improve operations for multiple current and future platform designs.

Warfighter sustainment advanced technology

The budget request included \$68.5 million in PE 63236N for the development of warfighter sustainment advanced technology, but included no funding for body armor development or for automated container and cargo handling systems.

While protective vests have saved many lives, there is a requirement for flexible, lightweight, full body armor that will protect limbs as well. The committee recommends an increase of \$3.0 million in PE 63236N for the development of full body protective apparel.

The Navy and Marine Corps continue to develop a concept of operations for sea basing. One of the technical hurdles that must be achieved to turn this concept into reality is the transfer of cargo at sea, in varying sea states. There have been some subscale technologies tested as small business innovative research programs,

but this needs to evolve to full-scale testing of automated container and cargo handling systems. The committee recommends an increase of \$4.0 million in PE 63236N for the development of automated container and cargo handling systems.

The committee recommends a total authorization of \$75.5 million in PE 63236N.

Navy persistent surveillance

The budget request included \$70.1 million in PE 63271N, for radio frequency (RF) systems advanced development. Real-time precision target radar supports the Navy's time critical strike mission. The committee recommends an increase of \$3.0 million in PE 63271N to fully configure the APY-6 radar to meet broad area maritime surveillance and other emerging unmanned aerial vehicle requirements.

The Navy pursues electronic attack (EA) capabilities for a variety of missions with air, sea, and land applications. The Department of Defense Unmanned Aerial Vehicle Roadmap recommends development and operational assessment of an unmanned combat aerial vehicle capable of performing several missions including EA. To augment existing systems while extending the life of current low-density/high-demand electronic attack assets, the committee recommends an increase of \$3.0 million in PE 63271N for an acceleration of joint unmanned aerial vehicle electronic attack capabilities.

Armored patrol vehicle

The budget request included \$56.4 million in PE 63640M, for Marine Corps advanced technology demonstrations. Additional research to capture emerging technologies in the areas of mobility, materials, power generation, propulsion, survivability, durability, signature reduction, and modularity will speed protection systems for an expanded class of vehicles. The committee recommends an increase of \$3.0 million in PE 63640M for initial development of an armored patrol vehicle to address threats posed by blast, projectiles, and shock waves.

Laser integrated target engagement system

The budget request included \$56.4 million in PE 63640M, for Marine Corps advanced technology demonstrations. The committee recommends an increase of \$5.2 million in PE 63640M for a Marine Corps unfunded requirement to modify the laser integrated target engagement system (LITES). The program would finance one prototype and laboratory testing of a Marine Corps version of the Air Force forward air controllers capability.

Water purification system

The budget request included \$56.4 million in PE 63640M, for Marine Corps advanced technology demonstrations. Air deliverable, high capacity water purification systems meet a critical need during all military missions. Research on high efficiency, compact technology will help alleviate the significant logistical burden of transporting water. The committee recommends an increase in PE 63640M of \$7.0 million for final development and production of expeditionary warfare water purification systems.

Modeling and simulation for urban operations

The budget request included \$187.9 million in Research, Development, Test, and Evaluation, Navy, for Joint Experimentation, in PE 63727N, but did not include sufficient funding to continue development of the modeling and simulation for urban operations program. The committee notes that such a capability is of great importance to battlefield commanders facing complex urban environments such as that faced by U.S. Armed Forces in Fallujah, Iraq last year. Preliminary work has been initiated on such a capability with promising results, both for battlefield commanders and for defense and homeland security officials charged with planning for consequence management of potential terrorist attacks on the homeland. The modeling and simulation for urban operations program is the second highest priority of the Commander, U.S. Joint Forces Command, for additional funding.

The committee recommends an increase of \$9.9 million in PE 63727N, to continue development of the modeling and simulation for urban operations program.

Surface Navy integrated undersea tactical technology

The budget request included \$122.1 million in PE 63502N for surface and shallow water mine countermeasures, but included no funding for the surface Navy integrated undersea tactical technology (SNIUTT) program. SNIUTT would provide surface ship mine countermeasures sonar operators with the simulated training necessary to recognize mine-like contacts. This concept was originally used by aviation mine countermeasures sonar operators, and SNIUTT would leverage this former program. The committee recommends an increase of \$2.0 million in PE 63502N for SNIUTT.

Shipboard system component development

The budget request included \$22.2 million in PE 63513N for shipboard system component development, including \$9.2 million for the development of integrated power systems. The budget request included no funding specifically for either the amorphous metal permanent magnet generator (PMG) set or the high temperature superconductor alternating current (HTS-AC) synchronous marine propulsion motor.

An amorphous metal PMG would reduce both weight and size when compared to conventional generator sets. Additional funding would upscale the current 30 kilowatt prototype to 750 kilowatts. The committee recommends an increase of \$1.5 million in PE 63513N for the amorphous metal PMG.

A 36.5 megawatt HTS-AC synchronous marine propulsion prototype motor is being fabricated and tested. A follow-on effort can be initiated to modify the motor and power electronic drive system designs to meet the evolving specifications of the Navy's newest surface combatants. The committee recommends an increase of \$8.0 million in PE 63513N for the continued development of the HTS-AC synchronous marine propulsion motor.

The committee recommends a total authorization of \$31.7 million in PE 63513N.

Improved surface vessel torpedo launcher

The budget request included \$17.3 million in PE 63553N for anti-submarine warfare advanced development, but included no funding for the improved surface vessel torpedo launcher. This launcher would use an automotive airbag inflator launch concept in a new launcher, contoured into the deck of future ships. Additional funding would allow testing of the production model of the breech replacement version of the launcher. The committee recommends an increase of \$4.5 million in PE 63553N for the advanced development of the improved surface vessel torpedo launcher.

Guided missile submarine conversion

The budget request included \$24.0 million in PE 63559N for design work for guided missile submarines (SSGN). Four former Ohio-class ballistic submarines are currently being converted into this new class of submarine, which will have the capability to provide covert striking power against targets ashore and to covertly deliver and support an expeditionary force on land.

One of the most promising technologies for the SSGNs will be the ability to deploy unmanned undersea vehicles. To capitalize on the experimentation to demonstrate feasibility that has already been completed, additional funding is required to develop and experiment with the requisite stowage, launch, and recovery systems to gain understanding of ship integration technologies. The large displacement mission reconfigurable unmanned undersea vehicle (LD-MRUUV) would provide flexibility to deploy new payloads and sensors. The committee recommends an increase of \$20.0 million in PE 63559N for integration of LD-MRUUV into the SSGN as part of the conversion program.

Advanced submarine system development

The budget request included \$163.0 million in PE 63562N for advanced submarine system development. Of this amount, \$50.0 million is for the design of a future undersea superiority system alternative to the reduced submarine program to include consideration of new propulsion systems. The committee is aware that this effort was directed by the Department of Defense shortly before submission of the budget request, and that it was also directed that these funds not just be added to existing systems. No specific plans on the use of these funds have been provided to the committee.

The committee has received a study on Fleet Platform Architecture that was prepared by the Office of Force Transformation in response to section 216 of the National Defense Authorization Act for Fiscal Year 2004 (Public Law 108-136), and is aware that this study recommends investigating alternate propulsion systems for submarines.

In written testimony before the Subcommittee on Seapower of the Committee on Armed Services, the Congressional Research Service addressed alternate propulsion systems for submarines. The air-independent propulsion equipped non-nuclear-powered submarine would offer increased low speed submerged endurance over the conventional diesel-electric, but comparable submerged endurance at high speed. The testimony concluded that these alternatives to nuclear-powered submarines are not well suited for sub-

marine missions that require: (1) long, completely stealthy transits from home port to the theater of operation; (2) submerged periods in the theater of operation lasting more than two or three weeks; or (3) submerged periods in the theater of operation lasting more than a few hours or days that involve moving the submarine at something more than low speed. The committee is concerned with the reduced capabilities and lack of operational flexibility the submarine forces would possess with these new propulsion systems.

The committee is also aware of and supports the "Tango Bravo" program, being conducted jointly by the Navy and the Defense Advanced Research Projects Agency (DARPA). The technologies being investigated in this program include shaftless propulsion and weapons external to the pressure hull, all of which could contribute to a smaller, less expensive nuclear-powered submarine with capabilities equivalent to those of the *Virginia*-class submarine.

Numerous analyses have supported an attack submarine force of at least 55 boats. However, the Secretary of the Navy, in an interim report to Congress on the annual long-range plan for the construction of naval vessels, projects that the number of attack submarines required in the future will be between 37 and 41 boats. The committee is concerned that this reduced number of submarines will fall short of the number required by the combatant commanders. The committee believes that funds at this time should be directed at the class of submarines currently in production, and that the production rate should be increased above that shown in the Future Years Defense Program as soon as possible.

The committee recommends a decrease of \$40.0 million in PE 63562N, specifically in the future undersea superiority system project for development of propulsion alternatives, and that the remaining funding be used to complement the development of technologies being investigated in the Tango Bravo program by DARPA.

Regenerative filtration technology

The budget request included \$253.7 million in PE 63611M for the Expeditionary Fighting Vehicle (EFV), but no funding for regenerative filtration technology. Recent advances in nuclear, biological, and chemical filtration technology have brought about the development of regenerative systems that use canisters with chemical beds that can be used and cleaned while the vehicle is operating. Current technology requires filter replacement in a secure environment. In fiscal year 2005, the Marine Corps completed Phase I of the plan to develop a regenerative filtration system for the EFV, which will provide three units of the prototype system for testing. Phase II of this project consists of the completion of the system development and demonstration phase of the project. The committee recommends an increase of \$8.5 million in PE 63611M for acceleration of Phase II of regenerative filtration technology development, for a total authorization of \$262.2 million.

Marine Corps ground and supporting arms systems

The budget request included \$500,000 in PE 63635M, for the development of the follow-on to shoulder-launched multi-purpose as-

sault weapon (FOTS), but no funding for the development of non-lethal weapons nor a sniper detection system.

The FOTS program will qualify and field an accurate, shoulder-fired, assault weapon designed to defeat a variety of ground targets on the battlefield, particularly in urban environments like those encountered by Marine Corps forces engaged in Operation Iraqi Freedom and Operation Enduring Freedom. FOTS will replace the Shoulder-Launched Multi-Purpose Assault Weapon, which has been in the Marine Corps inventory for over 20 years. The committee believes the Marine Corps needs to accelerate the development of this weapon system.

Nonlethal weapon development includes research in support of clearing facilities with novel technology and nonlethal and scalable weaponization. These initiatives aim to minimize collateral damage to infrastructure and personnel, while neutralizing facilities and the threats that might be posed to these facilities and the personnel that occupy them. Additionally, an urban operations environmental laboratory will provide assessment and analysis of the affects of nonlethal technologies to ensure minimum environmental and collateral damage when used in urban activities. The committee believes that the Marine Corps must have a broad range of responses to contain and manage emerging threats before, during, and after conflict, and with minimum collateral damage. Therefore, the committee supports these initiatives.

The Marine Corps requires a means to locate hostile fire to address survivability for forces in urban environments such as Iraq. No existing system can locate sources of sniper fire quickly and dependably. However, the committee believes that technology exists to develop a system that uses a thermal source-of-fire indicator to pinpoint the location from which a shot has been fired.

The committee notes that the Commandant of the Marine Corps has identified additional funding for FOTS development, nonlethal weapon development, and a sniper detection system development on his unfunded priorities list.

The committee recommends the following:

- (1) an increase of \$14.0 for FOTS development;
- (2) an increase of \$5.5 million for the nonlethal weapons urban operations laboratory to expand the assessment, analysis, neutralization, and development of capabilities to ensure minimum environmental and collateral damage with nontraditional and traditional capabilities;
- (3) an increase of \$2.9 million to conduct research in support of clearing facilities with novel technology;
- (4) an increase of \$2.6 million for nonlethal technology weaponization to conduct additional research, education, and training to meet the goals of modern nonlethal and scalable options for Marine Corps forces deployed around the world; and
- (5) an increase of \$7.4 million to develop an anti-sniper infrared targeting system.

The committee recommends a total authorization of \$32.9 million in PE 63635M.

Marine mammal detection and mitigation

The budget request included \$4.54 million in PE 63721N, for environmental protection. The committee notes that there continues to be intense interest in the issue of sonar and other sound impacts on marine mammals. Research of this type will increase the scientific body of knowledge necessary to maintain the combat training necessary for military readiness while also protecting marine mammals. Better systems to detect marine mammals will aid in development of systems and procedures to mitigate potential impacts. Data collected from such systems will also be invaluable in better understanding migration routes, population densities, and habits.

The committee recommends an increase of \$5.0 million in PE 63721N for marine mammal detection and mitigation.

Navy logistics common operating picture

The budget request included \$51.2 million in PE 64231N for the Tactical Command System, but contained no funding for the Navy logistics common operating picture (LOGCOP). Navy LOGCOP is a logistics decision support and management tool based on predictive software technology that was developed under a Navy-sponsored small business innovative research program. The committee recommends an increase of \$2.0 million in PE 64231N for the development of Navy LOGCOP.

Automatic radar periscope detection and discrimination

The budget request included \$29.5 million in PE 64261N for acoustic search sensors, including \$12.2 million for the automatic radar periscope detection and discrimination (ARPDD) project. ARPDD provides a fully automated periscope detection, classification, and tracking capability to reliably detect periscopes and masts in complex, cluttered environments. The committee recommends an increase of \$3.0 million in PE 64621N to accelerate the ARPDD project.

DD(X) destroyer integrated propulsion system

The budget request included \$1,114.8 million in PE 64300N for DD(X) destroyer total ship systems engineering. The budget request included no funding for completing the development of the integrated power system for this ship, since final developmental testing of the integrated power system is expected to be completed in fiscal year 2005 prior to the ship's critical design review and the subsequent transition of funding to the Shipbuilding & Conversion, Navy account for detail design.

In proof of concept tests prior to shipment to the Navy's land-based test facility, the primary propulsion motor planned for the integrated power system, the permanent magnet motor (PMM), experienced a failure. The failure was determined to be caused by insulation, resulting in damage to the stators of the motor. To maintain schedule to meet the ship critical design review, the Navy has decided to fall back to an alternate propulsion motor, the advanced induction motor (AIM), for demonstration at the land-based test facility. Use of the AIM would add 300 tons to the weight of the DD(X). Funding is not adequate to pursue both technologies.

The committee believes that continued development of the PMM is warranted, if not for incorporation in the lead ship, for incorporation in following ships. The committee recommends an increase of \$10.0 million in PE 64300N for continued development and testing of the PMM for the DD(X) destroyer.

Affordable towed array construction

The budget request included \$95.5 million in PE 64503N for submarine systems equipment development, but included no funding for the continued development of new, highly reliable, low cost fiber optic towed arrays. Funding is required to accelerate system performance verification testing, demonstrate array architectural flexibility, implement automated manufacturing equipment, and qualify commercial suppliers. The committee recommends an increase of \$6.0 million in PE 64503N for the development of affordable towed array construction.

New Design SSN

The budget request included \$155.8 million in PE 64558N for the continuing development of the *Virginia*-class submarine. The development efforts in this program are to evaluate a broad range of system and technology alternatives to directly support and enhance the mission capability of this class of submarine.

The budget request included no funding to develop the multi-mission module concept, with the focus to identify flexible payload concepts. The committee believes that the baseline *Virginia*-class design allows for integration of innovative payloads and sensors, which would enhance its capability. The committee recommends an increase of \$30.0 million in PE 63558N for multi-mission module development.

The budget request included no funding to develop a large aperture bow array for the *Virginia*-class submarine. This array has the potential to allow for the rapid insertion and spiral development of future sensor technologies, increasing sonar performance at a lower cost than the current spherical array. The committee recommends an increase of \$10.0 million in PE 64558N for development of a large aperture bow array.

The budget request included no funding to transition the small business innovative research programs for advanced processing builds and multipurpose processor rapid commercial, off-the shelf insertion. Transition of these efforts would lead to an infrastructure for the *Virginia*-class submarine that could support insertion of network-centric intelligence, surveillance, and reconnaissance. The committee recommends an increase of \$4.0 million in PE 64558N for network-centric capability technology insertion.

The committee recommends a total authorization of \$199.8 million in PE 64558N.

Submarine tactical warfare system

The budget request included \$40.7 million in PE 64562N for submarine tactical warfare systems development. This program develops commercial, off-the-shelf based software and hardware upgrades to integrate improved weapons and tactical control capabilities for all submarine classes.

The budget request included no funding specifically for the insertion of common open architecture technology. Open architecture is key to enabling timely weapons system software upgrades. The committee recommends an increase of \$3.5 million in PE 64562N for submarine common open architecture technology insertion.

The budget request included no funding to initiate the development of the automated submarine command and control center. This development would reduce the number of personnel necessary for submarine attack center operations. The committee recommends an increase of \$3.5 million in PE 64562N for development of the automated submarine command and control center.

The committee recommends a total authorization of \$47.7 million in PE 64562N.

Autonomous unmanned surface vessel

The budget request included \$45.9 million in PE 64755N for detection and control for ship self-defense, but included no funding for the continued development of the autonomous unmanned surface vessel (AUSV), which is being developed as a concept demonstrator for potential anti-terrorism force protection missions and to protect harbors and coastal facilities. The committee recommends an increase of \$5.2 million in PE 64755N for the continued development of the AUSV.

NULKA anti-ship missile decoy development

The budget request included \$24.0 million in PE 64757N for development of soft kill technologies for ship self-defense and \$1.0 million for the continuing development of the NULKA decoy. NULKA is an offboard, active decoy designed to counter a wide variety of present and future radar-guided anti-ship missiles. Continued development of NULKA is necessary to counter anti-ship missiles that may migrate to other frequency bands or use dual mode seekers. The committee recommends an increase of \$9.0 million in PE 64757N for the continued development of the NULKA decoy.

Navy medical research

The budget request included \$7.2 million in PE 64771N, for medical development. The Department of Defense medical research continues to produce results in the form of vaccines and treatments to address the threat posed by biological weapons and naturally occurring illnesses in areas of military operation. Enhanced distribution techniques and more efficient delivery of treatments would further reduce logistical and personnel requirements, while increasing protection. The committee recommends an increase of \$3.5 million in PE 64771N for non-invasive vectored vaccine research to explore a new approach to production of a consistent, highly immunogenic, and easily manufactured and administered vaccine.

Research on methods to prevent and address severe blood loss due to combat injuries challenges both the Army and Navy medical communities. Various blood preservation developments combined with innovations in blood loss treatments and blood replacement therapies yield life saving advances. Additional work in these areas would reduce treatment side effects and prolong the viability of blood substitutes. The committee recommends an increase of \$9.0

million in PE 64771N, including \$3.0 million to facilitate hemostatic therapy trials; \$2.0 million for advanced research and development to improve the QuickClot treatment for internal use; and \$4.0 million for evaluation of the safety and efficacy of a room and elevated temperature stable hemoglobin-based oxygen carrier.

Shared Reconnaissance Pod logistics support

The budget request included \$88.7 million in PE 24136N for F/A-18 improvements, but included no funding for Shared Reconnaissance Pod (SHARP) logistics support. The SHARP system is an electro-optical/infrared system that is capable of collecting long- and medium-range imagery and can record or data link the imagery to provide the combatant commander information with which to identify possible targets. The development of logistics support for 21 SHARP systems—including interactive electronic technical manuals, completion of specific tasks associated with the Automated Maintenance Environment, and fleet aircrew and maintenance training curricula and maintenance training aids—are required for SHARP to achieve full operational capability. SHARP logistics support is included on the Chief of Naval Operations' unfunded priorities list. The committee recommends an increase of \$3.2 million in PE 24136N for SHARP logistics support.

Marine Corps communications systems

The budget request included \$237.1 million in PE 26313M, for communications systems development, including \$18.3 million for the development of the ground/air task orientated radar (G/ATOR) and \$5.8 million for the development of the distributed common ground/surface system (DCGS). The budget request included no funding for the Critical Infrastructure Protection Center (CIPC).

The G/ATOR program is a single material solution for the Multi-Role Radar System (MRRS) and Ground Weapons Locator Radar (GWLR) requirements that replaces and consolidates the capability of numerous legacy radars, including the AN/TPS-63 air surveillance, AN/MPQ-62 force control, AN/TPS-73 air traffic control, and AN/UPS-3 air defense radar systems. Current radar performance does not meet operational forces' requirements. Additional funding for G/ATOR development is on the Commandant of the Marine Corps' unfunded priorities list. The committee recommends an increase of \$3.5 million in PE 26313M for G/ATOR.

The DCGS is a collection of service systems that will contribute to joint and combined war fighter needs for intelligence, surveillance and reconnaissance support. The DCGS integrated backbone (DIB) is the architecture that will tie the services' DCGS systems together into one family of systems. The committee notes that the Marine Corps portion of the DCGS has not been integrated into the DIB. The committee recommends an increase of \$4.8 million in PE 26313M to complete integration efforts.

The mission of CIPC is to foster system security engineering solutions for critical infrastructure protection by integrating information operations, emergency management, and other critical infrastructure protection initiatives. The committee notes that the Marine Corps has an ongoing requirement to perform information systems security functions that could be addressed by the CIPC. The

committee recommends an increase of \$3.5 million in PE 26313M, for information system security development.

The committee recommends a total authorization of \$248.9 million in PE 26313M.

Marine Corps ground combat and supporting arms systems

The budget request included \$48.4 million in PE 26623M for the development of Marine Corps ground combat and supporting arms systems, including \$1.8 million for the Family of Raid and Reconnaissance equipment program and \$7.1 million for the Expeditionary Fire Support System (EFSS), but no funding for the Light Armored Vehicle (LAV) Sense and Respond Support System.

EFSS will be the primary indirect fire support system for the vertical assault element of the ship-to-objective maneuver force and is intended to fill the third “leg” of the Marine Corps’ indirect fires triad, complementing longer-range systems such as the M777 155mm lightweight towed Howitzer and the High Mobility Artillery Rocket System. Munition development lags equipment development. Additional funding for EFSS is on the Commandant of the Marine Corps’ unfunded priorities list. The committee recommends an increase of \$11.0 million to modify existing munitions from the family of 120mm rifled mortar rounds for use with EFSS.

The Family of Raid and Reconnaissance equipment program supports the research, development, and procurement actions for multiple airborne and specialized reconnaissance-related programs. Without a flexible multi-mission support platform, the Marine Corps cannot take full advantage of its recent investment in the Underwater Reconnaissance Capability (URC). URC consists of an advanced diver propulsion device, state-of-the-art hydrographic mapping equipment, and other critical maritime reconnaissance equipment to include the Multi-Role Intermediate Support Craft (MRISC), a replacement for the outdated and inefficient Combat Rubber Raiding Craft. The Marine Corps is currently evaluating commercial, off-the-shelf variants and additional funding would accelerate that evaluation. The committee recommends an increase of \$9.5 million for the MRISC.

For the last two years, the Marine Corps has been studying the creation of a Sense and Respond Support System to monitor overall system health of the LAV. The Marine Corps needs to develop the technology to embed a variety of sensors in metal parts of the LAV. Successful implementation of this technology will decrease maintenance “down” time, increase readiness, and be a better predictor of vehicle life throughout its life cycle. The committee recommends an increase of \$4.0 million for development of a LAV SRSS.

The committee recommends a total authorization of \$72.9 million in PE 26623M.

Battlefield management system

The budget request included \$10.5 million in PE 26624M, for the development of combat service support equipment, but no funding for the battlefield management system (BMS). The committee understands that the Marine Corps is currently exploring ways to improve situational awareness for Marine Corps armored ground vehicles and mechanized infantry at the platoon, company, and bat-

talion level by providing target acquisition, fire coordination, sensor-to-shooter target management, mounted navigation, and instant dissemination of situational awareness information. The Marine Corps is ready to initiate Phase II of the program which will address Phase I technical issues of integrating BMS into the M1A1 Tank and the Amphibious Assault Vehicle. The committee recommends an increase of \$1.5 million in PE 26624M for BMS development, for a total authorization of \$12.0 million.

RQ-8B Firescout vertical takeoff and landing unmanned aerial vehicle

The budget request included \$77.6 million in PE 35204N for the development of tactical unmanned aerial vehicles, including \$60.1 million for the development of the RQ-8B Firescout vertical takeoff and landing unmanned aerial vehicle (VTUAV). The Firescout VTUAV was designed to provide real-time intelligence, surveillance, and reconnaissance data to tactical users. A Firescout system is composed of three air vehicles, sensors, and control systems. The Firescout VTUAV will be common to the three modules to be incorporated on the Littoral Combat Ship (LCS). Additional funding for the Firescout VTUAV was included on the Chief of Naval Operations' unfunded priorities list to support the first LCS deliveries.

The committee recommends an increase of \$39.0 million in PE 35204N to procure six additional Firescout air vehicles and sensor packages to support the completion of developmental and operational testing and integration with the first deliveries of LCS.

Distributed common ground system—Navy

The budget request included \$12.4 million in PE 35208N for development of the distributed common ground system for the Navy (DCGS-N), but included no funding for integration of the advanced field artillery tactical data system (AFATDS), which provides automated command and control for the firepower aboard Navy ships. The converged architecture enabled by DCGS-N provides unparalleled flexibility to the warfighter and rapid response capability against relocatable, time critical targets. Currently, fire control information must be manually transferred between DCGS-N and AFATDS. The committee recommends an increase of \$3.2 million in PE 35208N for the integration of AFATDS into the DCGS-N architecture.

National shipbuilding research program—advanced shipbuilding enterprise

The budget request included no funding in PE 78730N for maritime technology. In recent years, funding provided by this line was used for the national shipbuilding research program—advanced shipbuilding enterprise (NSRP-ASE). This enterprise is a collaborative effort between the Navy and industry, which has yielded new processes and techniques that reduce the cost of building and repairing ships. The program has already documented a positive return on investment.

Section 242 of the Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005 (Public Law 108-375) expressed

the sense of the Congress that the Secretary of Defense should continue to fund this program at a sustaining level. With a shrinking industrial base for shipbuilding already driving higher costs, this type of initiative is essential to providing efficiencies. The committee believes it is shortsighted not to invest in improved processes that would reduce the cost of shipbuilding. The committee recommends an increase of \$10.0 million in PE 78730N for the NSRP-ASE.

Air Force

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			RESEARCH, DEVELOPMENT, TEST & EVALUATION, AIR FORCE			
3600	0601102F	1	DEFENSE RESEARCH SCIENCES Hypersonics research	223,894	6,500 [4,000]	230,394
			Nanophotonic components		[2,500]	
3600	0601103F	2	UNIVERSITY RESEARCH INITIATIVES	105,029	2,500 [2,500]	107,529
3600	0601108F	3	Secure and assured information sharing research			
3600	0602102F	4	HIGH ENERGY LASER RESEARCH INITIATIVES MATERIALS	11,894 74,156	7,000 [4,000]	11,894 81,156
			Blast resistant barriers		[2,000]	
			Complex structures for manned and unmanned aerial vehicles		[1,000]	
			Nanoparticle materials coatings research			
3600	0602201F	5	AEROSPACE VEHICLE TECHNOLOGIES	96,679	1,000	96,679
3600	0602202F	6	HUMAN EFFECTIVENESS APPLIED RESEARCH	79,442	[1,000]	80,442
			Nanoparticle multi-agent detection		12,000 [12,000]	119,523
3600	0602203F	7	AEROSPACE PROPULSION	107,523		
			Hypersonics research and engine integration			
3600	0602204F	8	AEROSPACE SENSORS	93,263		93,263
3600	0602500F	9	MULTI-DISCIPLINARY SPACE TECHNOLOGY	81,339		81,339
3600	0602601F	10	SPACE TECHNOLOGY	84,540	8,000 [3,000]	92,540
			Deployable structures experiment		[3,000]	
			Integrated control for autonomous space systems		[3,000]	
			Nano-reinforced and multifunction space structures		[2,000]	
3600	0602602F	11	CONVENTIONAL MUNITIONS	58,058		58,058

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				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
3600	0602605F	12	DIRECTED ENERGY TECHNOLOGY	37,709	3,000	40,709
			Adaptive optics laser communications		[3,000]	
3600	0602702F	13	COMMAND CONTROL AND COMMUNICATIONS	93,316		93,316
3600	0602805F	14	DUAL USE SCIENCE AND TECHNOLOGY PROGRAM			
3600	0602890F	15	HIGH ENERGY LASER RESEARCH	45,678		45,678
3600	0603112F	16	ADVANCED MATERIALS FOR WEAPON SYSTEMS	36,714	7,000	43,714
			Laser eye protection		[5,000]	
			Metals affordability initiative		[2,000]	
3600	0603203F	17	ADVANCED AEROSPACE SENSORS	35,157		35,157
3600	0603205F	18	FLIGHT VEHICLE TECHNOLOGY			
3600	0603211F	19	AEROSPACE TECHNOLOGY DEV/DEMO	25,133		25,133
3600	0603216F	20	AEROSPACE PROPULSION AND POWER TECHNOLOGY	77,268	15,500	92,768
			More electric gas turbine		[3,000]	
			Versatile affordable advanced turbine engines		[2,500]	
			Supersonic cruise missile engine		[10,000]	
3600	0603231F	21	CREW SYSTEMS AND PERSONNEL PROTECTION TECHNOLOGY	29,775		29,775
3600	0603270F	22	ELECTRONIC COMBAT TECHNOLOGY	23,923		23,923
3600	0603311F	23	BALLISTIC MISSILE TECHNOLOGY			
3600	0603333F	24	UNMANNED AIR VEHICLE DEV/DEMO			
3600	0603400F	25	JOINT UNMANNED COMBAT AIR SYSTEMS (J-UCAS) ADVANCED	77,800		77,800

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				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
3600	0603401F	26	ADVANCED SPACECRAFT TECHNOLOGY	60,915	28,000	88,915
			Radically segmented launch vehicle		[4,000]	
			AC coupled interconnect		[3,000]	
			Thin film amorphous solar arrays		[10,000]	
			Beta energy cells for defense and intelligence		[3,000]	
			Integrated spacecraft engineering tool		[3,000]	
			Ballistic Missile Technology		[5,000]	
3600	0603444F	27	MAUI SPACE SURVEILLANCE SYSTEM (MSSS)	5,848	5,000	10,848
			High accuracy network determination system		[5,000]	
3600	0603500F	28	MULTI-DISCIPLINARY ADVANCED DEVELOPMENT SPACE TECHI	53,437	5,000	58,437
			Laser threat warning attack reporting		[5,000]	
3600	0603601F	29	CONVENTIONAL WEAPONS TECHNOLOGY	18,660		18,660
3600	0603605F	30	ADVANCED WEAPONS TECHNOLOGY	26,955		26,955
3600	0603723F	31	ENVIRONMENTAL ENGINEERING TECHNOLOGY			
3600	0603789F	32	C3I ADVANCED DEVELOPMENT	30,125	3,200	33,325
			Enable network centric warfare		[3,200]	
3600	0603801F	33	SPECIAL PROGRAMS	280,135		280,135
3600	0603850F	34	INTEGRATED BROADCAST SERVICE			
3600	0603924F	35	HIGH ENERGY LASER ADVANCED TECHNOLOGY PROGRAM	5,801		5,801
3600	0207423F	36	ADVANCED COMMUNICATIONS SYSTEMS			
3600	0401840F	37	AMC COMMAND AND CONTROL SYSTEM			
3600	0804757F	38	JOINT NATIONAL TRAINING CENTER			
3600	0603260F	39	INTELLIGENCE ADVANCED DEVELOPMENT	4,580		4,580
3600	0603287F	40	PHYSICAL SECURITY EQUIPMENT	21,937		21,937

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3600	0603421F	41	NAVSTAR GLOBAL POSITIONING SYSTEM III	87,364		87,364
3600	0603430F	42	ADVANCED EHF MILSATCOM (SPACE) AEHF	665,257	100,000 [100,000]	765,257
3600	0603432F	43	POLAR MILSATCOM (SPACE)	2,185		2,185
3600	0603434F	44	NATIONAL POLAR-ORBITING OPERATIONAL ENVIRONMENTAL :			
3600	0603438F	45	SPACE CONTROL TECHNOLOGY	14,205		14,205
3600	0603742F	46	COMBAT IDENTIFICATION TECHNOLOGY	51,893		51,893
3600	0603790F	47	NATO RESEARCH AND DEVELOPMENT	3,973		3,973
3600	0603791F	48	INTERNATIONAL SPACE COOPERATIVE R&D	574		574
3600	0603845F	49	TRANSFORMATIONAL SATCOM (TSAT) Delay TSAT	835,769	-200,000 [-200,000]	635,769
3600	0603850F	50	INTEGRATED BROADCAST SERVICE	15,344		15,344
3600	0603851F	51	INTERCONTINENTAL BALLISTIC MISSILE	44,672		44,672
3600	0603854F	52	WIDEBAND GAPFILLER SYSTEM RDT&E (SPACE)	93,858		93,858
3600	0603858F	53	SPACE-BASED RADAR Delay SBR	225,839	-75,000 [-75,000]	150,839
3600	0603859F	54	POLLUTION PREVENTION	2,735		2,735
3600	0603860F	55	JOINT PRECISION APPROACH AND LANDING SYSTEMS	11,211		11,211
3600	0604015F	56	NEXT GENERATION BOMBER	25,135		25,135
3600	0604327F	57	HARD AND DEEPLY BURIED TARGET DEFEAT SYSTEM (HDBTDS)			
3600	0604400F	58	JOINT UNMANNED COMBAT AIR SYSTEMS (J-UCAS) ADVANCED	272,300		272,300
3600	0604731F	59	UNMANNED COMBAT AIR VEHICLE (UCAV)			
3600	0604855F	60	OPERATIONALLY RESPONSIVE LAUNCH Tactical satellite demonstrations	23,480	10,000 [10,000]	33,480

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3600	0604856F	61	COMMON AERO VEHICLE (CAV)	27,394		27,394
3600	0207423F	62	ADVANCED COMMUNICATIONS SYSTEMS	969		969
3601	0305178F	63	NATIONAL POLAR-ORBITING OPERATIONAL ENVIRONMENTAL:	323,665		323,665
3600	0603840F	64	GLOBAL BROADCAST SERVICE (GBS)	18,283		18,283
3600	0604012F	65	JOINT HELMET MOUNTED CUEING SYSTEM (JHMCS)	2,912		2,912
3600	0604222F	66	NUCLEAR WEAPONS SUPPORT	15,154	-1,000	14,154
			Robust nuclear earth penetrator		[-1,000]	
3600	0604226F	67	B-1B	132,496	8,000	140,496
			B-1B digital communications improvements		[8,000]	
3600	0604233F	68	SPECIALIZED UNDERGRADUATE FLIGHT TRAINING	8,593		8,593
3600	0604239F	69	F-22	76,203		76,203
3600	0604240F	70	B-2 ADVANCED TECHNOLOGY BOMBER	285,205		285,205
3600	0604270F	71	ELECTRONIC WARFARE DEVELOPMENT	82,587		82,587
3600	0604280F	72	JOINT TACTICAL RADIO	124,225		124,225
3600	0604287F	73	PHYSICAL SECURITY EQUIPMENT	11,153		11,153
3600	0604329F	74	SMALL DIAMETER BOMB (SDB)	85,988		85,988
3600	0604421F	75	COUNTERSPACE SYSTEMS	24,651	6,000	30,651
			Ground-based space control test bed		[6,000]	
3600	0604429F	76	AIRBORNE ELECTRONIC ATTACK	120,985		120,985
3600	0604441F	77	SPACE BASED INFRARED SYSTEM (SBIRS) HIGH EMD	756,630		756,630
3600	0604479F	78	MILSTAR LDR/MDR SATELLITE COMMUNICATIONS (SPACE)			
3600	0604600F	79	MUNITIONS DISPENSER DEVELOPMENT	21,738		21,738
3600	0604602F	80	ARMAMENT/ORDNANCE DEVELOPMENT	7,786		7,786
3600	0604604F	81	SUBMUNITIONS	5,475		5,475

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				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
3600	0604617F	82	AGILE COMBAT SUPPORT	10,173		10,173
3600	0604618F	83	JOINT DIRECT ATTACK MUNITION			
3600	0604706F	84	LIFE SUPPORT SYSTEMS	7,315		7,315
3600	0604735F	85	COMBAT TRAINING RANGES	6,122		6,122
3600	0604740F	86	INTEGRATED COMMAND & CONTROL APPLICATIONS (IC2A)	161		161
3600	0604750F	87	INTELLIGENCE EQUIPMENT	1,369		1,369
3600	0604754F	88	TACTICAL DATA LINK INFRASTRUCTURE			
3600	0604762F	89	COMMON LOW OBSERVABLES VERIFICATION SYSTEM (CLOVER)	8,692		8,692
3600	0604800F	90	JOINT STRIKE FIGHTER (JSF)	2,474,763		2,474,763
3600	0604851F	91	INTERCONTINENTAL BALLISTIC MISSILE	32,415		32,415
3600	0604853F	92	EVOLVED EXPENDABLE LAUNCH VEHICLE PROGRAM (SPACE)	26,093		26,093
3600	0605011F	93	RDT&E FOR AGING AIRCRAFT	24,384		24,384
3600	0605807F	94	TEST AND EVALUATION SUPPORT	50,000		50,000
3600	0207256F	95	UNMANNED COMBAT AIR VEHICLE JOINT PROGRAM OFFICE			
3600	0207434F	96	LINK-16 SUPPORT AND SUSTAINMENT	157,677		157,677
3600	0207443F	97	FAMILY OF INTEROPERABLE OPERATIONAL PICTURES (FIOP)	29,296		29,296
3600	0207450F	98	E-10 SQUADRONS	397,011		397,011
3600	0207701F	99	FULL COMBAT MISSION TRAINING	26,423		26,423
3600	0305176F	100	COMBAT SURVIVOR EVADER LOCATOR			
3600	0401318F	101	CV-22	39,532		39,532
3600	0604256F	102	THREAT SIMULATOR DEVELOPMENT	32,546		32,546
3600	0604759F	103	MAJOR T&E INVESTMENT	55,339	5,000	60,339
			FPS-16 radar mobilization and upgrade		[5,000]	
3600	0605101F	104	RAND PROJECT AIR FORCE	28,354		28,354

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				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
3600	0605306F	105	RANCH HAND II EPIDEMIOLOGY STUDY	4,188		4,188
3600	0605502F	106	SMALL BUSINESS INNOVATION RESEARCH			
3600	0605712F	107	INITIAL OPERATIONAL TEST & EVALUATION	34,615		34,615
3600	0605807F	108	TEST AND EVALUATION SUPPORT	642,665		642,665
3600	0605860F	109	ROCKET SYSTEMS LAUNCH PROGRAM (SPACE)	13,773	15,000	28,773
			Ballistic missile range safety technology		[15,000]	
3600	0605864F	110	SPACE TEST PROGRAM (STP)	48,157		48,157
3600	0605976F	111	FACILITIES RESTORATION AND MODERNIZATION - TEST AND E	60,561		60,561
3600	0605978F	112	FACILITIES SUSTAINMENT - TEST AND EVALUATION SUPPORT	26,238		26,238
3600	0305193F	113	INTELLIGENCE SUPPORT TO INFORMATION OPERATIONS (IO) (JI			
3600	0804731F	114	GENERAL SKILL TRAINING	331		331
3600	0909900F	115	FINANCING FOR EXPIRED ACCOUNT ADJUSTMENTS			
3600	0909980F	116	JUDGMENT FUND REIMBURSEMENT	3,739		3,739
3600	1001004F	117	INTERNATIONAL ACTIVITIES	7,827		7,827
3600	0605024F	118	ANTI-TAMPER TECHNOLOGY EXECUTIVE AGENCY	[]		[]
3600	0605798F	119	DEFENSE TECHNOLOGY ANALYSIS	22,784		22,784
3600	0101113F	120	B-52 SQUADRONS	1,989		1,989
3600	0101120F	121	ADVANCED CRUISE MISSILE	2,250		2,250
3600	0101122F	122	AIR-LAUNCHED CRUISE MISSILE (ALCM)	29,134		29,134
3600	0101313F	123	STRAT WAR PLANNING SYSTEM - USSSTRATCOM	5,013		5,013
3600	0101314F	124	NIGHT FIST - USSSTRATCOM	9,875		9,875
3600	0101815F	125	ADVANCED STRATEGIC PROGRAMS	18,237		18,237
3600	0102326F	126	REGION/SECTOR OPERATION CONTROL CENTER MODERNIZATI	30,093		30,093
3600	0203761F	127	WARFIGHTER RAPID ACQUISITION PROCESS (WRAP) RAPID TRA			

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				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
3600	0207028F	128	JOINT EXPEDITIONARY FORCE EXPERIMENT			
3600	0207131F	129	A-10 SQUADRONS	51,835	25,000	76,835
			A-10 propulsion upgrade		[25,000]	
3600	0207133F	130	F-16 SQUADRONS	155,666		155,666
3600	0207134F	131	F-15E SQUADRONS	124,647		124,647
3600	0207136F	132	MANNED DESTRUCTIVE SUPPRESSION	9,394		9,394
3600	0207138F	133	F/A-22 SQUADRONS	403,517		403,517
3600	0207141F	134	F-117A SQUADRONS	13,600		13,600
3600	0207161F	135	TACTICAL AIM MISSILES	15,639		15,639
3600	0207163F	136	ADVANCED MEDIUM RANGE AIR-TO-AIR MISSILE (AMRAAM)	33,262		33,262
3600	0207224F	137	COMBAT RESCUE AND RECOVERY	113,825		113,825
3600	0207247F	138	AF TENCAP	10,829		10,829
3600	0207248F	139	SPECIAL EVALUATION PROGRAM	276,219		276,219
3600	0207253F	140	COMPASS CALL	4,650		4,650
3600	0207268F	141	AIRCRAFT ENGINE COMPONENT IMPROVEMENT PROGRAM	153,265		153,265
3600	0207277F	142	CSAF INNOVATION PROGRAM	1,737		1,737
3600	0207325F	143	JOINT AIR-TO-SURFACE STANDOFF MISSILE (JASSM)	66,997		66,997
3600	0207410F	144	AIR & SPACE OPERATIONS CENTER (AOC)	68,099		68,099
3600	0207412F	145	CONTROL AND REPORTING CENTER (CRC)	9,289		9,289
3600	0207417F	146	AIRBORNE WARNING AND CONTROL SYSTEM (AWACS)	121,565		121,565
3600	0207423F	147	ADVANCED COMMUNICATIONS SYSTEMS	28,938		28,938
3600	0207424F	148	EVALUATION AND ANALYSIS PROGRAM			
3600	0207433F	149	ADVANCED PROGRAM TECHNOLOGY	300,673		300,673
3600	0207438F	150	THEATER BATTLE MANAGEMENT (TBM) C4I	40,472		40,472

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				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
3600	0207445F	151	FIGHTER TACTICAL DATA LINK	122,160		122,160
3600	0207446F	152	BOMBER TACTICAL DATA LINK	144,863		144,863
3600	0207448F	153	C2ISR TACTICAL DATA LINK	14,838		14,838
3600	0207449F	154	COMMAND AND CONTROL (C2) CONSTELLATION	41,071		41,071
3600	0207581F	155	JOINT SURVEILLANCE/TARGET ATTACK RADAR SYSTEM (JSTAR)	78,084		78,084
3600	0207590F	156	SEEK EAGLE	19,510		19,510
3600	0207591F	157	ADVANCED PROGRAM EVALUATION	290,589		290,589
3600	0207601F	158	USAF MODELING AND SIMULATION	30,541		30,541
3600	0207605F	159	WARGAMING AND SIMULATION CENTERS	6,369		6,369
3600	0207697F	160	DISTRIBUTED TRAINING AND EXERCISES	4,222		4,222
3600	0208006F	161	MISSION PLANNING SYSTEMS	138,475		138,475
3600	0208021F	162	INFORMATION WARFARE SUPPORT	15,204		15,204
3600	0301310F	163	NATIONAL AIR INTELLIGENCE CENTER	[]		[]
3600	0301314F	164	COBRA BALL	[]		[]
3600	0301315F	165	MISSILE AND SPACE TECHNICAL COLLECTION	[]		[]
3600	0301324F	166	FOREST GREEN	[]		[]
3600	0301386F	167	GDIP COLLECTION MANAGEMENT	[]		[]
3600	0301398F	168	MANAGEMENT HQ - GDIP	[]		[]
3600	0302015F	169	E-4B NATIONAL AIRBORNE OPERATIONS CENTER (NAOC)	18,909		18,909
3600	0303131F	170	MINIMUM ESSENTIAL EMERGENCY COMMUNICATIONS NETWO	57,344		57,344
3600	0303140F	171	INFORMATION SYSTEMS SECURITY PROGRAM	109,292	3,000	112,292
			Homeland defense civil support threat studies		[1,000]	
			Infrastructure assurance and security research		[2,000]	
3600	0303141F	172	GLOBAL COMBAT SUPPORT SYSTEM	20,555		20,555

Title II-RDT and E
(Dollars in Thousands)

<u>Acct</u>	<u>Account</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2006</u> <u>Request</u>	<u>Senate</u> <u>Change</u>	<u>Senate</u> <u>Authorized</u>
3600	0303150F	173	GLOBAL COMMAND AND CONTROL SYSTEM	3,541		3,541
3600	0303158F	174	JOINT COMMAND AND CONTROL PROGRAM (JC2)	5,200		5,200
3600	0303601F	175	MILSATCOM TERMINALS	273,974		273,974
3600	0304111F	176	SPECIAL ACTIVITIES	[]		[]
3600	0304260F	177	AIRBORNE SIGINT ENTERPRISE (JIMP)	78,920		78,920
3600	0304311F	178	SELECTED ACTIVITIES	[]		[]
3600	0305099F	179	GLOBAL AIR TRAFFIC MANAGEMENT (GATM)	7,139		7,139
3600	0305110F	180	SATELLITE CONTROL NETWORK (SPACE)	29,143		29,143
3600	0305111F	181	WEATHER SERVICE	28,675		28,675
3600	0305114F	182	AIR TRAFFIC CONTROL, APPROACH, AND LANDING SYSTEM (AT			
3600	0305116F	183	AERIAL TARGETS	6,641		6,641
3600	0305124F	184	SPECIAL APPLICATIONS PROGRAM	[]		[]
3600	0305128F	185	SECURITY AND INVESTIGATIVE ACTIVITIES	491		491
3600	0305142F	186	APPLIED TECHNOLOGY AND INTEGRATION	[]		[]
3600	0305148F	187	AIR FORCE TACTICAL MEASUREMENT AND SIGNATURE INTELL			
3600	0305159F	188	DEFENSE RECONNAISSANCE SUPPORT ACTIVITIES (SPACE)	[]		[]
3600	0305160F	189	DEFENSE METEOROLOGICAL SATELLITE PROGRAM (SPACE)	3,908		3,908
3600	0305164F	190	NAVSTAR GLOBAL POSITIONING SYSTEM (USER EQUIPMENT) (S	125,778		125,778
3600	0305165F	191	NAVSTAR GLOBAL POSITIONING SYSTEM (SPACE AND CONTRO	188,301		188,301
3600	0305172F	192	COMBINED ADVANCED APPLICATIONS	[]		[]
3600	0305174F	193	SPACE WARFARE CENTER	411		411
3600	0305182F	194	SPACELIFT RANGE SYSTEM (SPACE)	48,854		48,854
3600	0305193F	195	INTELLIGENCE SUPPORT TO INFORMATION OPERATIONS (IO) (JI	3,618		3,618
3600	0305202F	196	DRAGON U-2 (JIMP)	10,158		10,158

Title II-RDT and E
(Dollars in Thousands)

<u>Acct</u>	<u>Account</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2006 Request</u>	<u>Senate Change</u>	<u>Senate Authorized</u>
3600	0305205F	197	ENDURANCE UNMANNED AERIAL VEHICLES			
3600	0305206F	198	AIRBORNE RECONNAISSANCE SYSTEMS (JMIP)	51,769		51,769
3600	0305207F	199	MANNED RECONNAISSANCE SYSTEMS (JMIP)	8,101		8,101
3600	0305208F	200	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS (JMIP)	40,402		40,402
3600	0305219F	201	PREDATOR UAV (JMIP)	61,007	5,000	66,007
			Viper strike munitions for Predator UAV		[5,000]	
3600	0305220F	202	GLOBAL HAWK UAV (JMIP)	308,533		308,533
3600	0305221F	203	NETWORK-CENTRIC COLLABORATIVE TARGET (TIARA)	8,647		8,647
3600	0305887F	204	INTELLIGENCE SUPPORT TO INFORMATION WARFARE	978		978
3600	0305906F	205	NCMC - TW/AA SYSTEM	85,222		85,222
3600	0305910F	206	SPACETRACK (SPACE)	151,102	25,000	176,102
			S-band radar		[10,000]	
			Space-based space surveillance		[15,000]	
3600	0305913F	207	NUDET DETECTION SYSTEM (SPACE)	32,783		32,783
3600	0305917F	208	SPACE ARCHITECT	12,878		12,878
3600	0307141F	209	NASS, IO TECHNOLOGY INTEGRATION & TOOL DEV	15,182		15,182
3600	0308699F	210	SHARED EARLY WARNING (SEW)	3,295		3,295
3600	0401115F	211	C-130 AIRLIFT SQUADRON	233,028		233,028
3600	0401119F	212	C-5 AIRLIFT SQUADRONS (IF)	226,479		226,479
3600	0401130F	213	C-17 AIRCRAFT (IF)	165,762		165,762

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(Dollars in Thousands)

<u>Acct</u>	<u>Account</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2006</u> <u>Request</u>	<u>Senate</u> <u>Change</u>	<u>Senate</u> <u>Authorized</u>
3600	0401132F	214	C-130J PROGRAM	6,681		6,681
3600	0401133F	215	AEROMEDICAL EVACUATION	2,077		2,077
3600	0401134F	216	LARGE AIRCRAFT IR COUNTERMEASURES (LAIRCM)	55,743		55,743
3600	0401218F	217	KC-135S	1,498		1,498
3600	0401219F	218	KC-10S	13,472		13,472
3600	0401221F	219	KC-135 TANKER REPLACEMENT	99,210		99,210
3600	0408011F	220	SPECIAL TACTICS / COMBAT CONTROL	2,156		2,156
3600	0702207F	221	DEPOT MAINTENANCE (NON-IF)	1,408		1,408
3600	0702239F	222	AVIONICS COMPONENT IMPROVEMENT PROGRAM			
3600	0702806F	223	ACQUISITION AND MANAGEMENT SUPPORT	3,404		3,404
3600	0708011F	224	INDUSTRIAL PREPAREDNESS Nanomaterials manufacturing	36,934	4,000 [4,000]	40,934
3600	0708012F	225	LOGISTICS SUPPORT ACTIVITIES			
3600	0708026F	226	PRODUCTIVITY, RELIABILITY, AVAILABILITY, MAINTAIN. PROG			
3600	0708610F	227	LOGISTICS INFORMATION TECHNOLOGY (LOGIT)	44,503		44,503
3600	0708611F	228	SUPPORT SYSTEMS DEVELOPMENT Aging aircraft logistics management Aircraft systems and support in infrastructure Semi-autonomous robot for aircraft maintenance	10,316	6,900 [3,000] [1,000] [2,900]	17,216
3600	0804757F	229	JOINT NATIONAL TRAINING CENTER	2,924		2,924

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(Dollars in Thousands)

<u>Acct</u>	<u>Account</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2006</u>	<u>Senate</u>	<u>Senate</u>
				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
3600	0808716F	230	OTHER PERSONNEL ACTIVITIES	111		111
3600	0901202F	231	JOINT PERSONNEL RECOVERY AGENCY	978		978
3600	0901212F	232	SERVICE-WIDE SUPPORT (NOT OTHERWISE ACCOUNTED FOR)			
3600	0901218F	233	CIVILIAN COMPENSATION PROGRAM	7,445		7,445
3600	0901220F	234	PERSONNEL ADMINISTRATION	16,383	-16,383	
			Terminate personnel service delivery program		[-16,383]	
3600	0901538F	235	FINANCIAL MANAGEMENT INFORMATION SYSTEMS DEVELOPM	17,531		17,531
3600	XXXXXXXX	999	CLASSIFIED PROGRAMS	6,069,810		6,069,810
			Total, RDT&E Air Force	22,612,351	24,217	22,636,568

Air Force basic science

The budget request included \$223.9 million in PE 61102F, for Air Force defense research sciences. Innovative work supported by the Air Force basic research accounts is key to ensuring that our military has future capabilities and equipment to meet emerging threats. Applications such as air combat systems and ground support optoelectronics have foundations in novel nanomaterials used for the development of optical devices which are, in turn, components of information processing systems. The ability to quickly, securely, and reliably process information enables information dominance, one of a number of broad defense objectives. The committee recommends an increase of \$2.5 million in PE 61102F, for nanophotonic components, the building blocks of electronic materials in a number of aircraft, ship, and soldier systems.

Air Force missions in the areas of reducing time to target and rapid response to global threats require basic and applied research on missile propulsion systems. Research on hypersonic engine designs have produced some early results over the last year. Design tools to predict and monitor performance of propulsion and control systems are needed, as are trained experts to move promising research forward. The committee recommends an increase of \$4.0 million in PE 61102F to expand basic hypersonics research and to develop a strong academic program in hypersonics flow physics.

Secure, assured information sharing

The budget request included \$105.0 million in PE 61103F, for university research initiatives. Air Force university research supports defense related basic science in a wide range of scientific and engineering disciplines important to maintaining U.S. military technology superiority. One basic science pursuit of increasing significance involves investigation into information management in the “need to know” and “need to share” environments. The committee recommends an increase of \$2.5 million in PE 61103F to expand research on novel approaches to information sharing requirements and to address policies, procedures, and technology to meet differing security protection levels and requirements.

Blast resistant barriers

The budget request included \$74.2 million in PE 62102F, for materials research. The committee supports research focused on the development of materials, composites, and structural designs to protect personnel and equipment from the threat of vehicle borne and other explosive device delivery methods. A variety of commercial and “makeshift” barricades currently provide protection to bases, facilities, and structures in the homeland and abroad. The committee recommends an increase of \$4.0 million in PE 62102F for research and development of blast resistant barriers, including engineering of materials for different structural designs, testing, and establishment of blast barrier standards.

Air Force materials research

The budget request included \$74.2 million in PE 62102F, for materials research. The committee recommends an increase of \$1.0 million in PE 62102F for nano-particle materials coating research.

This research has the potential to develop advanced aeronautical coatings to improve the reliability and corrosion resistance of Air Force platforms.

The Department of Defense has a need for improved, affordable aerospace structures. Composite materials offer the potential for cost and weight savings along with improved air and space vehicle performance. The committee recommends an increase of \$2.0 million in PE 62102F for accelerated development of complex composite structures for manned and unmanned air vehicles.

Nano-technologies for chemical and biological defense

The budget request included \$79.4 million in PE 62202F, for human effectiveness applied research. Progress has been made in development of multiple-step processes for the detection, identification, and neutralization of single biological agents. A system capable of executing all three steps at once for a wide range of bio-agents, in different environments, would add value to existing capabilities. The committee recommends an increase of \$1.0 million in PE 62202F to augment ongoing research on the use of pulsed power plasma produced nano-particles to detect, identify, and defeat pathogens in a one-step process.

Hypersonics engine research and integration

The budget request included \$107.5 million in PE 62203F, for aerospace propulsion, including \$18.9 million for advanced aerospace propulsion technologies and hypersonic weapons and aircraft concepts. The committee notes that the X-43A successfully achieved Mach 9.8 during test flights last year, and believes that the joint Air Force and National Aeronautics and Space Administration (NASA) X-43 effort represents an important technology pathway to achieving a hypersonic operational capability.

The committee recommends an increase of \$12.0 million in PE 62203F to support a more aggressive hypersonics scramjet research program, to facilitate additional ground testing of the X-43 engine, and to evaluate initial concepts for integration of engine and vehicle designs. The committee strongly encourages NASA and the Air Force to work jointly on this program and to support the multi-engine demonstrator in future budget requests.

The committee notes that magnetohydrodynamics (MHD) may have applications when integrated with hypersonic vehicles now under development. The committee believes a better understanding of the advantages of the technology, the technical challenges to its use, and the potential for incorporation into hypersonic vehicle designs would be beneficial. The committee directs the Secretary of Defense, in coordination with the Administrator of the National Aeronautics and Space Administration, to provide a report to the congressional defense committees, by March 15, 2006, surveying both classified and unclassified MHD research conducted in the past and provide recommendations on whether military applications may be derived from MHD technology.

Space technology

The budget request included \$84.5 million in PE 62601F, for space technology. In response to Department of Defense guidance,

the Air Force research community embarked on an effort to support the space dominance mission. Integration of multiple functions into single space structures capable of autonomous fabrication and assembly represents a key focus of investigation in this area. Nano-reinforced structural space systems and advanced multifunctional space structures show promise in facilitating major improvements in space structure utility and performance. The committee recommends an increase of \$2.0 million in PE 62601F for expanded research in both of these structural areas and for examination of concepts for weight and cost reduction of space structural systems.

The committee further recommends an increase of \$6.0 million in PE 62601F, including \$3.0 million for the deployable space structures experiment, a general effort to lower the cost of spacecraft by instituting commonality and modularity in the construction of satellites; and \$3.0 million for integrated control for autonomous space systems, a program focused on development of advanced satellite control and measurement technologies needed to operate Air Force space and airbreathing systems.

Adaptive optics research

The budget request included \$37.7 million in PE 62605F, for directed energy research. Advanced digital communications allow for high levels of data transfer and rapid processing of visual images in support of network centric warfare. The Air Force has been doing work with lasers to expand communications bandwidth and to increase digital communication capabilities. The committee recommends an increase of \$3.0 million in PE 62605F to accelerate this work and to support adaptive optics research for laser communications systems.

Integrated spacecraft engineering tool

The budget request included \$60.9 million in PE 63401F for Advanced Spacecraft Technology, but no funding for the integrated spacecraft engineering tool (ISET).

ISET would be used to build software models to enable satellite system designers, builders, and operators to accurately and reliably model and predict the performance of space systems. This would provide significant cost savings in the development and integration of future satellite systems and aid in the analysis of alternatives for prospective space systems.

The committee recommends an increase of \$3.0 million in PE 63401F to develop, demonstrate, and validate an integrated spacecraft engineering tool—to support rapid prototyping, and to collaborate research, development, testing, and evaluation of advanced spacecraft and aerospace vehicles.

Laser eye protection

The budget request included \$36.7 million in PE 63112F, for advanced materials for weapon systems. The committee recommends an increase of \$5.0 million in PE 63112F to address an Air Force requirement for laser eye protection.

Metals affordability initiative

The budget request included \$36.7 million in PE 63112F, for advanced materials for weapons systems. The committee recommends an increase of \$2.0 million in PE 63112F for unfunded priority Air Force research on specialty aerospace metals as part of the Metals Affordability Initiative. This type of research could lead to cheaper and higher performance aerospace metals and alloys, which will contribute significantly to future military air and space capabilities.

Aerospace propulsion and power technologies

The budget request included \$77.3 million in PE 63216F, for aerospace propulsion and power technology. Traditional oil lubrication of propulsion and power systems carries operation and maintenance costs that could be avoided through the use of alternative technologies. The committee recommends an increase in PE 63216F of \$3.0 million to advance the more electric gas turbine research to a technology readiness level for prototype development and testing. Application of this technology could improve performance, reliability, and cost-effectiveness of propulsion and power systems by replacing oil lubrication with magnetic and electrical components in gas turbine engines.

The Air Force is pursuing research on reusable high-speed turbine engines for a hypersonic cruise missile. The Air Force Science and Technology unfunded priority list includes a request for additional research on a Mach 4+ turbine engine for rapid long-range strike and operational responsive space lift. The committee recommends an increase of \$10.0 million in PE 63216F for the advanced supersonics cruise missile, to meet the Air Force unfunded requirement in this area and to accelerate and expand ground demonstrations to include critical integration technologies such as the supersonic inlet, exhaust nozzle and afterburner subsystems.

Versatile affordable advanced turbine engines

The budget request included \$77.3 million in PE 63216F, for aerospace propulsion and power technologies. The Versatile Affordable Advanced Turbine Engine (VAATE) program is a joint program between the Departments of Defense and Energy, the National Aeronautics and Space Administration, and industry to develop, demonstrate, and transition advanced, multiuse turbine engine technologies. The committee recommends an increase of \$2.5 million in PE 63216F to meet Air Force requirements for accelerated development of these technologies that could be key to the evolution of long-endurance, high efficiency engines for emerging unmanned aerial combat systems.

Ballistic missile technology

The budget request included \$60.9 million in PE 63401F for advanced spacecraft technology.

The committee is aware of the need to develop common advanced guidance technology applicable to Air Force and Navy strategic ballistic missile systems and future space vehicles. These efforts support capabilities needed to fulfill validated requirements for land-based strategic deterrence and prompt global strike.

The committee recommends an increase in \$5.0 million in PE 63401F for advanced technology demonstrations in guidance and control, flight computers, vehicle structures, and range safety technology.

AC coupled interconnect

The budget request included \$60.9 million in PE 63401F, for advanced spacecraft technology.

The committee notes that the Air Force has been exploring ways for satellites to operate more effectively on the limited power offered by solar cells. AC coupled interconnect is a new technique that would provide for the connecting of electronic chips in computer and electronic equipment at more efficient rates. In 2004, a key demonstration of this technology resulted in chips communicating with each other at 6 GHz. Additional funding would produce a complete technology for connecting electronic chips for all fields of application, including satellites.

The committee recommends an increase of \$3.0 million in PE 63401F for AC coupled interconnect development.

Energy cells for defense and intelligence applications

The budget request included \$60.9 million in PE 603401F, for advanced spacecraft technology, but no funding for the development of Beta Energy Cells (BEC).

The committee understands that BEC can be used to charge batteries and super capacitors to greatly extend the operational life of critical military and intelligence systems.

The committee recommends an increase of \$3.0 million in PE 603401F to complete the development phase of BEC research and make prototype products available to defense and intelligence users.

Radically Segmented Launch Vehicle

The budget request included \$61.0 in PE 63401F, for advanced spacecraft technology, but no funding for the Radically Segmented Launch Vehicle (RSLV)

The RSLV program addresses a broad range of Department of Defense mission requirements for low-cost, routine, and responsive space launch. Program development and risk reduction for responsive space launch is currently performed under a joint Air Force, National Air and Space Administration, and Defense Advanced Research Project Agency program management arrangement. The committee is supportive of efforts to acquire an operationally responsive space capability to support the warfighter.

The committee recommends an increase of \$4.0 million in PE 63401F to perform engineering development, prototype hardware fabrication, and ground testing of the RSLV for the purpose of mitigating technical risk and validating cost savings potential.

Thin film amorphous solar arrays

The budget request included \$60.9 million in PE 63401F, for advanced spacecraft technology, but no funding for thin film amorphous solar arrays.

The committee is aware of the need to reduce the cost of satellite launches, which is driven to a large extent by the weight of satellite payloads. The committee believes research on thin film amorphous solar arrays has the potential to produce solar arrays that are significantly less expensive, lighter, and more efficient than current solar arrays.

The committee recommends an increase of \$10.0 million in PE 63401F for thin film amorphous solar array research and development.

High Accuracy Network Determination System

The budget request included \$5.8 million in PE 63444F, for the Maui space surveillance system, but no funding for the High Accuracy Network Determination System (HANDS).

The Air Force satellite control network maintains careful management of satellites that perform missions of crucial importance to national security, such as detecting ballistic missile launches against the United States as well as space launches and nuclear detonations. HANDS technology has the potential to increase the accuracy of the data gathered in support of this mission.

The committee recommends an increase of \$5.0 million in PE 63444F to research, develop, and demonstrate capabilities of HANDS technology.

Laser threat warning attack reporting

The budget request included \$53.4 million in PE 63500F, for the multidisciplinary advanced development space program.

The committee notes that U.S. space systems are becoming increasingly vulnerable to deliberate hostile or intrusive attacks from lasers deployed by foreign governments and terrorist groups. The purpose of the laser threat warning attack reporting (LTWAR) for space program is to develop electro-optical sensors capable of detecting such laser radiation incidents on space systems.

The committee recommends an increase of \$5.0 million in PE 63500F to accelerate the LTWAR.

Enable network centric warfare

The budget request included \$30.1 million in Research, Development, Test, and Evaluation, Air Force, for Command, Control, Communications, and Intelligence Advanced Development, but included no funding for science and technology efforts to continue development and fielding of advanced capabilities that will facilitate the ability of air platforms to engage in airborne networking and improve their ability to participate in network centric operations.

The enable network centric warfare program is an urgent need requirement that was identified by the Commander, U.S. Central Command (CENTCOM), after the fiscal year 2006 President's budget request had been submitted. The concept of network centric warfare is being implemented within the Department of Defense, but challenges remain in developing the capabilities to fully enable airborne platforms to be integrated into network centric operations. This integration effort is expected to result in a reliable, secure, and assured network centric communications infrastructure for ground mobile and airborne platforms that will improve the ability

of battlefield commanders to see the battlespace and coordinate the use of weapons systems.

The committee recommends an increase of \$3.2 million in PE 63789F, to accelerate development and fielding of operational airborne networking equipment for network centric operations and more quickly meet the urgent need requirement of the Commander, U.S. CENTCOM.

Military satellite communications

The budget request included \$835.8 million in PE 63845F, for the Transformational Satellite Communications system (TSAT) and \$665.3 million in PE 63430F, for the Advanced Extremely High Frequency (AEHF) system.

The committee recognizes the increasing importance of communications to net-centric military operations and remains supportive of the TSAT effort to provide substantial increases in bandwidth to the military and intelligence user. The committee notes, however, that while TSAT has been an acquisition program since January 2004, only one of its seven critical technologies is mature, according to the Government Accountability Office's 2005 assessment of major weapon programs.

The committee has been concerned that the technical risks in the program are very high given the state of critical technology development. In hearings before Congress in 2004 and 2005, then-Under Secretary of the Air Force, Peter Teets, acknowledged that if the TSAT program were to experience unanticipated problems, the Air Force would adjust its strategy by taking "acquisition off-ramps." These off-ramps or back-up technologies are associated with critical technologies from the Advanced Extremely High Frequency (AEHF) satellite program.

Given the technological risks associated with TSAT, the committee recommends that the Air Force provide funding to the AEHF program for the development and procurement of a fourth AEHF satellite. The committee directs the Air Force to focus TSAT funding and development efforts primarily on those activities directly related to maturing critical technologies. Finally, the committee recommends that the Air Force consider incorporating available maturing TSAT technologies into the fourth AEHF satellite, if feasible. This approach is in accordance with the Department of Defense's updated space acquisition policy, which states that evolutionary acquisition is the preferred strategy for rapid acquisition of mature technology for the user. Procuring a fourth, incrementally enhanced AEHF satellite could serve to shorten the time in moving from AEHF to TSAT capabilities as well as reduce the overall risks in achieving TSAT capabilities.

In accordance with these recommendations, the committee recommends a decrease of \$200.0 million in PE 63845F for TSAT and an increase of \$100.0 million in PE 63430F for AEHF.

Space radar

The budget request included \$225.8 million in PE 63858F, for space radar (SR).

In the statement of managers accompanying the Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005

(Public Law 108-375), the conferees expressed the view that while they were strongly supportive of radar satellites, the Air Force cost estimates for the notional space based radar (SBR) architecture, as presented in the fiscal year 2005 budget request, made the system potentially unaffordable. The conferees noted that affordability would be dependent on the development of a single radar satellite system to meet both military and intelligence community needs and the integration of the space-based radar into an architecture consisting of other intelligence, surveillance, and reconnaissance (ISR) capabilities. Consequently, the Department of Defense was directed to restructure the SBR effort to focus on continued technology maturation, architectural analysis, and system evolution.

The committee believes that while the Air Force has taken steps to address congressional concerns, the restructured space radar (SR) program still lacks sufficient programmatic and cost definition. The committee welcomes realignment of the SR program budget to focus on early development and demonstration of ground infrastructure and ground capabilities that may have benefits beyond the space radar program. While the committee supports a demonstration project to help validate technology readiness and ascertain costs for the objective system, the committee questions the Air Force decision to pursue an on-orbit demonstration as opposed to an earlier, less costly airborne experiment. Moreover, the inability of the Air Force to provide a firm cost estimate for the demonstration project illustrates the uncertainty of the approach. While the joint memorandum on the space radar program signed by the Secretary of Defense and the Director of Central Intelligence on January 13, 2005, is a welcome sign, the lack of agreement on a specific cost share for the program is an indication that much has yet to be decided before Congress can provide its full support for this program. Finally, the committee notes that two important reports to Congress, addressing various options for the space-based radar architecture and key features of an ISR system-of-systems architecture, have yet to be completed and received by this committee—another indication that Department plans for space radar remain uncertain.

The committee recommends a decrease of \$75.0 million in PE 63858F, and strongly urges the Department to consider an airborne demonstration in fiscal year 2006 or early fiscal year 2007 to inform a Key Decision Point B decision for the objective Space Radar program as soon as possible. The committee directs the Secretary of Defense to provide a report to the congressional defense committees by January 15, 2006, on the Department's plan for the objective Space Radar program, including associated costs. Finally, the committee recommends that the Department seek solid commitments from the Director of National Intelligence regarding cost and requirements sharing for space radar before the fiscal year 2007 budget request submission.

Tactical satellite demonstrations

The budget request included \$23.5 million in PE 64855F for operationally responsive launch, but no funding for tactical satellite demonstrations.

The U.S. space transportation policy of January 6, 2005, directs the government to demonstrate before 2010 an initial capability for operationally responsive access to and use of space to support national security requirements. The Air Force is pursuing a joint warfighting space concept to provide prompt space support for the warfighter by rapidly launching rockets with small, militarily useful satellites that would be controlled by the warfighter. The objective is to develop tactical satellites that could be stored and, when directed, launched and ready to support operations within a few days compared to the two-year lead time that is currently needed for satellite launches. The committee has been supportive of this concept as a way to improve space support to the warfighter and reduce the cost and development time for military space systems. The Air Force and other service partners have funded the first satellite experiment and most of the satellite work for the second joint warfighting space satellite, JWS-2, (otherwise known as TacSat-3) but no funds are currently budgeted for other important demonstration pieces, including the launch. The committee notes that the Chief of Staff of the Air Force's unfunded priorities list includes a \$13.5 million request for this purpose.

The committee recommends an increase of \$10.0 million in PE 64855F to fund the launch and range costs for JWS-2, and one year of satellite operations.

Robust nuclear earth penetrator

The budget request included \$15.2 million in PE 64222F for development of nuclear weapons support, including \$1.0 million for the development of nuclear weapons and counterproliferation technologies to support joint Air Force and National Nuclear Security Administration efforts associated with logistics and aircraft integration for the Robust Nuclear Earth Penetrator (RNEP). The committee notes that the evaluation of RNEP feasibility by the Department of Energy is not scheduled to be completed prior to 2007. Therefore, the committee recommends a decrease of \$1.0 million in PE 64222F for efforts associated with logistics and aircraft integration for the RNEP.

Space control test capabilities

The budget request included \$24.7 million in PE 64421F, for Air Force counterspace systems.

The "National Space Policy" of September 1996 specifies that the United States will develop, operate, and maintain space control capabilities to ensure freedom of action in space and, if directed, deny such freedom of action to adversaries. The committee recognizes that continuing development by the Army Aviation and Missile Research, Development and Engineering Center of software applications used to integrate offensive and defensive space control systems into a single system-of-systems simulated testbed could contribute to near-term capabilities for space control and situational awareness.

The committee recommends an increase of \$6.0 million in PE 64421F for continued test and development of command and control capabilities for ground-based space control assets.

FPS-16 radar mobilization and upgrade

The budget request included \$55.3 million in PE 64759F, for major test and evaluation investments. The committee recommends an increase of \$5.0 million in PE 64759F for upgrade and mobilization of an additional fixed positioning system (FPS)-16 radar. Updating the radar with fully digital electronics would increase reliability, decrease maintenance time and cost, and enhance radar performance and data products. Mobilization of the radar will facilitate flexibility and increase optimal tracking coverage.

Ballistic missile range safety technology

The budget request included \$13.8 million in PE 65860F for the rocket systems launch program, but no funding for ballistic missile range safety technology (BMRST).

The committee is aware that BMRST is a global positioning system based launch range safety system that has the potential to provide significant technical and reliability advantages and cost savings over current radar systems. The committee notes that several launch ranges have requested BMRST systems for local range certification as well as down-range reentry support.

The committee recommends an increase of \$15.0 million in PE 65860F to support expanded BMRST system capability, critical certification, and testing requirements.

A-10 aircraft propulsion improvements

The budget request included \$51.8 million in PE 27131F for the continued development of the A-10 aircraft; including \$33.9 million for A-10 propulsion improvements. The Air Force intends to operate this aircraft until fiscal year 2028; and aircrews have continued to rank propulsion as a major operational deficiency. The committee recommends an increase of \$25.0 million in PE 27131F to continue the propulsion modernization effort for the A-10 aircraft.

Information systems security research

The budget request included \$109.3 million in PE 33140F, for the information systems security program. A recent National Defense University report entitled "Information Assurance: Trends in Vulnerabilities, Threats and Technologies" noted that a series of internal and external studies and policy pronouncements from the Department of Defense over the last two decades contains a basic premise, that: "the explosive changes in information technology would transform the future of military operations. The benefits of this change have been well documented but its potential vulnerabilities have been less commonly described—or addressed for corrective action." To augment the Department's work in developing solutions to information security vulnerabilities and to review associated legal and regulatory issues, the committee recommends an increase of \$3.0 million in PE 33140F, including \$2.0 million for infrastructure assurance and security research conducted in collaboration with the Air Intelligence Agency and \$1.0 million for homeland defense threat information studies and analysis of the legal and regulatory challenges involved in cyber security.

Viper Strike munition for Predator

The budget request included \$61.0 million in Research, Development, Test, and Evaluation, Air Force, for Predator UAV, in PE 35219F, for the continued development of the Predator unmanned aerial vehicle system, but did not include additional funding for the development of the Viper Strike lightweight precision munition that can be integrated onto the Predator air frame. The Viper Strike precision munition represents a transformational capability, providing pinpoint accuracy against moving, stationary, and armored targets, even in low visibility environments. The Viper Strike is an important step forward in linking powerful sensors to precision munitions to allow the rapid engagement of high-value targets on the complex 21st century battlefield. Funding would allow fielding of this important capability in the global war on terrorism to battlefield commanders in fiscal year 2006, while the Air Force establishes a program of record for future years.

The committee recommends an increase of \$5.0 million in PE 35219F, for development and early fielding of 55 Viper Strike precision munitions.

S-band radar

The budget request included \$151.1 million in PE 35910F for spacetrack, but no funding for the S-band radar.

The S-band sensor system detects and tracks all low-earth orbiting objects and is the only planned system capable of providing the information required for space situational awareness and space control. Air Force funding reductions to the space surveillance system, of which S-band radar is an important component, led to eliminating funding for S-band radar in the fiscal year 2006 budget request. The committee understands it is the intention of the Air Force to continue funding this program in fiscal years 2008 to 2011. The committee believes, therefore, that additional funding will accelerate deployment and mitigate additional system costs.

The committee recommends an increase of \$10.0 million in PE 35910F for the S-band radar project.

Space-Based Space Surveillance

The budget request included \$151.1 million in PE 35910F, for spacetrack, of which \$114.2 million is for the Space-Based Space Surveillance (SBSS) program.

The SBSS is a sensor that will conduct deep space and low-earth orbit surveillance in support of U.S. space control and situational awareness requirements. The committee notes that funding cuts in fiscal year 2005 delayed the SBSS launch for one year from 2008 to 2009, causing a potential gap in space surveillance capabilities. Additional funding for SBSS was included in the Air Force Chief of Staff's unfunded priorities list.

The committee recommends an increase of \$15.0 million in PE 35910F for SBSS to purchase long-lead hardware to support assembly, integration, and testing in fiscal year 2006.

Nano-materials manufacturing

The budget request included \$36.9 million in PE 78011F, for industrial preparedness. As research advances lead to robust com-

posite material designs assembled from the nano-scale level, manufacturing processes must develop in parallel to expedite production and use of new structures. The committee recommends an increase in PE 78011F of \$4.0 million for nano-materials manufacturing.

Air Force support systems

The budget request included \$10.3 million in PE 78611F, for support systems development. Fuel tank coatings require periodic inspection for adhesion and corrosion and may demand removal and reapplication. Current procedures are costly as well as hazardous to maintenance personnel. The committee recommends an increase of \$2.9 million in PE 78611F to complete development of a semi-autonomous robot that would replace personnel in the dangerous work inside aircraft fuel tanks and would provide cost savings, particularly in the maintenance of legacy aircraft.

The Department of Defense's pursuit of "cradle to grave" weapon systems management shows promise in improving supply chains and logistics. The committee recommends an increase of \$3.0 million in PE 78611F for an aging aircraft logistics management integrated data environment. The integrated system would enable an "as-is" depiction of the C-5/C-17 weapons systems at any given point in time. Logistics and supply chain decision-making improvements support cost savings and increased levels of readiness.

The committee further recommends an increase of \$1.0 million in PE 78611F for the aircraft systems and support infrastructure project and for research into five specific focus areas: structure and materials; avionics, electronics and software; information technology; environmental compliance; and depot industrial processes.

Personnel and pay information technology systems

The committee understands that the Department of Defense plans to begin implementing its Defense Integrated Military Human Resources System (DIMHRS) for personnel and pay in fiscal year 2006. In development since 1998, this program is intended, in part, to address long-standing problems with military personnel pay. These problems have only been exacerbated in recent years by the call-up of numerous reservists and guardsman to serve in the ongoing global war on terrorism. The DIMHRS implementation plan for a single consolidated military personnel and pay system across the entire Department is a laudable goal, long overdue, and one which the committee supports.

The first phase of the DIMHRS implementation begins in fiscal year 2006 with the Army, and is planned to continue through the end of fiscal year 2007. Additional phases, or "spirals," are still under development. However, the committee is concerned that the program is under funded by \$49.0 million in fiscal year 2006.

The committee has also been briefed on a separate effort planned within the Air Force to enhance their legacy personnel and pay system, called Personnel Service Delivery (PSD). This proposed system appears to duplicate many of the features and attributes of the DIMHRS system already under development. Additionally, the PSD program has not yet received certification from the Secretary of Defense, as required by section 332 of the Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005 (Public Law

108–375). The budget request included \$16.4 million in PE 91220F and \$25.6 million in Operation and Maintenance, Air Force, for the Air Force's PSD effort.

The committee is concerned that the Air Force is continuing to invest in efforts that duplicate DIMHRS. Therefore, the committee recommends a reduction in PE 91220F, of \$16.4 million; and a reduction in Operation and Maintenance, Air Force, of \$25.6 million to eliminate funding for the PSD effort. The committee also recommends an increase in Operation and Maintenance, Defense-wide, of \$49.0 million for the DIMHRS program.

Defense-wide

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(Dollars in Thousands)

Acct	Account	Line	Program Title	FY2006 Request	Senate Change	Senate Authorized
			RESEARCH, DEVELOPMENT, TEST & EVALUATION, DEFENSE-WIDE			
0400	0601101E	1	DEFENSE RESEARCH SCIENCES	130,090		130,090
0400	0601111D8Z	2	GOVERNMENT/INDUSTRY COSPONSORSHIP OF UNIVERSITY RE: Focus center research program		4,000 [4,000]	4,000
0400	0601114D8Z	3	DEFENSE EXPERIMENTAL PROGRAM TO STIMULATE COMPETIT	9,164		9,164
0400	0601120D8Z	4	NATIONAL DEFENSE EDUCATION PROGRAM	10,282		10,282
0400	0601384BP	5	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM SPECTRA	72,533	1,850 [1,850]	74,383
0400	0602000D8Z	6	INSENSITIVE MUNITIONS - EXPLORATORY DEVELOPMENT	5,176		5,176
0400	0602227D8Z	7	MEDICAL FREE ELECTRON LASER	9,845		9,845
0400	0602228D8Z	8	HISTORICALLY BLACK COLLEGES AND UNIVERSITIES (HBCU) S	13,887		13,887
0400	0602234D8Z	9	LINCOLN LABORATORY RESEARCH PROGRAM	29,914		29,914
0400	0602301E	10	COMPUTING SYSTEMS AND COMMUNICATIONS TECHNOLOGY			
0400	0602302E	11	EMBEDDED SOFTWARE AND PERSVASIVE COMPUTING	198,831		198,831
0400	0602303E	12	INFORMATION & COMMUNICATIONS TECHNOLOGY	200,799		200,799
0400	0602304E	13	COGNITIVE COMPUTING SYSTEMS	145,354		145,354
0400	0602383E	14	BIOLOGICAL WARFARE DEFENSE			
0400	0602384BP	15	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM Portable chemical/biological detection sensor system Automated MIST	187,787	13,200 [2,000]	200,987
			Next generation chem/bio suit		[1,200]	
			Multi-purpose bio-defense immuno-arrays		[2,000]	
			Mustard gas antidote		[5,000]	
					[3,000]	

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				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
0400	0602702E	16	TACTICAL TECHNOLOGY	361,562	-33,020	328,542
			Agile interceptor		[-3,000]	
			Guided projectiles		[-3,800]	
			Riverine crawler		[-3,420]	
			Program reduction		[-18,000]	
			Pre-conflict anticipation and shaping		[-4,800]	
0400	0602712E	17	MATERIALS AND ELECTRONICS TECHNOLOGY	294,188		294,188
0400	0602715E	18	MATERIALS AND BIOLOGICAL TECHNOLOGY	206,487	1,000	207,487
0400	0602716BR	19	WMD DEFEAT TECHNOLOGY	241,736	[-1,000]	241,736
			Human performance research			
0400	0602716E	20	ELECTRONICS TECHNOLOGY	106,708		106,708
0400	0602717BR	21	WMD DEFENSE TECHNOLOGIES	13,595		13,595
0400	0602787D8Z	22	MEDICAL TECHNOLOGY	2,215		2,215
0400	1160401BB	23	SPECIAL OPERATIONS TECHNOLOGY DEVELOPMENT	34,529		34,529
0400	1160407BB	24	SOF MEDICAL TECHNOLOGY DEVELOPMENT	55,301		55,301
0400	0603002D8Z	25	MEDICAL ADVANCED TECHNOLOGY			
0400	0603121D8Z	26	SO/LIC ADVANCED DEVELOPMENT			
0400	0603122D8Z	27	COMBATING TERRORISM TECHNOLOGY SUPPORT			
			Explosive effects		13,000	68,301
			Bio-engineered agent assessment tool		[8,000]	
			Fuel cell power for continuity of operations		[3,000]	
			COUNTERPROLIFERATION INITIATIVES - PROLIFERATION PREV		[2,000]	
0400	0603160BR	28	Fiber radiation detectors	96,143	4,000	100,143
			Radiation portal monitors		[3,000]	
					[1,000]	

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				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
0400	0603175C	29	BALLISTIC MISSILE DEFENSE TECHNOLOGY Massively parallel optical interconnects BMD Technology	136,241	-23,000 [2,000] [-25,000]	113,241
0400	0603225D8Z	30	JOINT DOD-DOE MUNITIONS TECHNOLOGY DEVELOPMENT	25,102		25,102
0400	0603285E	31	ADVANCED AEROSPACE SYSTEMS			
0400	0603286E	32	ADVANCED AEROSPACE SYSTEMS Long Gun	75,866	-6,400 [-6,400]	69,466
0400	0603287E	33	SPACE PROGRAMS AND TECHNOLOGY	223,811		223,811
0400	0603384BP	34	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM - ADVANCED Anthrax/plague oral vaccine research Miniaturized chemical detectors	164,481	7,750 [3,750] [4,000]	172,231
0400	0603400D8Z	35	JOINT UNMANNED COMBAT AIR SYSTEMS (JUCAS) ADVANCED	35,000		35,000
0400	0603648D8Z	36	JOINT CAPABILITY TECHNOLOGY DEMONSTRATIONS			
0400	0603704D8Z	37	SPECIAL TECHNICAL SUPPORT			
0400	0603711BR	38	ARMS CONTROL TECHNOLOGY			
0400	0603712S	39	GENERIC LOGISTICS R&D TECHNOLOGY DEMONSTRATIONS Embedded passives research and development Diminishing manufacturing source (DMS) Manufacturing supply chain Vehicle fuel cell program	22,360	14,500 [3,000] [1,500] [3,000] [7,000]	36,860
0400	0603713S	40	DISTRIBUTION PROCESS OWNER TECHNOLOGY DEVELOPMENT	10,000		10,000
0400	0603716D8Z	41	STRATEGIC ENVIRONMENTAL RESEARCH PROGRAM	64,101		64,101
0400	0603727D8Z	42	JOINT WAREFIGHTING PROGRAM	10,205		10,205

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				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
0400	0603739E	43	ADVANCED ELECTRONICS TECHNOLOGIES	214,378	-8,000	206,378
			Small scale systems packaging		[2,000]	
			Combat optical fiber technology		[-3,000]	
			Networked microsystems		[-5,000]	
			Visible/short wave IR-photon counting		[-2,000]	
0400	0603750D8Z	44	ADVANCED CONCEPT TECHNOLOGY DEMONSTRATIONS	163,649	24,700	188,349
			Crossed field radiation technology		[2,000]	
			Communications and control alert framework		[4,700]	
			Certification of flexible JP-8 pilot		[18,000]	
0400	0603755D8Z	45	HIGH PERFORMANCE COMPUTING MODERNIZATION PROGRAM	189,747	5,000	194,747
			Prevent and detect cyber-based threats		[1,500]	
			Simulation center upgrade		[3,500]	
0400	0603760E	46	COMMAND, CONTROL AND COMMUNICATIONS SYSTEMS	216,408		216,408
0400	0603762E	47	SENSOR AND GUIDANCE TECHNOLOGY			
0400	0603763E	48	MARINE TECHNOLOGY			
0400	0603764E	49	LAND WARFARE TECHNOLOGY	139,100	-47,000	92,100
			Future Combat Systems research support		[-15,000]	
			Multi-modal missile		[-6,000]	
			Non-lethal weapons new start		[-6,000]	
			Program reduction		[-14,000]	
			Tactical urban operations		[-6,000]	
0400	0603765E	50	CLASSIFIED DARPA PROGRAMS	162,534		162,534
0400	0603766E	51	NETWORK-CENTRIC WARFARE TECHNOLOGY	136,899	-3,000	133,899
			Multi-dimensional robot		[-3,000]	

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0400	0603767E	52	SENSOR TECHNOLOGY Program reduction	189,452	-5,000 [-5,000]	184,452
0400	0603768E	53	GUIDANCE TECHNOLOGY	103,272		103,272
0400	0603769SE	54	DISTRIBUTED LEARNING ADVANCED TECHNOLOGY DEVELOPM	14,689		14,689
0400	0603781D8Z	55	SOFTWARE ENGINEERING INSTITUTE	25,209		25,209
0400	0603805S	56	DUAL USE APPLICATION PROGRAMS			
0400	0603826D8Z	57	QUICK REACTION SPECIAL PROJECTS	110,717		110,717
0400	0603832D8Z	58	JOINT WARGAMING SIMULATION MANAGEMENT OFFICE	34,928		34,928
0400	0603941D8Z	59	TEST & EVALUATION SCIENCE & TECHNOLOGY	28,614		28,614
0400	0603942D8Z	60	TECHNOLOGY LINK	3,435		3,435
0400	0605160D8Z	61	COUNTERPROLIFERATION SUPPORT			
0400	1160402BB	62	SPECIAL OPERATIONS ADVANCED TECHNOLOGY DEVELOPMEN Voice activated handheld translator Special Operations portable power source Mark V replacement Advanced tactical laser reduction	104,315	-6,200 [2,300] [5,000] [1,500] [-15,000]	98,115
0400	0603228D8Z	63	PHYSICAL SECURITY EQUIPMENT			
0400	0603527D8Z	64	RETRACT LARCH	6,683		6,683
0400	0603709D8Z	65	JOINT ROBOTICS PROGRAM	11,755		11,755
0400	0603714D8Z	66	ADVANCED SENSOR APPLICATIONS PROGRAM	18,275		18,275
0400	0603851D8Z	67	ENVIRONMENTAL SECURITY TECHNICAL CERTIFICATION PROG	30,632		30,632
0400	0603879C	68	ADVANCED CONCEPTS, EVALUATIONS AND SYSTEMS			
0400	0603881C	69	BALLISTIC MISSILE DEFENSE TERMINAL DEFENSE SEGMENT	1,143,610		1,143,610

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				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
0400	0603882C	70	BALLISTIC MISSILE DEFENSE MIDCOURSE DEFENSE SEGMENT GMD enhanced testing	3,266,196	175,000 [100,000]	3,441,196
0400	0603883C	71	Aegis SM-3 development and deployment	483,863	[75,000]	483,863
0400	0603884BP	72	BALLISTIC MISSILE DEFENSE BOOST DEFENSE SEGMENT CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM	100,796	4,300	105,096
0400	0603884C	73	Miniaturized CO oxidation technology BALLISTIC MISSILE DEFENSE SENSORS	529,829	[4,300]	539,829
0400	0603886C	74	Airborne infrared surveillance system BALLISTIC MISSILE DEFENSE SYSTEM INTERCEPTOR	229,658	[10,000]	179,658
0400	0603888C	75	BMD System interceptors	617,456	[-50,000]	617,456
0400	0603889C	76	BALLISTIC MISSILE DEFENSE TEST & TARGETS BALLISTIC MISSILE DEFENSE PRODUCTS	455,152	-30,000 [-30,000]	425,152
0400	0603890C	77	BMD Products BALLISTIC MISSILE DEFENSE SYSTEMS CORE	447,006	-30,000 [-30,000]	417,006
0400	0603891C	78	BMD System Core SPECIAL PROGRAMS - MDA	349,522	[-50,000]	299,522
0400	0603920D8Z	79	BMD Special Programs HUMANITARIAN DEMINING	14,305	[-50,000]	14,305
0400	0603923D8Z	80	COALITION WARFARE	5,777		5,777
0400	0604016D8Z	81	DEPARTMENT OF DEFENSE CORROSION PROGRAM	5,141		5,141
0400	0604400D8Z	82	JOINT UNMANNED COMBAT AIR SYSTEMS (J-UCAS) ADVANCED	3,000		3,000
0400	0604648D8Z	83	JOINT CAPABILITY TECHNOLOGY DEMONSTRATIONS			
0400	0604722D8Z	84	JOINT SERVICE EDUCATION AND TRAINING SYSTEMS DEVELOP			
0400	0605017D8Z	85	REDUCTION OF TOTAL OWNERSHIP COST	24,824		24,824

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				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
0400	0303191D8Z	86	JOINT ELECTROMAGNETIC TECHNOLOGY (JET) PROGRAM	3,566		3,566
0400	0604051D8Z	87	DEFENSE ACQUISITION CHALLENGE PROGRAM (DACP)	28,975		28,975
0400	0604384BP	88	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM	280,908	1,800	282,708
			Military mail screening system development		[1,800]	
0400	0604618D8Z	89	MANPADS DEFENSE PROGRAM	13,349		13,349
0400	0604709D8Z	90	JOINT ROBOTICS PROGRAM	13,745		13,745
0400	0604764K	91	ADVANCED IT SERVICES JOINT PROGRAM OFFICE (AITS-JPO)	9,325		9,325
0400	0604771D8Z	92	JOINT TACTICAL INFORMATION DISTRIBUTION SYSTEM (JTIDS)	11,075		11,075
0400	0605013BL	93	INFORMATION TECHNOLOGY DEVELOPMENT	19,574		19,574
0400	0605015BL	94	INFORMATION TECHNOLOGY DEVELOPMENT-STANDARD PROC	5,074		5,074
0400	0605016D8Z	95	FINANCIAL MANAGEMENT SYSTEM IMPROVEMENTS	75,987		75,987
0400	0605018SE	96	DEFENSE INTEGRATED MILITARY HUMAN RESOURCES SYSTEM	20,322		20,322
0400	0605019D8Z	97	ACQUISITION DOMAIN	3,600		3,600
0400	0605140D8Z	98	TRUSTED FOUNDRY	31,655		31,655
0400	0605648D8Z	99	DEFENSE ACQUISITION EXECUTIVE (DAE) PILOT PROGRAM	1,000		1,000
0400	0303129K	100	DEFENSE MESSAGE SYSTEM	13,367		13,367
0400	0303140K	101	INFORMATION SYSTEMS SECURITY PROGRAM			
0400	0303141K	102	GLOBAL COMBAT SUPPORT SYSTEM	17,952		17,952
0400	0303158K	103	JOINT COMMAND AND CONTROL PROGRAM (JC2)	14,580		14,580
0400	0305840K	104	ELECTRONIC COMMERCE	6,698		6,698
0400	0305840S	105	ELECTRONIC COMMERCE			
0400	0901200D8Z	106	BMMP DOMAIN MANAGEMENT AND SYSTEMS INTEGRATION	11,802		11,802
0400	0603704D8Z	107	SPECIAL TECHNICAL SUPPORT	19,916		19,916
0400	0603757D8Z	108	TRAINING TRANSFORMATION (T2)			

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				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
0400	0603835D8Z	109	TRANSFORMATION INITIATIVES PROGRAM	10,152		10,152
0400	0603858D8Z	110	UNEXPLODED ORDNANCE DETECTION AND CLEARANCE			
0400	0604140D8Z	111	CAPITAL ASSET MANAGEMENT SYSTEM-MILITARY EQUIPMENT	4,812		4,812
0400	0604774D8Z	112	DEFENSE READINESS REPORTING SYSTEM (DRRS)	13,475		13,475
0400	0604875D8Z	113	JOINT SYSTEMS ARCHITECTURE DEVELOPMENT	9,254		9,254
0400	0604940D8Z	114	CENTRAL TEST AND EVALUATION INVESTMENT DEVELOPMENT	128,759	5,000	133,759
			UAV systems and operations validation		[5,000]	
0400	0604943D8Z	115	THERMAL VICAR	7,278		7,278
0400	0605104D8Z	116	TECHNICAL STUDIES, SUPPORT AND ANALYSIS	31,075		31,075
0400	0605110BR	117	CRITICAL TECHNOLOGY SUPPORT			
0400	0605110D8Z	118	USD(A&T)-CRITICAL TECHNOLOGY SUPPORT	1,999		1,999
0400	0605114D8Z	119	BLACK LIGHT			
0400	0605116D8Z	120	GENERAL SUPPORT TO C3I			
0400	0605117D8Z	121	FOREIGN MATERIAL ACQUISITION AND EXPLOITATION	36,895		36,895
0400	0605123D8Z	122	INTERAGENCY EXPORT LICENSE AUTOMATION			
0400	0605124D8Z	123	DEFENSE TRAVEL SYSTEM	20,441		20,441
0400	0605126J	124	JOINT THEATER AIR AND MISSILE DEFENSE ORGANIZATION	81,504		81,504
0400	0605128D8Z	125	CLASSIFIED PROGRAM USD(P)			
0400	0605130D8Z	126	FOREIGN COMPARATIVE TESTING	35,738		35,738
0400	0605161D8Z	127	NUCLEAR MATTERS	12,442		12,442
0400	0605170D8Z	128	SUPPORT TO NETWORKS AND INFORMATION INTEGRATION	10,706		10,706
0400	0605200D8Z	129	GENERAL SUPPORT TO USD (INTELLIGENCE)	5,282		5,282
0400	0605384BP	130	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM	81,425		81,425
0400	0605502BR	131	SMALL BUSINESS INNOVATION RESEARCH			

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				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
0400	0605502C	132	SMALL BUSINESS INNOVATIVE RESEARCH - MDA			
0400	0605502D8Z	133	SMALL BUSINESS INNOVATIVE RESEARCH			
0400	0605502E	134	SMALL BUSINESS INNOVATIVE RESEARCH			
0400	0605710D8Z	135	CLASSIFIED PROGRAMS - C3I		10,000	10,000
			Foreign Supplier Assessment Center		[10,000]	
0400	0605790D8Z	136	SMALL BUSINESS INNOVATION RESEARCH/CHALLENGE ADMIN	1,983		1,983
0400	0605798S	137	DEFENSE TECHNOLOGY ANALYSIS	5,393		5,393
0400	0605799D8Z	138	FORCE TRANSFORMATION DIRECTORATE	19,927	20,000	39,927
			Joint operational small satellites		[20,000]	
0400	0605801K	139	DEFENSE TECHNICAL INFORMATION SERVICES (DTIC)	49,969		49,969
0400	0605801KA	140	DEFENSE TECHNICAL INFORMATION CENTER (DTIC)	8,853		8,853
0400	0605803SE	141	R&D IN SUPPORT OF DOD ENLISTMENT, TESTING AND EVALUA	8,873		8,873
0400	0605804D8Z	142	DEVELOPMENT TEST AND EVALUATION	49,472		49,472
0400	0605898E	143	MANAGEMENT HQ - R&D	[]		[]
0400	0301555G	144	CLASSIFIED PROGRAMS	[]		[]
0400	0301556G	145	SPECIAL PROGRAM	[]		[]
0400	0303169D8Z	146	INFORMATION TECHNOLOGY RAPID ACQUISITION	5,580		5,580
0400	0305193D8Z	147	INTELLIGENCE SUPPORT TO INFORMATION OPERATIONS (IO) (JI	13,940		13,940
0400	0305193G	148	INTELLIGENCE SUPPORT TO INFORMATION OPERATIONS (IO) (JMIP)			
0400	0901585C	149	PENTAGON RESERVATION	17,386		17,386
0400	0901598C	150	MANAGEMENT HQ - MDA	99,327		99,327
0400	0901598D8W	151	IT SOFTWARE DEV INITIATIVES	1,694		1,694
0400	0604130V	152	DEFENSE INFORMATION SYSTEM FOR SECURITY (DISS)	16,850		16,850
0400	0605127T	153	PARTNERSHIP FOR PEACE (PFP) INFORMATION MANAGEMENT S	5,660		5,660

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				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
0400	0607384BP	154	CHEMICAL AND BIOLOGICAL DEFENSE (OPERATIONAL SYSTEM	10,093		10,093
0400	0208043J	155	CLASSIFIED PROGRAMS	1,570		1,570
0400	0208045K	156	C4I INTEROPERABILITY	65,517		65,517
0400	0208052J	157	JOINT ANALYTICAL MODEL IMPROVEMENT PROGRAM	[]		[]
0400	0301011G	158	CRYPTOLOGIC ACTIVITIES	[]		[]
0400	0301301L	159	GENERAL DEFENSE INTELLIGENCE PROGRAM	[]		[]
0400	0301318BB	160	HUMINT (CONTROLLED)	[]		[]
0400	0301398L	161	MANAGEMENT HQ - GDIP	[]		[]
0400	0301555BB	162	CLASSIFIED PROGRAMS	[]		[]
0400	0301556BB	163	SPECIAL PROGRAM	[]		[]
0400	0302016K	164	NATIONAL MILITARY COMMAND SYSTEM-WIDE SUPPORT	659		659
0400	0302019K	165	DEFENSE INFO INFRASTRUCTURE ENGINEERING AND INTEGRA	5,466		5,466
0400	0303126K	166	LONG-HAUL COMMUNICATIONS - DCS	1,470		1,470
0400	0303131K	167	MINIMUM ESSENTIAL EMERGENCY COMMUNICATIONS NETWO	7,438		7,438
0400	0303140D8Z	168	INFORMATION SYSTEMS SECURITY PROGRAM	12,546		12,546
0400	0303140G	169	INFORMATION SYSTEMS SECURITY PROGRAM	462,211		462,211
0400	0303148K	170	DISA MISSION SUPPORT OPERATIONS	3,426		3,426
0400	0303149J	171	C4I FOR THE WARRIOR	3,549		3,549
0400	0303149K	172	C4I FOR THE WARRIOR	6,311		6,311
0400	0303150K	173	GLOBAL COMMAND AND CONTROL SYSTEM	52,331		52,331
0400	0303153K	174	JOINT SPECTRUM CENTER	14,097		14,097
0400	0303165K	175	DEFENSE COLLABORATION TOOL SUITE (DCTS)			
0400	0303170K	176	NET-CENTRIC ENTERPRISE SERVICES (NCES)	79,018		79,018
0400	0303610K	177	TELEPORT PROGRAM	12,180		12,180

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				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
0400	0304210BB	178	SPECIAL APPLICATIONS FOR CONTINGENCIES	21,116		21,116
0400	0304345BQ	179	NATIONAL IMAGERY AND MAPPING AGENCY	[]		[]
0400	0305102BQ	180	DEFENSE GEOSPACIAL - INTELLIGENCE PROGRAM	[]		[]
0400	0305125D8Z	181	CRITICAL INFRASTRUCTURE PROTECTION (CIP)	11,363		11,363
0400	0305127BZ	182	FOREIGN COUNTERINTELLIGENCE ACTIVITIES	[]		[]
0400	0305146BZ	183	DEFENSE JOINT COUNTERINTELLIGENCE PROGRAM (JMIP)	20,406		20,406
0400	0305146D8Z	184	DEFENSE JOINT COUNTERINTELLIGENCE PROGRAM (JMIP)			
0400	0305183L	185	DEFENSE HUMAN INTELLIGENCE (HUMINT) PROGRAM (DHIP)	[]		[]
0400	0305190D8Z	186	C3I INTELLIGENCE PROGRAMS			
0400	0305191D8Z	187	TECHNOLOGY DEVELOPMENT (JMIP)			
0400	0305193L	188	INTELLIGENCE SUPPORT TO INFORMATION OPERATIONS (IO) (JI)	[]		[]
0400	0305199D8Z	189	NET CENTRICITY	8,387		8,387
0400	0305202G	190	DRAGON U-2 (JMIP)	[]		[]
0400	0305206G	191	AIRBORNE RECONNAISSANCE SYSTEMS (JMIP)	[]		[]
0400	0305207G	192	MANNED RECONNAISSANCE SYSTEMS (JMIP)	[]		[]
0400	0305208BQ	193	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS (JMIP)	[]		[]
0400	0305208G	194	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS (JMIP)	[]		[]
0400	0305208L	195	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS (JMIP)	[]		[]
0400	0305883L	196	HARD AND DEEPLY BURIED TARGET (HDBT) INTEL SUPPORT	[]		[]
0400	0305884L	197	INTELLIGENCE PLANNING AND REVIEW ACTIVITIES	[]		[]
0400	0305885G	198	TACTICAL CRYPTOLOGICAL ACTIVITIES	[]		[]
0400	0305889G	199	COUNTERDRUG INTELLIGENCE SUPPORT	[]		[]
0400	0307141G	200	NASS, IO TECHNOLOGY INTEGRATION AND TOOL DEV	[]		[]
0400	0307207G	201	AERIAL COMMON SENSOR (ACS) (JMIP)	[]		[]

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				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
0400	0708011S	202	INDUSTRIAL PREPAREDNESS Advanced manufacturing technologies	18,219	6,500 [1,500] [5,000]	24,719
0400	0708012S	203	Laser additive systems manufacturing for titanium and alloy parts	2,900		2,900
0400	0902298J	204	LOGISTICS SUPPORT ACTIVITIES	5,762		5,762
0400	1001018D8Z	204	MANAGEMENT HEADQUARTERS (JCS)	25,474		25,474
0400	1160279BB	205	NATO JOINT STARS			
0400	1160403BB	206	SMALL BUSINESS INNOVATIVE RESEARCH/SMALL BUS TECH TR	104,330		104,330
0400	1160404BB	207	SPECIAL OPERATIONS AVIATION SYSTEMS ADVANCED DEVELC	63,513		63,513
0400	1160405BB	208	SPECIAL OPERATIONS TACTICAL SYSTEMS DEVELOPMENT	33,167	2,500 [2,500]	35,667
		209	SPECIAL OPERATIONS INTELLIGENCE SYSTEMS DEVELOPMENT Wireless management and control system			
0400	1160408BB	210	SOF OPERATIONAL ENHANCEMENTS Maritime UAV sensor	66,313	7,400 [4,900]	73,713
			Lightweight solar panels			
0400	1160421BB	211	SPECIAL OPERATIONS CV-22 DEVELOPMENT	29,954		29,954
0400	1160425BB	212	SPECIAL OPERATIONS AIRCRAFT DEFENSIVE SYSTEMS	38,824		38,824
0400	1160426BB	213	OPERATIONS ADVANCED SEAL DELIVERY SYSTEM (ASDS) DEVI	2,040		2,040
0400	XXXXXXXX	999	CLASSIFIED PROGRAMS	3,441,033		3,441,033
Total, RDT&E Defense-Wide				18,803,416	39,880	18,843,296

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				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
			OPERATIONAL TEST & EVALUATION, DEFENSE			
0460	0603941D8Z	1	TEST & EVALUATION SCIENCE & TECHNOLOGY			43,928
0460	0604940D8Z	2	CENTRAL TEST AND EVALUATION INVESTMENT DEVELOPMENT	43,928		43,928
0460	0605118D8Z	3	OPERATIONAL TEST AND EVALUATION	10,340		10,340
0460	0605131D8Z	4	LIVE FIRE TESTING	114,190		114,190
0460	0605804D8Z	5	DEVELOPMENT TEST AND EVALUATION			
			Total, Operational Test & Evaluation, Defense	168,458	407,197	168,458
			TOTAL RDT&E	69,356,040	407,197	69,763,237

Focus center research program

The budget request included no funding in PE 60111D8Z, for government/industry co-sponsorship of university research.

The committee recommends an increase of \$4.0 million in PE 60111D8Z for a component of the focus center research program managed by the Director, Defense Research and Engineering. This partnership achieved successful transition of technologies to advance capabilities of weapons systems, radars, missile seekers, and information networks. The program also supports microelectronics research and training of future scientists and engineers.

Superstructural particle evaluation

The budget request included \$72.5 million in PE 61384BP, for chemical and biological defense basic research. Basic science challenges continue to plague efforts to develop comprehensive methods for countering threats posed by chemical and biological warfare agents. The committee commends the Department of Defense for supporting basic research to address both the chemical and biological threat, and recommends an increase of \$1.85 million in PE 61384BP to accelerate promising work in superstructural particle evaluation and characterization with targeted reaction analysis (SPECTRA). This program would allow for testing of agents at the cellular level and the possible rapid development of a series of bio-protection substances. These protection methods could improve survivability and alleviate symptoms of exposure to chemical and biological warfare agents.

Chemical and biological defense applied research

The budget request included \$187.8 million in PE 62384BP, for chemical and biological defense applied research. The Department of Defense requires improved prediction models for timely monitoring of exposure to different chemical warfare agents and toxic industrial chemicals. The committee recommends an increase of \$1.2 million in PE 62384BP for an automated man-in-simulant-test (MIST) program to facilitate testing and development of a new generation of protective clothing. The new testing capability would allow for reliable reproduction of the same test and would lower test operating costs and shorten the time between tests.

The Department requires a flexible analytical tool for bio-defense to support force protection and intelligence and threat assessment activities. The committee recommends an increase of \$5.0 million in PE 62384BP for continuing research into the development of multipurpose bio-defense immuno-arrays. The immuno-arrays would allow for rapid, inexpensive characterization of new and novel pathogens and expedited development of countermeasures to biological threats, thereby enhancing force protection and threat assessment capabilities.

Current chemical and biological protective suits used by the military have deficiencies, including limited life; limited moisture vapor permeability; and the need for post-contamination containment. The committee recommends an increase of \$2.0 million in PE 62384BP for development and demonstration of self-decontaminating prototype chemical and biological protective suits, which would address some of these limitations.

One of the objectives of the applied chemical and biological research program is to develop lightweight, effective, and fast agent detectors for widespread use. The committee recommends an increase of \$2.0 million in PE 62384BP for research and development of a portable chemical/biological sensor system using quartz crystal microbalance technology. Such a system would have potential application for autonomous vehicles and individual soldiers.

Mustard gas antidote

The budget request included \$21.5 million in PE 62384BP, for medical chemical defense applied research. This program emphasizes the prevention of chemical casualties and addresses capability gaps in the area of prophylaxes for chemical warfare agents. The committee recommends an increase of \$3.0 million in PE 62384BP for mustard gas antidote research. The committee commends the Department of Defense for current research focused on a mustard gas antidote using signal transduction inhibition antioxidant liposomes (STIMAL), and notes that STIMAL research has demonstrated the ability to substantially reduce or eliminate the effects of a range of chemical and biological weapons.

Tactical technology

The budget request included \$361.6 million in PE 62702E, for tactical technology. The committee recommends a decrease of \$33.02 million in PE 62702E, including decreases of \$6.8 million in unjustified growth for two missile programs—agile interceptor and guided projectiles; \$3.42 million from the riverine crawler under-water vehicle, which would duplicate similar unmanned systems already under development; and \$4.8 million from the newly initiated preconflict anticipation and shaping program, which does not contain sufficient justification.

Human performance in hazardous environments

The budget request included \$206.5 million in PE 62716BR, for weapons of mass destruction (WMD) defeat, but no funds for a central repository of information on human vulnerabilities to, and performance in, adverse environments which result from weapons' effects. Command authorities need information regarding immediate occupational health and environmental safety implications to protect forces conducting and supporting military operations. The committee recommends an increase of \$1.0 million in PE 62716BR for demonstration and validation of emerging products, which would provide information on human performance in hazardous environments.

Technology Support Working Group

The budget request included \$55.3 million in PE 63122D8Z for combating terrorism technology support. The Technology Support Working Group (TSWG) manages efforts under this account that focus on interagency rapid prototyping research and development programs for combating terrorism technologies in response to user requirements.

Current threats underscore the need to protect bridges, tunnels, oil pipelines, and other critical infrastructures against exposure to

attack. Design engineers lack the basic structural response data for retrofit and new construction for many of these unique and important structures. The committee recommends an increase of \$8.0 million for a defense against explosive effects program to close existing capability gaps, to develop infrastructure protection guidelines, and to validate and enhance existing and new analytical tools for use by armed services and homeland defense officials.

Genetic engineering of bio-agents may provide a powerful countermeasure to bio-detection systems currently in use and in development, and may also increase vaccine and therapy defeat capabilities. The committee recommends an increase of \$3.0 million in PE 63122D8Z for the bio-engineered agent assessment tool, which has the potential to deliver a unique set of real-time chemical and biological identification and analysis capabilities, to address the threat of biological terrorism which employs engineered agents.

The committee recommends an increase of \$2.0 million in PE 63122D8Z for the development of fuel cell technologies for continuity of operations missions. Fuel cell technology has potential advantages over traditional backup power options as it could provide continuous, low maintenance, extended operation, and is useable in confined spaces.

Radiation detection technology

The budget request included \$6.6 million in PE 63160BR for proliferation prevention and defeat radiation detection technology. The committee recommends an increase of \$3.0 million in PE 63160BR for procuring glass scintillation fiber radiation detectors and developing new portable applications, including backpack detectors, panels for aircraft, and detectors included in clothing systems. The committee further recommends an increase of \$1.0 million in PE 63160BR for the development of a state-of-the-art radiation portal monitor using High Purity Germanium technology that will surpass the performance and accuracy of portal monitors currently in use. The committee notes the importance of developing higher quality, more cost-effective nuclear radiation detectors to enhance our ability to detect and identify hazardous materials that pose a proliferation threat.

Ballistic missile defense reductions

The budget request included \$136.3 million in PE 63175C for ballistic missile defense technology; \$455.2 million in PE 63889C for ballistic missile defense products; \$447.0 million in PE 63890C for ballistic missile defense systems core; and \$345.0 million in PE 63891C for special programs—MDA. The committee notes that within each of these program elements there is funding specified for activities in fiscal year 2008 and beyond that lack sufficient budget justification.

The committee recommends a decrease of \$25.0 million in PE 63175C for ballistic missile defense technology; a decrease of \$30.0 million in PE 63889C for ballistic missile defense products; a decrease of \$30.0 million in PE 63890C for ballistic missile defense systems core; and a decrease of \$50.0 million in PE 63891C for special programs—MDA.

Massively parallel optical interconnects

The budget request included \$136.0 million in PE 63175C for ballistic missile defense technology.

Massively parallel optical interconnects for micro-satellite data communications is an advanced technology that would greatly increase the reliability and precision of satellite guidance for advanced tactical missiles. The committee is aware of the key role played by satellite guided-precision munitions during Operation Iraqi Freedom, and supports efforts to improve upon this capability in a timely manner.

The committee recommends an increase of \$2.0 million in PE 63175C to enable the technology associated with massively parallel optical interconnects to advance to the deployment stage.

Missile technology

The budget request included \$75.9 million in PE 63286E, for advanced aerospace systems. The committee recommends a decrease of \$6.4 million in PE 63286E for the Long Gun program. The committee notes that this project duplicates the Navy's affordable weapon system effort, which is not yet part of long-range Navy acquisition plans. There is no validated requirement for the effort and no funding programmed in the Navy budget to transition the technology.

Anthrax and plague oral vaccine research and development

The budget request included \$63.1 million in PE 63384BP, for advanced technology development specific to medical bio-defense. The committee supports the Department of Defense's efforts under this account to develop and test safe and effective prophylaxes and therapies for pre- and post-exposure to biological threats and agents. The committee recommends an increase of \$3.75 million in PE 63384BP for Phase I clinical trials and initial production of the oral anthrax plague vaccine. This effort parallels the Department's plague vaccine development program and may provide superior protection against pneumonic plague.

Miniaturized RAMAN chemical identification system

The budget request included \$164.5 million in PE 63384BP, for the chemical and biological defense advanced technology program. The ability to rapidly characterize substances such as explosives, chemical agents, toxic industrial chemicals, narcotics, and other hazardous materials under a variety of conditions poses difficult challenges. Combining real-time, reliable sensing and identification techniques into a hand-held device has been an even more complicated task.

The committee recommends an increase of \$4.0 million in PE 63384BP for accelerated development of a small, lightweight chemical identification system, which uses the RAMAN spectroscopy technology. These additional resources are intended to ensure a power supply that lasts nearly twice as long as currently available, in a device that is under one quarter the weight but which maintains the substance identification speed of larger stationary machines.

Diminishing manufacturing sources

The budget request included \$22.4 million in PE 63712S, for general logistics research and development technology demonstrations. The military faces challenges in maintaining a supply of replacement and repair parts for legacy systems, a costly problem with readiness implications and no coordinated solution. The committee recommends an increase of \$1.5 million in PE 63712S for continuation of a project designed to create a single repository of information for addressing the diminishing manufacturing source problem.

The Department of Defense needs a capability to develop and evaluate methods and processes for manufacturing printed circuit boards with buried passive components and other advanced technologies relevant to warfighter needs. The committee recommends an increase of \$3.0 million in PE 63712S for the embedded passives research and development test bed to enable advanced domestic capability in the military crucial technology area of electronic systems.

The committee further recommends an increase of \$3.0 million in PE 63712S to support the manufacturing supply chain and for increased involvement of small- and medium-sized firms in meeting surge production requirements.

Vehicle fuel cell program

The budget request included \$22.4 million in PE 63712S, for general logistics research and development technology demonstrations. A recent Defense Logistics Agency (DLA) report entitled "Potential Use of Hydrogen as a Defense Logistics Fuel" noted that hydrogen power may offer benefits to the warfighter such as stealth and sustainment and could provide multiple potential sources of fuel. The committee recommends an increase of \$7.0 million in PE 63712S for acceleration of the Department of Defense vehicle fuel cell program, particularly in development of a hydrogen logistics fuel for use in both tactical and nontactical military vehicles. Consistent with the recommendations made by DLA, the committee directs the Secretary of Defense to establish a Hydrogen Logistics Initiative to develop a comprehensive and integrated strategy and plan for the appropriate use of hydrogen and acquisition of hydrogen to meet Department requirements for the future.

Advanced electronics

The budget request included \$214.4 million in PE 63739E, for advanced electronics. The committee recommends a decrease of \$10.0 million in PE 63739E, including decreases of \$3.0 million from the combat optical fiber technology program, which requires additional fundamental research prior to developmental work; \$5.0 million from the networked microsystems program; and \$2.0 million from the visible short wave infra-red photon counting project. These programs are new starts in fiscal year 2006. The committee recommends spending levels more appropriate for the start-up year of such programs.

Small scale systems packaging

The budget request included \$214.4 million in PE 63739E, for advanced electronics technology. Small scale systems, devices and

interconnections on the order of micro- and nano-scale in size are becoming more frequent components in military systems. Research on individual components shows promise, but efforts at integration of small scale components systems are not keeping pace with advances in research. The committee recommends an increase of \$2.0 million in PE 63739E to address challenges in packaging small scale components into systems.

Advanced ferrite antenna

The budget request included \$163.6 million in PE 63750D8Z, for advanced concept technology demonstrations. Use of the advanced ferrite antenna would allow replacement of large antennas and reduction of the antenna footprint. The committee recommends an increase of \$2.0 million in PE 63750D8Z for crossed field radiation technology to test the advanced ferrite antenna to meet Navy and military standards.

Communications and control alert framework

The budget request included \$163.6 million in PE 63750D8Z, for advanced concept technology demonstrations. The Department of Defense's complex command and control structure poses management challenges critical to the successful prosecution of any single mission. Important collaborations with other agencies and governments create further complications. The layers of permission for sharing of information, combined with time-sensitive needs to disseminate data across networks and between operating domains, presents an ideal project for exploration by the advanced concepts technology demonstration process.

The committee recommends an increase of \$4.7 million in PE 63750D8Z to bridge the gap between initial research on the command and control alert framework system and full accomplishment of design objectives for testing of a comprehensive, flexible data-sharing system. The alert system would allow local data managers to control information access and would enable participants to filter data streams and reduce information overload.

Flexible JP-8 military fuel certification

The budget request included \$163.6 million in PE 63750D8Z, for advanced concept technology demonstrations. The Department of Defense continues to support efforts aimed at near- and far-term solutions for energy sources, particularly those for transportation. One such research program involves development of a clean jet fuel source. In support of efforts to examine new forms of energy and to meet the Department's clean fuel targets, the committee recommends an increase of \$18.0 million in PE 63750D8Z for final certification of a flexible JP-8 military fuel pilot program to facilitate transition to an advanced concept technology demonstration.

Prevention and detection of cyber threats

The budget request included \$189.8 million in PE 63755D8Z, for the high performance computing modernization program. The President's Information Technology Advisory Committee noted in a February 2005 report entitled "Cyber Security: A Crisis of Prioritization" that "the information technology infrastructure of

the United States, which is now vital for communication, commerce, and control of our physical infrastructure, is highly vulnerable to terrorist and criminal attacks.” The Department of Defense uses networks to communicate with bases, research facilities, and other installations. These networks are vulnerable to a number of types of attack that could be used to break into communication lines and to substitute false information for authentic commands. The committee recommends an increase of \$1.5 million in PE 63755D8Z to support increased research into addressing cyber-based emerging threats and growing challenges presented by various forms of computer-facilitated attack.

Simulation center upgrade

The budget request included \$189.8 million in PE 63755D8Z, for the high performance computing modernization program. The Department of Defense must possess the latest, state-of-the-art computing equipment and capabilities, particularly for the processing and storage of classified data. While the Department has requested funds to operate facilities charged with development, testing, and integration of strategic defense technologies and simulations, no funding is requested for equipment upgrades. The committee recommends an increase of \$3.5 million in PE 63755D8Z for upgrades to the Space and Missile Defense Command simulation center to meet computational demands for end-to-end simulation, testing, and evaluation of advanced interceptors and sensors.

Land warfare technology

The budget request included \$139.1 million in PE 63764E, for land warfare technology. The committee recommends a decrease of \$47.0 million in PE 63764E due to unjustified program growth and excessive funding levels for new starts. Specifically, the committee recommends decreases of \$15.0 million in the future combat systems support program, which would have increased by 66 percent in one year under the budget request; \$6.0 million in the multimodal missile program, for which \$12.4 million was requested for a program in the concept stage; \$6.0 million from a non-lethal weapons program new start, which should more closely follow the needs of the Joint Non-Lethal Weapons Directorate; and \$6.0 million from the tactical urban operations program, to promote an effort more focused specifically on the particular needs of the urban warfighter.

Network centric warfare technology

The budget request included \$136.9 million in PE 63766E, for network centric warfare technology. The committee recommends a decrease of \$3.0 million in PE 63766E from the multi-dimensional mobility robot program, a newly initiated program that duplicates other unmanned ground equipment development programs.

Sensor technology

The budget request included \$189.5 million in PE 63767E, for sensor technology. The committee recommends a decrease of \$5.0 million in PE 63767E from the network centric sensing engage-

ment programs, due to unjustified program growth and duplication of ongoing sensor integration work.

Advanced tactical laser

The budget request included \$61.8 million in Research, Development, Test, and Evaluation, Defense-wide, for Special Operations Advanced Technology Development, in PE 116407BB, for continuing development of the advanced tactical laser (ATL).

The ATL Advanced Concepts Technology Demonstration is a long-standing effort to weaponize directed energy technology into an existing tactical platform. While a potentially promising concept, the program has faced formidable technical challenges and continues to encounter new challenges, especially in the area of power generation to satisfy the high energy requirements to power the weapon system. Proposed funding for the program has increased considerably in fiscal year 2006, and is inconsistent with the technical challenges remaining to be solved before the program can move forward.

The committee recommends a decrease of \$15.0 million in PE116407BB, while the goals of the program are realigned and remaining technical challenges associated with the advanced tactical laser program are addressed.

Mark V patrol boat replacement craft prototype

The budget request included \$104.3 million in Research, Development, Test, and Evaluation, Defense-wide, for Special Operations Advanced Technology Development, in PE 116402BB, but did not include funding to complete the development, testing, and evaluation of the Mark V patrol boat replacement craft prototype.

The Mark V patrol boat is an important component of the Naval Special Warfare Command's overall special operations capabilities, but has proven to be very hard on the special operators who operate the boat or utilize it for insertion and extraction of special operations forces. The incidence of stress fractures and spinal injuries associated with the rough ride of a Mark V operating in medium to heavy seas has been very high. The Commander, U.S. Special Operations Command, has expressed concerns and initiated actions to improve the performance of the current Mark V through the introduction of shock-mitigating seats and to begin development of a replacement craft. A new design has been developed and a prototype craft incorporating composite technologies, shock-mitigation techniques, and improved hull design is near completion. Additional funding is required to complete testing, and evaluation of the prototype craft.

The committee recommends an increase of \$1.5 million in PE 116402BB, for final development, testing, and evaluation of the Mark V patrol boat replacement craft prototype.

Special operations portable power source program

The budget request did not include funding for the development of solid oxide fuel cell systems for special operators. Such systems are designed to reduce the weight burden of batteries by a factor of 10. Current battery systems are large and heavy, burdening the

logistical chain, and limiting operators and the flight ranges of their unmanned aerial vehicles.

The committee recommends an increase of \$5.0 million in Research, Development, Test, and Evaluation, Defense-wide, for Special Operations Advanced Technology Development, in PE 116402BB, for the portable power source program.

Voice activated handheld translator

The budget request did not include funding for the development of a voice activated handheld translator for special operations forces. This technology, deployed in Afghanistan in 2002, allows special operators to communicate with local populations when they do not speak the local language or have a reliable linguist with them. Research is required to refine, test, and demonstrate the translator capabilities, including two-way translation.

The committee recommends an increase of \$2.3 million in Research, Development, Test, and Evaluation, Defense-wide, for Special Operations Advanced Technology Development, in PE 116408BB, for development of a voice activated handheld translator.

Aegis ballistic missile defense

The budget request included \$3.3 billion in PE 63882C for the ballistic missile defense midcourse defense segment, of which approximately \$811.2 million is included for the Aegis ballistic missile defense (BMD) system.

The Aegis BMD element is intended to provide U.S. surface combatants the capability to detect, track, intercept, and destroy short-to intermediate-range ballistic missiles in the ascent, midcourse, and terminal phases of flight. The committee notes that the Aegis BMD system has demonstrated capability through a rigorous test program that includes five out of six successful flight intercepts of short-range ballistic missiles between 2002 and 2005, with the last test conducted under operationally realistic conditions.

Aegis BMD will provide missile defense protection for U.S. deployed forces, allies, and friends against the most imminent threats. The Commander, U.S. Pacific Command testified in March 2005 before the Committee on Armed Services that: (1) the threat posed by ballistic missiles in his area of responsibility is growing; (2) a capability to protect our forces with an effective tiered system against ballistic missiles remains “a key capability for the future and is a top priority for development;” and (3) our production inventory of PAC-3s and SM-3 missiles “must pace the increasing threat.”

The committee recommends an increase of \$75.0 million in PE 63882C for improvements to the Aegis BMD system and to accelerate production of SM-3 missiles. The committee makes these recommendations in light of the successful Aegis BMD test program and mindful of the importance of keeping pace with the growing threat. The committee directs that these funds be used to: (1) purchase long-lead materials for the Aegis BMD signal processor to provide significant system discrimination capabilities against missiles with separating warheads; (2) purchase additional test equipment necessary to accelerate SM-3 missile production rates; (3)

provide long-lead funding for an additional 15 SM-3 missiles to begin delivery in fiscal year 2007; (4) accelerate implementation of the engage-on-remote and launch-on-remote upgrades; and (5) accelerate integration of the two-color seeker for the SM-3 kill vehicle.

Ground-based midcourse ballistic missile defense

The budget request included \$3.3 billion in PE 63882C for the ballistic missile defense midcourse segment, of which approximately \$2.3 billion is for the ground-based midcourse defense (GMD) segment to cover continued development, ground and flight testing, fielding, and support.

Consistent with the National Missile Defense Act of 1999 (Public Law 106-38), the committee continues to support fielding of the GMD element as part of the missile defense test bed and for use in an emergency. The committee notes that the Commander, U.S. Strategic Command, and the Department of Defense Director for Operational Test and Evaluation endorse this dual-use approach for continuing development and fielding of this important defensive capability.

The committee is aware of the successful flight intercept tests achieved by the developmental prototype ground-based interceptor over the past five years. The committee is concerned, however, about the inability of the Missile Defense Agency (MDA) to complete two recent GMD flight tests, using the operationally configured interceptor, as well as the lengthy turnaround time for GMD tests. This seems to indicate, according to the acting Director for Operational Test and Evaluation, that "there is a quality problem." The committee commends the Director of the MDA for establishing an Independent Review Team to assess recent test failures and to improve mission assurance. According to the preliminary findings of the review team, as recounted by the Director of MDA during an April 7, 2005, hearing of the Subcommittee on Strategic Forces of the Committee on Armed Services, MDA needs to pay greater attention to the test certification process and devote more resources to integrated ground testing.

The committee recommends an increase of \$100.0 million in PE 63882C specifically to enhance the testing program for the GMD element in accordance with the findings of the Independent Review Team. The committee directs that these funds be used toward purchases of additional ground test missile units, enhanced integrated ground test capabilities, more comprehensive component testing, and other items for GMD testing. The Director of the MDA is to provide a report to the congressional defense committees by January 15, 2006, indicating specifically how this increase will be allocated.

Miniaturized carbon monoxide oxidation technology

The budget request included \$100.8 million in PE 63884BP, for chemical and biological defense advanced technology demonstrations. Urban and other combat environments often produce situations in which warfighters confront fire and carbon monoxide (CO) threats such as in caves, bunkers, tunnels, burning oil wells, aircraft, vehicles, or structures and buildings. The Department of De-

fense currently lacks gas mask canisters or small escape devices that contain CO filters and protection. A small, lightweight, long-lasting CO removal technology would increase protection and utility of existing systems and would add value to new systems under development. The committee recommends an increase of \$4.3 million in PE 63884BP to complete testing, development, and evaluation of the Mini-COT technology to meet the Department of Defense's need for CO protection.

Airborne Infrared System

The budget request included \$529.8 million in PE 63884C for ballistic missile defense sensors, but no funding for the Airborne Infrared System (AIRS).

AIRS is a system of infrared and visible sensors, a surveillance radar and adjunct data processing and storage that can track ballistic missiles and their warheads in all phases of flight. The committee believes that such a system, if and when deployed, could provide important test, operational, and technical intelligence capabilities in support of ballistic missile defense.

The committee recommends an increase of \$10.0 million in PE 63884C for AIRS research and development. This increase will allow the Missile Defense Agency to proceed with final engineering development and "in-line" demonstrations of system connectivity, a closed loop fire control system, and prototype design for integration on manned or unmanned vehicles.

Kinetic Energy Interceptor

The budget request included \$229.7 million in PE 63886C for Ballistic Missile Defense System Interceptors, of which \$218.7 million is for Kinetic Energy Interceptor (KEI) block 2010/2012.

The committee notes that the KEI effort has been restructured to serve as risk mitigation for the Airborne Laser (ABL), which has been chosen as the primary boost-phase intercept program. Accordingly, the Missile Defense Agency (MDA) has reduced funding for KEI by approximately \$883.0 million in fiscal year 2006 and \$5.0 billion over fiscal years 2006–2009. MDA has built into the KEI program a one-year delay in first flight to fiscal year 2008 in order to focus efforts on demonstrating critical technologies and reducing development risks. This new flight test date coincides with the plans of the MDA for a lethal shoot down of a target missile with ABL. The committee understands that should ABL fail to demonstrate a lethal shoot down in fiscal year 2008, a decision could be made at that point to switch to KEI as the primary boost-phase interceptor.

In light of the decision by the MDA to focus on ABL as the prime boost-phase defense system, the committee believes the funding request for KEI risk reduction efforts is excessive. The committee recommends a decrease of \$50.0 million in PE 63886C for KEI; and recommends that remaining funds be directed toward reducing high-risk technology challenges in the areas of booster thrust, differentiating between plume and missile hard body, and thrust vector control.

Military mail screening system development and demonstration

The budget request included \$280.9 million in PE 604384BP for chemical/biological defense system development and demonstration. The committee recommends an increase of \$1.8 million in PE 604384BP to validate system design and performance for fielded chemical agent detection and biological agent sampling systems to be used at military mail centers and post offices.

Elsewhere in this report, the committee recommends a provision that would require the Secretary of Defense to promptly develop and implement a plan to ensure that mail within the military mail system is safe for delivery, to include the screening of all mail in order to detect the presence of biological, chemical or radiological weapons, agents or pathogens, or explosive devices. The committee recommends authorizing additional funding for this purpose in fiscal year 2006 to ensure that resources are available to begin implementation of the plan as soon as possible.

UAV systems and operations validation program

The budget request included \$128.8 million in PE 64940D8Z, for central test and evaluation investment development. Testing of unmanned aerial vehicles (UAVs) for autonomous control and safety in piloted airspace would allow for full operational use of these systems in evolving battlefields that require both manned and unmanned air support. The committee recommends an increase of \$5.0 million in PE 64940D8Z for UAV systems and operations validation program to facilitate short- and long-range flight testing of autonomous systems.

Foreign supplier assessment center

The budget request included \$35.7 million in Research, Development, Test, and Evaluation, Defense-wide, for foreign comparative testing, but did not include funding for the Foreign Supplier Assessment Center (FSAC) concept.

The FSAC concept was established to assess potential foreign suppliers wanting to provide products and services, including components for weapon systems, automation hardware, and various forms of software to the Department of Defense. The FSAC is fulfilling a critical need to identify and categorize potential foreign suppliers; conduct tests and evaluation of products and services for appropriate security purposes; and develop recommendations and risk mitigation plans. However, the full requirement to assess foreign supplier of critical defense components will not be realized without significant additional investment.

The committee recommends an increase of \$10.0 million in PE 65710D8Z, for the continued expansion and operation of the FSAC concept.

Operationally responsive space payloads

The budget request included \$19.9 million in PE 65799D8Z for the Office of Force Transformation in the Office of the Secretary of Defense.

As noted in the Senate report accompanying S. 2400 (S. Rept. 108–260) of the National Defense Authorization Act for Fiscal Year

2005, the committee believes that acquisition of inexpensive launch vehicles and smaller satellites provide the promise of enhancing the effectiveness of U.S. military and intelligence space operations and mitigating some of the long-standing development problems that have afflicted U.S. space programs over the past decade. In support of this effort, OFT has sponsored the development of experimental satellites intended to demonstrate the rapid design and fabrication of operationally useful satellite payloads.

The committee notes that insufficient funding is requested for fiscal year 2006 to continue development of a modular, standard bus and complete the experimentation necessary to demonstrate tactical satellite capabilities. The committee recommends an increase of \$20.0 million dollars in PE 65799D8Z for the development of operationally responsive payloads, to include funding for payloads, satellite busses, integration, command and control, and joint warfighter experimentation.

Section 913 of the Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005 (Public Law 108-375) directed the Secretary of Defense to create a separate, dedicated program element for operationally responsive national security payloads and buses. The committee notes that such a program element was not included in the fiscal year 2006 budget request, but has subsequently been created by the Department of Defense as PE 62001D8Z with the title: joint operational small satellites. The committee fully expects that the \$20.0 million increase in PE 65799D8Z will be applied toward PE 62001D8Z for the funding of responsive satellites to provide direct support to the joint operational and tactical level warfighter.

Industrial preparedness

The budget request included \$18.2 million in PE 78011S, for industrial preparedness. The committee notes that the laser additive manufacturing process rapidly produced titanium wing pylons to replace aluminum parts, which experienced mechanical problems during sustained combat operations. The committee recommends an increase of \$5.0 million in PE 78011S for application of the laser additive manufacturing process to repair parts and to produce new parts for other aerospace-grade components that face similar degradation. The current processes and materials used for production of these parts are time consuming, expensive, and require long-lead times, which may negatively impact readiness.

The committee further recommends an increase of \$1.5 million in PE 78011S for research on improved manufacturing processes for defense-related technologies, including sensors, energy systems, and nanotechnology.

Special operations wireless management and control project

The budget request included \$33.2 million in Research, Development, Test, and Evaluation, Defense-wide, for Special Operations Intelligence Systems Development, in PE 116405BB, including \$11.7 million for the Joint Threat Warning System (JTWS), but did not include funding to develop new capabilities for the JTWS in the evolving wireless communications environment.

The special operations wireless management and control project will continue development of capabilities that can be integrated into the JTWS to provide special operations forces with tactical capabilities to maintain situational awareness of the wireless communications environment being used by potential adversaries. The JTWS is one of the highest priorities for the Commander, U.S. Special Operations Command, for additional funding.

The committee recommends an increase of \$2.5 million in PE 116405BB, to continue development of a wireless management and control capability for the JTWS.

Maritime unmanned aerial vehicle sensor

The budget request included \$66.3 million in Research, Development, Test, and Evaluation, Defense-wide, for Special Operations Forces (SOF) Operational Enhancements, in PE 116408BB, but did not include funding to develop new sensor capabilities for the maritime unmanned aerial vehicle (MUAV).

An urgent requirement for a new signals intelligence sensor for the MUAV was validated after submission of the fiscal year 2006 President's budget request. This sensor would provide a critical new capability for the MUAV and enhance the operational effectiveness of SOF. This MUAV is one of the highest priorities of the Commander, U.S. Special Operations Command, for additional funding.

The committee recommends an increase of \$4.9 million in PE 116408BB, for the development of a MUAV sensor.

Lightweight portable solar panels

The budget request did not include funding for lightweight portable solar panels. These flexible lightweight panels serve as portable chargers, converting sunlight to electricity to keep batteries constantly charged. This eliminates the need for operators to carry heavy battery packs during emergency and remote operations. The rugged folding panels are easy to carry and deploy, and they provide power even if damaged, or employed in partial shade.

The committee recommends an increase of \$2.5 million in Research, Development, Test, and Evaluation, Defense-wide, for Special Operations Forces Operational Enhancements, in PE 116408BB, for lightweight solar panels.

Items of Special Interest

Canopy hard-coats

The committee believes that industry has made a marked advancement in the development of canopy hard-coats that may significantly extend the life and reduce the cost of canopies used on naval aircraft. Therefore, the committee urges the Secretary of the Navy to accelerate the testing of new canopy hard-coats currently in development under the auspices of the Patuxent Naval Air Station Materials Laboratory. Furthermore, the committee directs the Secretary to evaluate these hard-coats on canopies provided by Navy canopy suppliers.

CH-53X helicopter development

The committee recognizes the essential contribution that heavy-lift assets make both in wartime and peacetime and is concerned by the intense usage of current assets in Afghanistan, the Horn of Africa, and Iraq. In 2003, an independent analysis of alternatives concluded that a program to remanufacture the existing aircraft would cause the Navy to shut down one-third of the Marine Corps heavy-lift squadrons for up to 5 years due to the number of aircraft that would be diverted from fleet squadrons to the remanufacturing program. The Navy decided to pursue a new production strategy in accordance with that recommendation.

The Joint Requirements Oversight Council approved a CH-53X operational requirements document on December 9, 2004. Marine Corps witnesses testified before the Committee on Armed Services that the CH-53X is an urgent warfighting requirement, that all alternatives have been analyzed, and that there are no other suitable alternatives to new manufacture of the CH-53X.

The committee supports the requirement for CH-53X new production program but has concerns regarding program execution and schedule. The Department of Defense Appropriations Act for Fiscal Year 2005 (Public Law 108-287) appropriated \$102.3 million for a risk reduction initiative in the CH-53X development program. Since March 18, 2005, the Assistant Secretary of the Navy for Research, Development, and Acquisition (ASN (RDA)) has released roughly \$50.0 million of these funds. The ASN (RDA) is withholding the remaining funds until an independent review team can assess whether the funding in the Future Years Defense Program is sufficient to execute the CH-53X program.

The committee supports this program. However, the committee is concerned that the Navy is not moving aggressively to execute risk reduction actions, thus potentially delaying the fielding of this critical system. The committee also appreciates the concerns expressed by the ASN (RDA) about program affordability. The committee, therefore, encourages the Navy to move expeditiously to resolve these concerns and to release the remaining \$52.3 million in risk reduction funding so that the requested fiscal year 2006 program can be completed.

Construction of Navy Research Vessels

The budget request included \$356.9 million in PE 61153N, for defense research sciences, including \$4.0 million for design of the next generation of ocean research vessels for the University National Ocean Laboratory (UNOLS) fleet. The academic research community uses UNOLS to conduct experiments and research for the Navy. The committee is concerned with the Navy's plans to fund the construction of academic research vessels in the basic science account in fiscal year 2007. While the ocean class research vessel, a key research tool, provides the Navy with a robust understanding of its battlespace, such diversion of research funds would adversely affect the goals of the innovative research account.

The committee authorizes the \$4.0 million requested in PE 61153N for design of the new research vessel in fiscal year 2006, but directs the Navy to request the planned \$25.0 million in fiscal year 2007 for ship construction funds in the Navy Shipbuilding and

Conversion account. The committee expects that the Navy will continue to use the Shipbuilding and Conversion account to provide for the recapitalization of ocean class research vessels in the Future Years Defense Program.

Department of Defense computer science research

The committee is concerned that the Department of Defense is reducing its investment in long-term computer science research, without due consideration of the potential negative ramifications of such reductions on the development of next generation networking, information technology, and information assurance systems on which our military will depend in the future. The committee notes that the President's Information Technology Advisory Committee and the Defense Science Board have both released reports this year that call attention to the potential impacts of reduced funding on the part of the Department in fundamental computer science.

The committee directs the Undersecretary of Defense for Acquisition, Logistics and Technology to carefully examine the long-term practical and policy implications of the Department's investment strategy for computing research and to provide the outcome of this review to the congressional defense committees with the fiscal year 2007 budget request. The review should include an explanation of the Department's role in the overall federal computing research portfolio and a review of the Department's structure and investment plan for these programs.

Unmanned aerial vehicles for resupply missions

The committee notes that dedicated unmanned aerial vehicles for movement of equipment and supplies could support Army expeditionary forces while reducing logistics, procurement, and operational costs. The committee directs the Secretary of the Army to provide to the congressional defense committees by April 1, 2006, a report on the requirements, technical feasibility, and cost of integrating unmanned aerial vehicles for resupply into its future force unmanned aviation concepts.