

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 2008 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 Department of Defense 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 2007
(Dollars in Thousands)

<u>Title II -- RESEARCH, DEVELOPMENT, TEST & EVALUATION</u>	<u>Authorization Request</u>	<u>Senate Change</u>	<u>Senate Authorized</u>
Research, Development, Test & Evaluation, Army	10,589,604	679,300	11,268,904
Research, Development, Test & Evaluation, Navy	17,075,536	-779,141	16,296,395
Research, Development, Test & Evaluation, Air Force	26,711,940	-1,129,951	25,581,989
Research, Development, Test & Evaluation, Defense-wide	20,559,850	771,625	21,331,475
Operational Test & Evaluation	180,264		180,264
TOTAL RDT&E	75,117,194	-458,167	74,659,027

Subtitle A—Authorization of Appropriations**Subtitle B—Program Requirements, Restrictions, and Limitations****Advanced Sensor Applications Program (sec. 211)**

Section 211 would require that \$20.0 million in funds authorized and appropriated for the Foreign Material Acquisition and Exploitation program and for activities of the Office of Special Technology in the Office of the Under Secretary of Defense for Intelligence shall be allocated to the Advanced Sensor Applications program (ASAP). Section 211 also would require that the ASAP program be promptly transferred to the Defense Threat Reduction Agency and executed by the Navy's Program Executive Officer for Aviation. Additional information is contained in the classified annex to this report.

Active protection systems (sec. 212)

The committee recommends a provision to accelerate the development and evaluation of active protection systems (APS), enabling accelerated deployment if APS is determined to be the most effective counter to current and emerging direct- and top-attack threats. The committee notes that these systems have the potential to deal with the threat of anti-tank guided munitions, rocket propelled grenades, kinetic energy rounds, and other emerging and proliferating threats. The committee is aware that the Department of Defense has undertaken and is currently investing in a number of research and development programs for APS. The committee notes that the recent independent assessment of APS, as required by section 234 of the John Warner National Defense Authorization Act for Fiscal Year 2007 (Public Law 109-364), made a number of specific recommendations that would serve to enhance the Department's efforts to deploy these systems.

The committee's recommended provision includes a number of these recommendations, including a requirement for a comparative live fire test of appropriate active protection systems; an assessment of current and developing foreign and domestic active protection systems to assess technologies and analyze the operational impact on military forces of the deployment of APS and countermeasures to those systems; and a number of funding increases to accelerate the fielding of the systems to United States forces. These funding increases are described elsewhere in this report.

Obligation and expenditure of funds for competitive procurement of propulsion system for the Joint Strike Fighter (sec. 213)

The committee recommends a provision that would require the Secretary of Defense to obligate sufficient annual amounts to develop and procure a competitive propulsion system for the Joint Strike Fighter (JSF) program, in order to conduct a competitive propulsion source selection, from funds appropriated pursuant to an authorization of appropriations or otherwise made available for research, development, test, and evaluation, and procurement for the JSF program. The committee notes that current plans for the

competitive JSF propulsion system would complete the development of the competitive propulsion system so that a competition for the JSF propulsion system would occur in fiscal year 2012 with the sixth lot of low-rate initial production.

The budget request contained \$1.7 billion in PE 64800N, and \$1.8 billion in PE 64800F for development of the JSF, but contained no funds for development of a competitive JSF propulsion system.

The competitive JSF propulsion system program is developing the F136 engine, which would provide a competitive alternative to the current baseline F135 engine. Section 211 of the John Warner National Defense Authorization Act for Fiscal Year 2007 (Public Law 109-364) required that, by March 15, 2007, the Secretary of Defense, acting through the Department of Defense Cost Analysis Improvement Group, the Comptroller General, and a federally funded research and development center, each provide an independent life cycle cost analysis of the JSF propulsion system, which would include a competitive engine program. The committee has been briefed on the results of these reviews and believes those results were, in the aggregate, inconclusive on whether there would be a financial benefit to the Department of Defense in continuing to develop a competitive propulsion system for the JSF program.

However, the committee notes that all studies identified significant non-financial factors of a two-engine competitive program that should be considered in deciding between the alternatives. These factors include: better engine performance; improved contractor responsiveness; a more robust industrial base; increased engine reliability; and improved operational readiness. The committee believes that the potential benefits from the non-financial factors favor continuing the JSF competitive propulsion system program. Therefore, the committee recommends an increase of \$480.0 million for this purpose, including \$240.0 million in PE 64800N, and \$240.0 million in PE 64800F.

Subtitle C—Missile Defense Programs

Limitation on availability of funds for procurement, construction, and deployment of missile defenses in Europe (sec. 231)

The committee recommends a provision that would limit the availability of funds authorized to be appropriated in this Act from being obligated or expended for procurement, site activation, construction, preparation of equipment for, or deployment of a long-range missile defense system in Europe until two conditions have been met: (1) the governments of the countries in which major components of the missile defense system (including interceptors and associated radars) are proposed to be deployed have each given final approval to any missile defense agreements negotiated between such governments and the United States concerning the proposed deployment of such components in their countries; and (2) 45 days have elapsed following the receipt by Congress of a report required by the provision.

The provision would also limit funds for the acquisition or deployment of operational interceptor missiles for the proposed long-

range missile defense system in Europe until the Secretary of Defense certifies to Congress, after receiving the views of the Director of Operational Test and Evaluation, that the proposed interceptor to be deployed as part of such a missile defense system has demonstrated, through successful, operationally realistic flight testing, that it has a high probability of working in an operationally effective manner.

The provision would also require a federally funded research and development center (FFRDC) to conduct an independent assessment of options for missile defense of Europe. The assessment would consider the ballistic missile threat to Europe, particularly from Iran, including short-range, medium-range, intermediate-range, and long-range missiles, and would consider a number of related issues, technologies, and factors. The FFRDC would be required to provide the results of its assessment, including any findings and recommendations, in an unclassified report not later than 180 days after the enactment of this Act.

The provision makes clear that it would not limit continuing obligation and expenditure of funds for missile defense, including for research and development and for other activities not otherwise limited by the provision. This would include site surveys, studies, analysis, and planning and design for the proposed missile defense deployment in Europe.

The administration requested \$310.4 million in the budget request for planning, design, development, construction and deployment activities for 10 Ground-based Interceptors (GBIs) to be deployed in Poland, and a large X-band radar to be deployed in the Czech Republic. The committee believes that construction and deployment activities are premature for the reasons explained below.

The two-stage interceptor proposed for deployment in Europe has not yet been developed or tested, and is not currently planned to be flight-tested until 2010. It could be several years before it is known if the interceptor will work in an operationally effective manner.

The United States is just beginning to negotiate with the Governments of Poland and the Czech Republic on detailed agreements for the proposed deployments in their nations. These negotiations may not be concluded before the end of this year, and then would have to be ratified by the parliaments in each nation. The Missile Defense Agency has estimated that such ratification would not take place before 2009. Construction and deployment would not begin before such ratification.

The budget request seeks funds to deploy up to 10 GBIs at a third deployment site, either in Europe or at Fort Greely, Alaska. The budget request anticipates the possibility of not deploying the interceptors in Europe, and both deployment options are under consideration.

The proposed European deployment would not defend all of the North Atlantic Treaty Organization (NATO) European territory. Additional missile defense systems, such as those described below, would be needed to provide coverage of all NATO European territory against all ranges of Iranian ballistic missiles. NATO, which has not yet decided to pursue missile defense of its territory, has not endorsed or rejected the proposed deployment.

The proposed deployment is intended to counter a potential future threat to the United States or Europe from Iranian long-range or intermediate-range ballistic missiles armed with nuclear warheads. There is uncertainty about whether Iran will have such long-range missiles, or nuclear warheads that could work on such missiles, by 2015.

However, there is no doubt that Iran currently has the largest inventory of short-range and medium-range ballistic missiles in the Middle East, and is working to increase their number, range, and capability. It is also clear that forward-deployed U.S. forces and some NATO allies are currently within range of those missiles, and that the United States does not have adequate regional missile defense capability in place today to protect our forward-deployed forces.

There are a number of near-term missile defense options to provide such defenses against short-range and medium-range missiles (and future intermediate-range missiles), including the Patriot PAC-3 system, the Aegis Ballistic Missile Defense (BMD) system and its Standard Missile-3 (SM-3) interceptor, and the Terminal High Altitude Area Defense (THAAD) system.

General James Cartwright, the Commander of U.S. Strategic Command, who has operational responsibility for global integrated missile defense, testified to the committee that his missile defense focus this year is to expand “beyond long-range intercontinental ballistic missiles to start to address those that hold at threat our forward deployed forces, or allies and our friends. Those are more in the short and medium-range ballistic missiles, things that Patriot, Standard Missile-2 and [Standard Missile]-3 will be able to address, and THAAD as it comes on.” All such options should be considered as Congress makes decisions on what missile defense capabilities are appropriate for Europe.

The current Ground-based Midcourse Defense (GMD) system deployed in the United States already has the range to provide defense of the United States against a potential future long-range missile threat from Iran.

Russia has expressed strong concerns about the proposed deployment, and it will take time to work through these issues in a manner that ensures improved security, rather than reduced security in Europe. The administration is planning high-level talks with the Russian Government starting in the fall of 2007.

The proposed European missile defense deployments would cost an estimated \$4.0 billion through fiscal year 2013, all of which the United States would be expected to pay.

Given these considerations, the committee believes that it is premature to authorize the appropriation of funds for construction or deployment of the proposed system without conditions. The committee notes that fiscal year 2008 research, development, test and evaluation funds authorized and appropriated for this proposed deployment would remain available for two years, during which time negotiations and development activities could move forward.

As discussed elsewhere in this report, the committee recommends a reduction of \$85.0 million proposed for site activation and construction activities for the proposed European GMD deployment.

Limitation on availability of funds for deployment of missile defense interceptors in Alaska (sec. 232)

The committee recommends a provision that would limit the availability of funds authorized to be appropriated in this Act from being obligated for the deployment of more than 40 Ground-based Interceptors at Fort Greely, Alaska, until the Secretary of Defense certifies to Congress, after receiving the views of the Director of Operational Test and Evaluation, that the Block 2006 Ground-based Midcourse Defense (GMD) element of the Ballistic Missile Defense system (BMDS) has demonstrated, through operationally realistic end-to-end flight testing, that it has a high probability of working in an operationally effective manner.

The committee notes that section 234 of the National Defense Authorization Act for Fiscal Year 2006 (Public Law 109–163) required the Director of Operational Test and Evaluation to provide to the Secretary of Defense and to Congress an assessment of the operational capability of each block of the BMDS, starting with the 2006 block, at the completion of test and evaluation for each block. This assessment will be available well before any additional interceptors would be ready to deploy in Alaska. If the Department of Defense decides it wants to deploy additional interceptors at Fort Greely beyond the 40 already planned, it would have to certify that the Block 2006 GMD system is operationally effective. If the system is not operationally effective, then it would not make sense to deploy more interceptors.

Budget and acquisition requirements for Missile Defense Agency activities (sec. 233)

The committee recommends a provision that would require the Missile Defense Agency (MDA) to submit its annual budget request, starting in fiscal year 2009, using all of the major categories of funding: research, development, test and evaluation (RDT&E); procurement; operation and maintenance; and military construction. The provision would also establish acquisition objectives for MDA to improve transparency, accountability, and oversight of its budget and programs. To accomplish these objectives, the provision would establish a number of specific acquisition improvements, including acquisition baselines for cost, schedule, and performance for those missile defense elements that have either entered the equivalent of the System Development and Demonstration phase of acquisition, or are being produced and fielded for operational use.

The extraordinary flexibility granted to the MDA to use exclusively RDT&E funds for all its activities, including such non-RDT&E activities as procurement, operation and maintenance, and military construction, was sought and granted in order to permit MDA to implement the President's December 2002 decision to deploy an initial missile defense system for the United States within 2 years, and without any of the normal acquisition or testing rules that apply to all other major defense acquisition programs. Now that the system has been developed and deployed, the rationale for this extraordinary flexibility, and the resultant lack of accountability, has expired.

As the Government Accountability Office (GAO) reported in March 2007, the extraordinary acquisition flexibility granted to the

MDA has resulted in a lack of accountability, transparency, and oversight, such that it is not possible for GAO to determine the cost of a 2-year block of work performed on the Ballistic Missile Defense (BMD) system, nor to determine the unit cost for such a fundamental item as the Ground-Based Interceptor (GBI) of the Ground-based Midcourse Defense (GMD) element.

After studying the MDA acquisition program and process, GAO concluded that there were a number of improvements that MDA should make. GAO recommended several steps designed to improve accountability, transparency, and oversight of the BMD program, including that MDA should use procurement funding for missile defense elements that are in the equivalent of the System Development and Demonstration phase, or are being fielded for operational use. GAO also recommended that MDA should establish acquisition baselines for cost, schedule, and performance for these elements, and that it should provide unit cost data, and other information that would help improve accountability. The committee agrees with the GAO recommendations and believes that MDA should make significant progress in accomplishing these objectives.

Participation of Director, Operational Test and Evaluation, in missile defense test and evaluation activities (sec. 234)

The committee recommends a provision that would provide authorities for the Director of Operational Test and Evaluation to have the same access to information concerning ballistic missile defense test and evaluation activities that exists for test and evaluation information for all other major defense acquisition programs under section 139 of title 10, United States Code.

The committee commends the Missile Defense Agency and the Director of Operational Test and Evaluation for establishing a constructive and cooperative relationship. This provision is intended to ensure that this important and necessary cooperation continues in the future.

Extension of Comptroller General assessments of ballistic missile defense programs (sec. 235)

The committee recommends a provision that would extend by 5 years the period during which the General Accountability Office (GAO) would continue to assess and report to Congress annually on the progress of the Missile Defense Agency to meet its annual goals for cost, schedule, testing, and performance of the ballistic missile defense system.

The committee has found the previous GAO annual assessments and reports to be valuable sources of oversight and insight into the ballistic missile defense program. This provision would ensure that such valuable assessments would continue for the period of the current future-years defense program.

Subtitle D—Other Matters**Modification of notice and wait requirement for obligation of funds for the foreign comparative test program (sec. 251)**

The committee recommends a provision that would enhance the efficiency of the Foreign Comparative Test program by modifying the congressional reporting requirement associated with the program, so that obligation of funds can occur after Congress reviews the program's intended action for 7 days. The committee understands that Congress has never utilized its current statutorily mandated 30 day review period to change a Foreign Comparative Test funding recommendation. This proposed change to the statute will expedite the execution of the Foreign Comparative Testing program, allowing contracting officers to enter into negotiations with potential vendors earlier and funds to be obligated and expended more quickly.

Modification of cost sharing requirement for Technology Transition Initiative (sec. 252)

The committee recommends a provision that would give the Department of Defense more flexibility in its execution of the Technology Transition Initiative, but would remove restrictions on the types of cost sharing arrangements allowed between a service or agency and the initiative manager in funding technology transition projects. The committee notes that this program, originally established by the committee in the National Defense Authorization Act for Fiscal Year 2003 (Public Law 107-314) has successfully transitioned a number of technologies from the Department's science and technology programs into fielded systems.

The committee notes that the Department has expressed concern that the current statute requires the Office of the Secretary of Defense through the initiative manager to provide no less than 50 percent of funds towards a transition project, with the balance coming from the sponsoring service or agency. This has restricted the number of projects that the program could support and on occasion prevented the sponsoring service or agency from contributing more funding to the projects. The committee's recommended proposal would allow the initiative manager complete flexibility in determining the appropriate cost sharing arrangement for each technology transition initiative project.

Strategic plan for the Manufacturing Technology Program (sec. 253)

The committee recommends a provision that would require the Secretary of Defense to develop and publish a biennial strategic plan for the manufacturing technology program. The committee notes that advanced manufacturing technologies are the key to a vital defense industrial base, as well as a support for United States economic competitiveness. The manufacturing technology program has traditionally been the activity through which the Department of Defense has pursued defense-related manufacturing technologies that serve to improve the performance and reduce the life cycle costs of defense systems. The committee commends the Department

for attempting to expand the scope and reach of the program, through the creation of the Joint Defense Manufacturing Technology Panel, the utilization of manufacturing readiness assessments as metrics on acquisition programs, and the establishment of a manufacturing science and technology initiative.

The committee notes that the 2006 Defense Science Board Task Force on the Manufacturing Technology Program recommended that the Department “must not only publish a strategic plan, but also ensure its implementation with periodic reviews of the plan’s execution.” The committee provision would implement the DSB’s recommendation. The committee encourages the Secretary to consider the other strategic planning recommendations of the DSB task force described in their report.

Modification of authorities on coordination of Defense Experimental Program to Stimulate Competitive Research with similar Federal programs (sec. 254)

The committee recommends a provision that would give the Department of Defense more flexibility in its execution of the Defense Experimental Program to Stimulate Competitive Research (DEPSCoR) program. The provision would enable the Department to award merit-based grants and other support under the program’s authority directly to entities in participating DEPSCoR states, or by using the existing mechanism of awarding contracts through state planning committees.

The committee notes that the DEPSCoR program funds defense-related research in eligible states where educational institutions historically performed less well in full and open competitions, with the intent of enabling them to become more successful in merit-based competitions. The committee notes that the Department plans to terminate its support for the program in fiscal year 2010, due to an inability to identify any DEPSCoR award “which led to any application used by, or supportive of, the warfighter,” due to resource constraints on science and technology programs and due to the need to provide more resources for the activities of the National Defense Education Program (NDEP). The Department has indicated that it intends to work with researchers in DEPSCoR states through NDEP.

The committee believes that the flexibility provided by this provision will enable the Department to better utilize DEPSCoR funding to support warfighter needs, including potentially supporting educational activities, while still preserving the important role of state planning committees to coordinate activities with other similar federal programs and state-based efforts where appropriate.

Enhancement of defense nanotechnology research and development program (sec. 255)

The committee recommends a provision to assist in the acceleration of the development, integration, and fielding of appropriate nanotechnology-based capabilities in defense systems. This recommendation is consistent with a series of actions taken by Congress over the past few years to highlight the importance that the growing nanotechnology research area can help both our national security and global competitiveness. Previously, with the intent to

ensure that the United States had global superiority in nanotechnology necessary for meeting national security requirements, the committee established the defense nanotechnology research program in section 246 of the Bob Stump National Defense Authorization Act for Fiscal Year 2003 (Public Law 107-314), which this provision updates and enhances. Later, Congress also passed the 21st Century Nanotechnology Research and Development Act (Public Law 108-153) to coordinate Federal Government investments and activities related to nanotechnology.

The committee notes that the Department of Defense has invested roughly \$2.0 billion in nanotechnology research and development since fiscal year 2000. These investments have been in areas such as advanced sensors, structural materials, and electronic systems based on the unique properties enabled by nanotechnology. The Department has also established a number of nanotechnology-focused research centers, including the Institute for Nanoscience at the Naval Research Laboratory and the Army's Institute for Soldier Nanotechnologies. These investments are developing technologies that will soon be integrated into deployed systems, and enable advanced capabilities that will enhance our forces' battlefield superiority.

The committee believes that nanotechnology is at the stage where the Department needs to focus more on transitioning technologies to demonstrate the return of the significant research investment made thus far. Therefore, the committee's provision directs the Department to focus more closely on the manufacturing of nanotechnologies and ensuring the vitality of the nanotechnology industrial base, since these are key to adoption of new technologies in defense systems. The committee notes that the Department should conduct state-of-the-art research on nanomanufacturing involving collaborations between academic institutions, Department of Defense laboratories, and industry partners, as well as working through the Department's manufacturing technology programs. Further, the committee notes that there would be significant value in collaborating with National Science Foundation centers working on nanomanufacturing and working toward a national nanomanufacturing enterprise that encourages extensive industrial collaboration, in order to maintain United States global leadership.

The committee's recommended provision also strengthens the connection between Department nanotechnology efforts and the Government-wide National Nanotechnology Initiative, by requiring participation in coordination activities, as well as in participation in and support of the mandatory external reviews of the program. The committee also recognizes the need for metrics and goals to ensure that the Department's nanotechnology program is well structured and successfully developing needed defense technologies. Therefore, the committee recommends a review by the Government Accountability Office of the overall Department nanotechnology program.

Finally, the committee is concerned that the United States may be losing its lead in the development of defense nanotechnologies to international competitors and partners. Therefore, the committee's recommended provision strengthens the monitoring and as-

assessment of international nanotechnology research and development capabilities in areas of interest to the Department of Defense.

Budget Items

Army

Title II-RDT and E
(Dollars in Thousands)

<u>Program Element</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2008 Request</u>	<u>Senate Change</u>	<u>Senate Authorized</u>
		RESEARCH, DEVELOPMENT, TEST & EVALUATION, ARMY			
		Basic Research			
0601101A	1	IN-HOUSE LABORATORY INDEPENDENT RESEARCH	19,266		19,266
0601102A	2	DEFENSE RESEARCH SCIENCES Respiratory infections research Document exploitation systems Organic semiconductor modeling & simulation research Nanostucture de-icing research	137,676	7,500 [2,000] [3,000] [1,000] [1,500]	145,176
0601103A	3	UNIVERSITY RESEARCH INITIATIVES Program increase	64,843	9,000 [9,000]	73,843

Title II-RDT and E
(Dollars in Thousands)

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0601104A	4	UNIVERSITY AND INDUSTRY RESEARCH CENTERS	84,034	18,200	102,234
		Information assurance research		[1,500]	
		Nanoscale biosensor research		[2,500]	
		Low temperature vehicle performance research		[2,000]	
		Automotive research		[3,000]	
		Integrated sensing & communications systems		[2,000]	
		Urban simulation & training research		[1,400]	
		Network security research		[2,000]	
		Machine interface research		[1,500]	
		Transparent nanocomposite armor research		[300]	
		Nanocomposite materials research		[2,000]	
		Applied Research			
0602105A	5	MATERIALS TECHNOLOGY	18,614	13,000	31,614
		Nanosensor manufacturing research		[2,000]	
		Ballistic materials for future combat systems		[2,000]	
		IED protection materials research		[4,000]	
		Advanced composite materials research		[3,000]	
		Soldier torso armor systems		[2,000]	

Title II-RDT and E

(Dollars in Thousands)

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0602120A	6	SENSORS AND ELECTRONIC SURVIVABILITY Advanced microelectronics manufacturing Operationally responsive space research Integrated remote sensing technologies	39,826	9,000 [2,000] [5,000] [2,000]	48,826
0602122A	7	TRACTOR HIP	4,367		4,367
0602211A	8	AVIATION TECHNOLOGY	42,567		42,567
0602270A	9	ELECTRONIC WARFARE TECHNOLOGY	16,411		16,411
0602303A	10	MISSILE TECHNOLOGY Materials for munitions protection research	53,038	2,000 [2,000]	55,038
0602307A	11	ADVANCED WEAPONS TECHNOLOGY	19,342		19,342
0602308A	12	ADVANCED CONCEPTS AND SIMULATION Photonics research for sniper detection	16,654	4,000 [4,000]	20,654
0602601A	13	COMBAT VEHICLE AND AUTOMOTIVE TECHNOLOGY Medium/heavy duty fuel cell vehicle demonstration Transparent armor research Military fuels research	53,342	7,000 [3,000] [2,000] [2,000]	60,342
0602618A	14	BALLISTICS TECHNOLOGY	55,014		55,014
0602622A	15	CHEMICAL, SMOKE AND EQUIPMENT DEFEATING TECHNOLOGY	2,235		2,235
0602623A	16	JOINT SERVICE SMALL ARMS PROGRAM Recoil mitigation technologies	7,008	2,000 [2,000]	9,008

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0602624A	17	WEAPONS AND MUNITIONS TECHNOLOGY UGV weaponization technologies	40,469	3,000 [3,000]	43,469
0602705A	18	ELECTRONICS AND ELECTRONIC DEVICES High-frequency, high-power electronic & optoelectronic devices Advanced rechargeable batteries	43,391	6,000 [3,000] [3,000]	49,391
0602709A	19	NIGHT VISION TECHNOLOGY	24,391		24,391
0602712A	20	COUNTERMINE SYSTEMS Standoff IED detection technologies	21,795	5,000 [5,000]	26,795
0602716A	21	HUMAN FACTORS ENGINEERING TECHNOLOGY	17,426		17,426
0602720A	22	ENVIRONMENTAL QUALITY TECHNOLOGY	15,809		15,809
0602782A	23	COMMAND, CONTROL, COMMUNICATIONS TECHNOLOGY	22,215		22,215
0602783A	24	COMPUTER AND SOFTWARE TECHNOLOGY	5,368		5,368
0602784A	25	MILITARY ENGINEERING TECHNOLOGY	51,120		51,120
0602785A	26	MANPOWER/PERSONNEL/TRAINING TECHNOLOGY	16,208		16,208
0602786A	27	WARFIGHTER TECHNOLOGY Ballistic materials for force protection	23,083	5,000 [5,000]	28,083
0602787A	28	MEDICAL TECHNOLOGY Advanced fibrin dressings Battlefield head injury diagnostic tools Biomechanics research Bioengineering research	76,544	6,500 [2,000] [1,000] [2,000] [1,500]	83,044

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		Advanced Technology Development			
0603001A	29	WARFIGHTER ADVANCED TECHNOLOGY	47,065	2,000	49,065
		AGAS technology development		[2,000]	
0603002A	30	MEDICAL ADVANCED TECHNOLOGY	53,274	19,000	72,274
		Lower limb prosthetics research		[3,000]	
		Combat wound initiative		[2,000]	
		Electronic vital signs monitoring systems		[2,000]	
		Robotic telesurgery research		[2,000]	
		Blast trauma detection research		[2,000]	
		Dengue infections research		[5,000]	
		Tissue regeneration research		[3,000]	
0603003A	31	AVIATION ADVANCED TECHNOLOGY	53,890	5,000	58,890
		UAV munitions technologies		[3,000]	
		UAV payload delivery systems		[2,000]	
0603004A	32	WEAPONS AND MUNITIONS ADVANCED TECHNOLOGY	59,389	1,000	60,389
		Canon recoil reduction system		[1,000]	

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0603005A	33	COMBAT VEHICLE AND AUTOMOTIVE ADVANCED TECHNOLOGICAL Composite armor cab development Antibalistic windshield armor Hostile fire detection systems Unmanned ground vehicle initiative Military hybrid engine development program Solid hydrogen storage vehicle research Composite ceramic vehicle armor program Fuel cell cost reduction research Solid oxide fuel cell manufacturing research Vehicle design optimization tools Dynamometer facility upgrade Fastening & joining research Tactical vehicle APS research	131,436	55,000 [3,000] [4,000] [3,000] [12,000] [10,000] [4,000] [1,000] [3,000] [1,500] [1,500] [3,000] [1,500] [7,500]	186,436
0603006A	34	COMMAND, CONTROL, COMMUNICATIONS ADVANCED TECHNOLOGY	12,255		12,255
0603007A	35	MANPOWER, PERSONNEL AND TRAINING ADVANCED TECHNOLOGY	6,783		6,783
0603008A	36	ELECTRONIC WARFARE ADVANCED TECHNOLOGY	49,199		49,199
0603009A	37	TRACTOR HIKE	12,633		12,633
0603015A	38	NEXT GENERATION TRAINING & SIMULATION SYSTEMS Joint leadership training systems	18,723	4,000 [4,000]	22,723
0603020A	39	TRACTOR ROSE	6,526		6,526

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<u>Program Element</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2008 Request</u>	<u>Senate Change</u>	<u>Senate Authorized</u>
0603100A	40	IED DEFEAT TECHNOLOGY DEVELOPMENT			
0603103A	41	EXPLOSIVES DEMILITARIZATION TECHNOLOGY	10,349		10,349
0603105A	42	MILITARY HIV RESEARCH	6,998		6,998
0603125A	43	COMBATING TERRORISM, TECHNOLOGY DEVELOPMENT	13,061		13,061
0603238A	44	GLOBAL SURVEILLANCE/AIR DEFENSE/PRECISION STRIKE T			
0603270A	45	ELECTRONIC WARFARE TECHNOLOGY	17,419		17,419
0603313A	46	MISSILE AND ROCKET ADVANCED TECHNOLOGY	60,353		60,353
0603322A	47	TRACTOR CAGE	18,448		18,448
0603606A	48	LANDMINE WARFARE AND BARRIER ADVANCED TECHNOLO	25,315		25,315
0603607A	49	JOINT SERVICE SMALL ARMS PROGRAM	8,097		8,097
0603710A	50	NIGHT VISION ADVANCED TECHNOLOGY	35,892	10,000	45,892
		Intelligence, surveillance & detection sensor research		[2,500]	
		FCS short range electro optic sensor research		[7,500]	
0603728A	51	ENVIRONMENTAL QUALITY TECHNOLOGY DEMONSTRATION	14,982		14,982
0603734A	52	MILITARY ENGINEERING ADVANCED TECHNOLOGY	6,837	6,000	12,837
		Direct methanol fuel cell development		[3,000]	
		Fuel cells for continuity of operations		[3,000]	
0603772A	53	ADVANCED TACTICAL COMPUTER SCIENCE AND SENSOR TI	67,011	6,000	73,011
		Advanced radar technologies		[3,000]	
		Phaselator improvement program		[3,000]	

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<u>Program Element</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2008 Request</u>	<u>Senate Change</u>	<u>Senate Authorized</u>
		Advanced Component Development & Prototypes			
0603024A	54	UNIQUE ITEM IDENTIFICATION (UID)	668		668
0603305A	55	ARMY MISSILE DEFENSE SYSTEMS INTEGRATION (NON SPA Radiation space hardening)	14,389	2,000 [2,000]	16,389
0603308A	56	ARMY MISSILE DEFENSE SYSTEMS INTEGRATION (SPACE)	17,421		17,421
0603327A	57	AIR AND MISSILE DEFENSE SYSTEMS ENGINEERING	176,142		176,142
0603460A	58	JOINT AIR-TO-GROUND MISSILE (JAGM)	53,500		53,500
0603619A	59	LANDMINE WARFARE AND BARRIER - ADV DEV	24,737		24,737
0603627A	60	SMOKE, OBSCURANT AND TARGET DEFEATING SYS-ADV DE	19,449		19,449
0603639A	61	TANK AND MEDIUM CALIBER AMMUNITION	44,578		44,578
0603653A	62	ADVANCED TANK ARMAMENT SYSTEM (ATAS) Stryker active protection system integration	142,486	40,000 [40,000]	182,486
0603747A	63	SOLDIER SUPPORT AND SURVIVABILITY	4,787		4,787
0603766A	64	TACTICAL ELECTRONIC SURVEILLANCE SYSTEM - ADV DEV	[]		[]
0603774A	65	NIGHT VISION SYSTEMS ADVANCED DEVELOPMENT	3,454		3,454
0603779A	66	ENVIRONMENTAL QUALITY TECHNOLOGY Undersea chemical weapons assessment	6,149	8,000 [8,000]	14,149
0603782A	67	WARFIGHTER INFORMATION NETWORK-TACTICAL Warfighter Information Network - Tactical	222,296	100,000 [100,000]	322,296
0603790A	68	NATO RESEARCH AND DEVELOPMENT	4,959		4,959
0603801A	69	AVIATION - ADV DEV	6,481		6,481

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<u>Program Element</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2008 Request</u>	<u>Senate Change</u>	<u>Senate Authorized</u>
0603804A	70	LOGISTICS AND ENGINEER EQUIPMENT - ADV DEV	27,499		27,499
0603805A	71	COMBAT SERVICE SUPPORT CONTROL SYSTEM EVALUATIC	19,054		19,054
0603807A	72	MEDICAL SYSTEMS - ADV DEV	12,479	7,500	19,979
		Future medical shelter systems		[7,500]	
0603827A	73	SOLDIER SYSTEMS - ADVANCED DEVELOPMENT	18,178	5,300	23,478
		Nickel boron metal coating technology for crew served weapons		[5,300]	
0603850A	74	INTEGRATED BROADCAST SERVICE	[]	[-10,000]	[]
		IBS		[-10,000]	
		System Development & Demonstration			
0603808A	75	CLASSIFIED PROGRAM	[]		[]
0604201A	76	AIRCRAFT AVIONICS	57,786		57,786
0604220A	77	ARMED, DEPLOYABLE OH-58D	82,310	100,000	182,310
		Transfer From ARH (APA 3)		[100,000]	
0604270A	78	ELECTRONIC WARFARE DEVELOPMENT	55,716		55,716
0604280A	79	JOINT TACTICAL RADIO			
0604321A	80	ALL SOURCE ANALYSIS SYSTEM	[]		[]
0604328A	81	TRACTOR CAGE	17,821		17,821
0604329A	82	COMMON MISSILE			
0604601A	83	INFANTRY SUPPORT WEAPONS	45,229		45,229
0604604A	84	MEDIUM TACTICAL VEHICLES	1,994		1,994
0604609A	85	SMOKE, OBSCURANT AND TARGET DEFEATING SYS-SDD	1,347		1,347

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0604622A	86	FAMILY OF HEAVY TACTICAL VEHICLES Advanced thermal & oil management controls research	1,947	5,000 [5,000]	6,947
0604633A	87	AIR TRAFFIC CONTROL	8,956		8,956
0604642A	88	LIGHT TACTICAL WHEELED VEHICLES Joint light tactical vehicle (JLTV) - transfer from Title XV Army fuel cell non-tactical vehicle propulsion	82,300	23,000 [20,000] [3,000]	105,300
0604645A	89	ARMORED SYSTEMS MODERNIZATION (ASM)-SDD	253,410		253,410
0604646A	90	NON-LINE OF SIGHT LAUNCH SYSTEM	137,802		137,802
0604647A	91	NON-LINE OF SIGHT CANNON	696,333	25,000 [25,000]	721,333
0604660A	92	FCS MANNED GRD VEHICLES & COMMON GRD VEHICLE FCS active protection system acceleration	1,589,466		1,589,466
0604661A	93	FCS SYSTEMS OF SYSTEMS ENGR & PROGRAM MGMT	41,164		41,164
0604662A	94	FCS RECONNAISSANCE (UAV) PLATFORMS	90,667	90,000 [90,000]	180,667
0604663A	95	FCS UNMANNED GROUND VEHICLES FCS armed robotic vehicles	10,999		10,999
0604664A	96	FCS UNATTENDED GROUND SENSORS	678,781		678,781
0604665A	97	FCS SUSTAINMENT & TRAINING R&D	64,796		64,796
0604666A	98	MODULAR BRIGADE ENHANCEMENT	44,619		44,619
0604710A	99	NIGHT VISION SYSTEMS - SDD	2,501		2,501
0604713A	100	COMBAT FEEDING, CLOTHING, AND EQUIPMENT	35,992		35,992
0604715A	101	NON-SYSTEM TRAINING DEVICES - SDD			

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0604741A	102	AIR DEFENSE COMMAND, CONTROL AND INTELLIGENCE - SI	21,513		21,513
0604742A	103	CONSTRUCTIVE SIMULATION SYSTEMS DEVELOPMENT	31,962		31,962
0604746A	104	AUTOMATIC TEST EQUIPMENT DEVELOPMENT	18,025		18,025
0604760A	105	DISTRIBUTIVE INTERACTIVE SIMULATIONS (DIS) - SDD	16,594		16,594
0604780A	106	COMBINED ARMS TACTICAL TRAINER (CATT) CORE	37,035		37,035
0604783A	107	JOINT NETWORK MANAGEMENT SYSTEM	2,786		2,786
0604802A	108	WEAPONS AND MUNITIONS - SDD	55,368		55,368
0604804A	109	LOGISTICS AND ENGINEER EQUIPMENT - SDD	45,009		45,009
0604805A	110	COMMAND, CONTROL, COMMUNICATIONS SYSTEMS - SDD	10,047		10,047
0604807A	111	MEDICAL MATERIEL/MEDICAL BIOLOGICAL DEFENSE EQUIP	15,823		15,823
0604808A	112	LANDMINE WARFARE/BARRIER - SDD	142,315		142,315
0604814A	114	ARTILLERY MUNITIONS	63,039		63,039
0604817A	115	COMBAT IDENTIFICATION	11,362	2,000	13,362
		SINGARS based combat ID research		[2,000]	
0604818A	116	ARMY TACTICAL COMMAND & CONTROL HARDWARE & SOFT	99,202		99,202
0604820A	117	RADAR DEVELOPMENT	7,067		7,067
0604822A	118	GENERAL FUND ENTERPRISE BUSINESS SYSTEM (GFEB)	53,559		53,559
0604823A	119	FIREFINDER	77,279		77,279
0604827A	120	SOLDIER SYSTEMS - WARRIOR DEM/VAL		30,400	30,400
		Continued development of Land Warrior		[30,400]	
0604854A	121	ARTILLERY SYSTEMS	24,221		24,221

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0604869A	122	PATRIOT/MEADS COMBINED AGGREGATE PROGRAM (CAP)	372,146		372,146
0604870A	123	NUCLEAR ARMS CONTROL MONITORING SENSOR NETWORK	7,300		7,300
0605013A	124	INFORMATION TECHNOLOGY DEVELOPMENT	103,485		103,485
		RDT&E Management Support			
0603808A	125	CLASSIFIED PROGRAM	[]		[]
0604256A	126	THREAT SIMULATOR DEVELOPMENT	21,887		21,887
0604258A	127	TARGET SYSTEMS DEVELOPMENT	13,499		13,499
0604759A	128	MAJOR T&E INVESTMENT	66,921		66,921
0604812A	129	CLASSIFIED PROGRAM	[]		[]
0605103A	130	RAND ARROYO CENTER	16,342		16,342
0605301A	131	ARMY KWAJALEIN ATOLL	182,136		182,136
0605326A	132	CONCEPTS EXPERIMENTATION PROGRAM	34,004		34,004
0605502A	133	SMALL BUSINESS INNOVATIVE RESEARCH			
0605601A	134	ARMY TEST RANGES AND FACILITIES	357,964		357,964
0605602A	135	ARMY TECHNICAL TEST INSTRUMENTATION AND TARGETS	74,391		74,391
0605604A	136	SURVIVABILITY/LETHALITY ANALYSIS	40,343		40,343
0605605A	137	DOD HIGH ENERGY LASER TEST FACILITY HELSTF	2,801	7,500 [7,500]	10,301
0605606A	138	AIRCRAFT CERTIFICATION	4,688		4,688
0605702A	139	METEOROLOGICAL SUPPORT TO RDT&E ACTIVITIES	8,346		8,346
0605706A	140	MATERIEL SYSTEMS ANALYSIS	16,526		16,526

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0605709A	141	EXPLOITATION OF FOREIGN ITEMS	[]		[]
0605712A	142	SUPPORT OF OPERATIONAL TESTING	75,293		75,293
0605716A	143	ARMY EVALUATION CENTER	61,694		61,694
0605718A	144	SIMULATION & MODELING FOR ACQ, RQTS, & TNG (SMART)	5,342		5,342
0605801A	145	PROGRAMWIDE ACTIVITIES	73,718		73,718
0605803A	146	TECHNICAL INFORMATION ACTIVITIES	41,607		41,607
0605805A	147	MUNITIONS STANDARDIZATION, EFFECTIVENESS AND SAFE	19,606		19,606
0605857A	148	ENVIRONMENTAL QUALITY TECHNOLOGY MGMT SUPPORT	4,958		4,958
0605898A	149	MANAGEMENT HQ - R&D	14,889		14,889
0909999A	150	FINANCING FOR CANCELLED ACCOUNT ADJUSTMENTS			
		Operational Systems Development			
0603778A	151	MLRS PRODUCT IMPROVEMENT PROGRAM	54,055	2,500	56,555
		HIMARS modular launcher communications system (MLCS)		[2,500]	
0603820A	152	WEAPONS CAPABILITY MODIFICATIONS UAV	3,900		3,900
0102419A	153	AEROSTAT JOINT PROJECT OFFICE	481,251		481,251
0203726A	154	ADV FIELD ARTILLERY TACTICAL DATA SYSTEM	16,837		16,837
0203735A	155	COMBAT VEHICLE IMPROVEMENT PROGRAMS	27,615	10,900	38,515
		Vehicle health management systems development		[6,000]	
		Combat vehicle transmission improvement		[4,900]	
0203740A	156	MANEUVER CONTROL SYSTEM	43,961		43,961

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0203744A	157	AIRCRAFT MODIFICATIONS/PRODUCT IMPROVEMENT PROG Helicopter autonomous landing system (HALS)	325,643	5,000 [5,000]	330,643
0203752A	158	AIRCRAFT ENGINE COMPONENT IMPROVEMENT PROGRAM	476		476
0203758A	159	DIGITIZATION	9,737		9,737
0203759A	160	FORCE XXI BATTLE COMMAND, BRIGADE AND BELOW (FBCE)	32,446		32,446
0203764A	161	TACTICAL WHEELED VEHICLE IMPROVEMENT PROGRAM			
0203801A	162	MISSILE/AIR DEFENSE PRODUCT IMPROVEMENT PROGRAM	30,219		30,219
0203802A	163	OTHER MISSILE PRODUCT IMPROVEMENT PROGRAMS	1,897		1,897
0203808A	164	TRACTOR CARD	16,573		16,573
0208010A	165	JOINT TACTICAL COMMUNICATIONS PROGRAM (TRI-TAC)	1,536		1,536
0208053A	166	JOINT TACTICAL GROUND SYSTEM JTAGS	23,462	-10,000 [-10,000]	13,462
0208058A	167	JOINT HIGH SPEED VESSEL (JHSV)	5,148		5,148
0301359A	168	SPECIAL ARMY PROGRAM	[]		[]
0303028A	169	SECURITY AND INTELLIGENCE ACTIVITIES			
0303140A	170	INFORMATION SYSTEMS SECURITY PROGRAM	28,332		28,332
0303141A	171	GLOBAL COMBAT SUPPORT SYSTEM	129,689		129,689
0303142A	172	SATCOM GROUND ENVIRONMENT (SPACE)	107,849		107,849
0303150A	173	WWMCCS/GLOBAL COMMAND AND CONTROL SYSTEM	24,836		24,836
0303158A	174	JOINT COMMAND AND CONTROL PROGRAM (JC2)	10,415		10,415

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<u>Program Element</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2008 Request</u>	<u>Senate Change</u>	<u>Senate Authorized</u>
0305204A	175	TACTICAL UNMANNED AERIAL VEHICLES Constant Hawk	97,947	30,000 [30,000]	127,947
0305206A	176	AIRBORNE RECONNAISSANCE SYSTEMS	[]		[]
0305208A	177	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	[]		[]
0702239A	178	AVIONICS COMPONENT IMPROVEMENT PROGRAM	1,024		1,024
0708045A	179	END ITEM INDUSTRIAL PREPAREDNESS ACTIVITIES	66,869		66,869
1001018A	180	NATO JOINT STARS			
	999	CLASSIFIED PROGRAMS	147,162	-10,000	137,162
		Total, RDT&E Army	10,589,604	679,300	11,268,904

Army basic research

The budget request included \$137.7 million in PE 61102A for defense research sciences. The committee notes that the National Research Council's 2005 "Rising Above the Gathering Storm" report highlighted the important role that basic research funding plays in areas like global competitiveness and national security. The report noted that with respect to basic research funding ". . . the Department of Defense research picture is particularly troubling in this regard." It went on to note that the Department of Defense funds 40 percent of the engineering research performed at universities, including more than half of all research in electrical and mechanical engineering and 17 percent of basic research in mathematics and computer science.

The committee supports increasing investments in basic research typically performed at universities to develop next generation military operational capabilities. The committee recommends increases of: \$2.0 million for research on the development of vaccines to combat respiratory infections; \$1.0 million for research on organic semiconductor materials for use in military flexible electronics; and \$1.5 million for research on nanomaterials that can speed the deicing of Army rotary wing vehicles.

University research initiatives

The budget request included \$64.8 million in PE 61103A for Army university research initiatives. The committee notes that this is down by approximately 20 percent in constant dollars from the fiscal year 2004 request, when the program was originally transferred to the services from the Office of the Secretary of Defense (OSD). The committee notes that all of the service university research initiatives programs are below the original fiscal year 2004 request in constant dollars, despite OSD assurances to Congress that the programs would at least keep pace with inflation.

To continue to preserve the Department of Defense efforts to support the valuable defense research undertaken at universities, the committee recommends an increase of \$9.0 million in PE 61103A for Army university research initiatives, an increase of \$9.0 million in PE 61103N for Navy university research initiatives, and an increase of \$10.0 million in PE 61103F for Air Force university research initiatives.

Army university research centers

The budget request included \$84.0 million in PE 61104A for university and industry research centers. The committee notes that basic research investments by the Army serve the dual purpose of developing next generation military capabilities through the exploration of fundamental scientific issues, as well as training the next generation of scientists, engineers, and technology entrepreneurs at our nation's academic institutions. The committee also notes that the National Research Council's committee on Department of Defense Basic Research recommended that the Department "should redress the imbalance between its current basic research allocation, which has declined critically over the past decade, and its need to better support the expanded areas of technology, the need for increased unfettered basic research, and the support of new research-

ers.” In support of that recommendation, the committee recommends a number of increases to the Army basic research program.

The committee recommends increases of: \$1.5 million for information assurance research; \$2.5 million for nanotechnology-based biosensors to detect biological threats; \$3.0 million for military automotive research; \$2.0 million for research on wireless optical communications systems; \$1.4 million for research on training and simulation in urban terrain; \$2.0 million for military network security research; \$1.5 million for research on soldier health monitoring systems; \$300,000 for nanocomposite transparent armor materials research; \$2.0 million for research on nanotechnologies for advanced lightweight armor systems; and \$2.0 million for research on the low temperature performance of Army vehicles.

Army materials research

The budget request included \$18.6 million in PE 62105A for applied research on materials technologies. The committee notes that the development of modular protective systems for future force assets and the development of vehicle armor technology are two of the official Army Technology Objectives (ATO). This includes the development of “advanced composite materials with properties tailorable for blast and ballistic protection . . .” Therefore, the committee recommends an additional \$2.0 million for the development of composite armor materials for Future Combat Systems (FCS) vehicles and an additional \$3.0 million for research on advanced composite materials for Army air and ground vehicles. The Army’s soldier protection technologies ATO focuses on the development of innovative materials for improved individual armor systems. Therefore, the committee recommends an additional \$2.0 million for development of armor for soldier torso and extremity protection, and an additional \$4.0 million for the development of lightweight armor systems designed to reduce casualties due to improvised explosive device blast effects.

The committee notes that the interagency National Nanotechnology Initiative has identified nanomanufacturing as one of its program component areas of emphasis. The Director of Defense Research and Engineering, in a May 2006 report to Congress entitled “Defense Nanotechnology Research and Development,” indicated that increased support of nanomanufacturing was recommended “in order to facilitate transitioning and the sustained supply of research results for defense technologies.” Therefore, the committee recommends an additional \$2.0 million for the development of advanced nanomanufacturing capabilities for sensors and other defense needs.

Electronics and space research

The budget request included \$39.8 million in PE 62120A for applied research on sensors and electronic survivability. The committee notes that the National Research Council’s report “Materials Research to meet 21st Century Defense Needs” highlights the need for continued defense research on electronic microsystems. The report listed fabrication of microsystems for displays as a high priority research area for the Department of Defense. Consistent with

this analysis, the committee recommends an increase of \$2.0 million for research on advanced microelectronics manufacturing for Army display applications.

The committee understands the Department of Defense's need to track hundreds of moving targets in space or terrestrial environments, including space debris or chemical and biological agents. The committee recommends an additional \$2.0 million for research on integrated remote sensing technologies.

The committee established the Joint Program Office for Operationally Responsive Space in the John Warner National Defense Authorization Act for Fiscal Year 2007 (Public Law 109-364) with the responsibility to pursue innovative approaches to the development of operationally responsive space capabilities. In coordination with the efforts of that office, the committee recommends an increase of \$5.0 million for operationally responsive space research efforts.

Materials for insensitive munitions

The budget request included \$53.0 million in PE 62303A for applied research on missile technology. The Army's Insensitive Munitions Technology Objective seeks to develop energetic materials and system-level innovations to maintain and improve munitions safety at lower weight and cost. The committee also notes that the Office of the Secretary of Defense has initiated new research efforts specifically aimed at improving capabilities in insensitive munitions. In support of these efforts, the committee recommends an additional \$2.0 million for the development of advanced materials for munitions protection in missile systems.

Sniper detection systems

The budget request included \$16.7 million in PE 62308A for advanced concepts and simulation technologies. The committee notes that urgent operational needs statements have called for the development of sniper detection systems for potential use in urban environments. Therefore, the committee recommends an additional \$4.0 million for the development of wearable sniper detection systems to aid in localizing sniper fire and mortar launches.

Army vehicle research

The budget request included \$53.3 million in PE 62601A for applied research on combat vehicles and automotive technology. The committee notes that research in this area will lead to: enhanced survivability for Army ground vehicles, including against improvised explosive devices and other threats; improved energy efficiency for vehicles—resulting in extended ranges and combat capability, as well as life cycle cost savings; and the development of more capable unmanned systems to extend the reach and capabilities of Army forces, while reducing the risks to soldiers.

The committee notes that the Army is developing a fuel cell strategy that is exploring the use of fuel cells in vehicles in tactical and support missions. In coordination with that effort, the committee recommends an increase of \$3.0 million for the development of hydrogen fuel cells for medium and heavy Army vehicles. Consistent with the efforts of the Department of Defense's Energy and

Power Technology Initiative to examine the utility of alternative fuels for military platforms, the committee recommends an increase of \$2.0 million for research on alternative military fuels.

The Army's Vehicle Armor Technology Objective is developing a comprehensive solution to threats to Future Combat Systems ground vehicles. In coordination with these efforts, as well as similar efforts in the Army's small business innovative research program, the committee recommends an increase of \$2.0 million for nanotechnology research to develop transparent armor for Army vehicles.

Recoil mitigation technologies

The budget request included \$7.0 million in PE 62623A for the joint service small arms program. The committee notes that the research goal of this program is to develop "new technologies for improved accuracy and greater lethality . . . while reducing the weight of the Soldier's weapon." To support these efforts, the committee recommends an increase of \$2.0 million for research on recoil mitigation technologies which reduce small arms weight while maintaining and improving weapons lethality.

Unmanned ground vehicle weaponization

The budget request included \$40.5 million in PE 62624A for weapons and munitions technology. The committee has been supportive of the development of unmanned ground systems to reduce casualties and to enable new operational concepts and capabilities. The committee notes that the Near Autonomous Unmanned Systems Army Technology Objective is developing robotic technologies for future unmanned systems, and working to transition technologies to programs such as Future Combat Systems and the Armed Robotic Vehicle. To support these efforts, the committee recommends an increase of \$3.0 million to develop remotely controlled unmanned systems with lethal and non-lethal capabilities.

Army electronics research

The budget request included \$43.4 million in PE 62705A for applied research on electronics and electronic devices. The committee notes that all of the services are developing needs for higher frequency and high power systems, as well as systems that operate at higher temperatures. These systems will require the development of semiconductor materials that operate efficiently at these power levels and temperature ranges. Accordingly, the wide-bandgap technology development Defense Technology Objective includes specific technical challenges for the development of new semiconductor materials and devices to meet military missions. In support of these efforts, the committee recommends an increase of \$3.0 million for research on high frequency, high power electronic and optoelectronic devices.

The Army's effort to reduce the load on soldiers includes a desire to develop smaller, lightweight battery technologies to power radios, computers, and other man-portable equipment. The Mounted/Dismounted Soldier Power Army Technology Objective addresses these challenges through the development of novel power technologies. In support of those efforts, the committee recommends an

increase of \$3.0 million for the development of high capacity portable battery technologies.

Standoff explosives detection technologies

The budget request included \$21.8 million in PE 62712A for applied research on countermine systems. The committee notes that the standoff detection of explosives is a capability that is of critical concern to the Department of Defense as it seeks to combat the use of improvised explosive devices in Iraq and Afghanistan. The National Research Council's 2004 report entitled "Existing and Potential Standoff Explosives Detection Techniques" recommended that "research into both new sensor types and new systems of real-time integration and decision making is needed." Therefore, the committee recommends an additional \$5.0 million in PE 62712A for the development of standoff explosives detection technologies.

Force protection materials research

The budget request included \$23.1 million in PE 62786A for applied research on warfighter technologies. The committee notes that the Army is developing requirements documents that call for the development of advanced modular force protection systems for base camps, which are coming under attack from mortars and improvised explosive devices in Iraq and Afghanistan. The committee also notes that the Army's Modular Protective Systems for Future Force Assets Technology Objective is seeking to develop advanced composite materials with properties tailorable for blast and ballistic protection. To support these efforts, the committee recommends an increase of \$5.0 million for research on advanced materials for enhanced ballistic protection of assets.

Unmanned air systems

The budget request included \$53.9 million in PE 63003A for aviation advanced technology. The committee is supportive of efforts to explore the use of unmanned systems in a variety of roles and missions on the battlefield, as was indicated in the requirements of section 941 of the John Warner National Defense Authorization Act for Fiscal Year 2007 (Public Law 109-364). To support the development of new capabilities for unmanned systems, the committee recommends an increase of \$2.0 million for the development of unmanned systems for the precision delivery of supplies to friendly forces.

In section 220 of the Floyd D. Spence National Defense Authorization Act for Fiscal Year 2001 (Public Law 106-398) the committee also established the goal that by 2010, one-third of all operational deep strike force aircraft will be unmanned. Further, the committee notes that the Unmanned Aircraft Systems Roadmap calls for development of weapons optimized for concept of employment from unmanned systems. In order to support this goal, the committee recommends an additional \$3.0 million for development of advanced munitions for unmanned air systems.

Army medical research

The budget request included \$76.5 million in PE 62787A for applied research on medical technologies. The committee notes that

research in this area contributes significantly to the successful treatment of battlefield injuries. The committee recommends a number of increases in this account to address a variety of medical issues resulting from current operations. The committee recommends increases of \$1.0 million for advanced battlefield head injury diagnostic tools; \$2.0 million for biomechanics research to address head, neck, and chest injuries; \$1.5 million for bioengineering research to support combat casualty care missions; and \$2.0 million for the development of advanced wound dressings.

Guided airdrop systems

The budget request included \$47.1 million in PE 63001A for advanced warfighter technologies. The committee notes that the 82nd Airborne Division recently submitted an operational needs statement for guided airdrop systems. The committee also notes that the Army and United States Joint Forces Command are investing in the Joint Precision Airdrop System to meet urgent needs in Iraq and Afghanistan. In support of those efforts, the committee recommends an additional \$2.0 million for research on guided airdrop systems.

Army medical technologies

The budget request included \$53.3 million in PE 63002A for advanced medical technologies. The committee recognizes the critical need to advance military medical technologies to address battlefield injuries. The committee has taken a number of steps to advance those efforts, including the establishment of a Department of Defense-wide initiative to prevent, mitigate, and treat blast injuries in section 256 of the National Defense Authorization Act for Fiscal year 2006 (Public Law 109–163). To support these and similar efforts, as well as to support a number of Army Technology Objectives in medical technologies, the committee recommends a number of increases in medical research investments.

The committee notes that improvised explosive devices have created a new set of challenges for medical personnel in dealing with soft tissue and bone damage. The committee recommends an increase of \$2.0 million for research on the treatment of combat wounds. To help address the treatment of blast injuries, in coordination with the Blast Mitigation Initiative, the committee recommends an increase of \$2.0 million for the development of technologies to efficiently detect blunt trauma injuries, and an increase of \$2.0 million for remote vital signs monitoring systems.

The committee recognizes the continuing need to develop advanced lower limb prostheses for battlefield amputees. The committee recommends an additional \$3.0 million for the development of advanced lower limb prosthesis technologies.

The committee notes that the Battlefield Treatment of Fractures and Soft Tissue Trauma Care Defense Technology Objective includes a specific challenge to improve tissue viability technologies. In support of this goal, the committee recommends an increase of \$3.0 million for research on novel tissue regeneration techniques to treat battlefield injuries. In addition, to support advances in military capabilities to treat battlefield injuries, the committee recommends an additional \$2.0 million for the development of ad-

vanced technologies to support telesurgery applications in battle-field environments.

Dengue infection research

The budget request included \$53.3 million in PE 63002A for advanced medical technology. The committee notes that dengue viruses have proven highly debilitating to U.S. military personnel in a number of past operational deployments, and that the military has long pursued a vaccine against all four types of dengue viruses. The committee also notes that the Joint Requirements Oversight Council has identified the Army as the lead agent to develop capabilities to address the Initial Capabilities Document for Infectious Disease Countermeasures. To support these efforts, the committee recommends an additional \$5.0 million in PE 63002A for research on the development of vaccines and therapeutics for dengue infections.

Lightweight cannon recoil technologies

The budget request included \$59.4 million in PE 63004A for advanced weapons and munitions technologies. The committee notes that the Army has a goal to reduce the size and weight of weapon systems associated with Future Combat Systems (FCS) to maintain lethality while being rapidly transportable. The committee recommends an additional \$1.0 million for the development of technologies to reduce the weight of FCS cannon systems using advanced recoil reduction technologies.

Combat vehicle armor technologies

The budget request included \$131.4 million in PE 63005A for advanced combat vehicle and automotive technologies. The Vehicle Armor Technology Army Technology Objective (ATO) seeks to provide comprehensive solutions for Future Combat System (FCS) ground vehicles to address a variety of threats, including mines, rocket propelled grenades, improvised explosive devices, and other ballistic threats. In conjunction with that objective, the Army's long term armoring strategy, and the need for armor technologies to be robust, lightweight, and affordable, the committee recommends a number of increases for armor technologies. The committee recommends an increase of \$3.0 million for the development of composite armored cabs, \$1.0 million for research on ceramic composite materials for armor, and \$4.0 million for development of windshield armor systems.

The committee continues to be concerned about the development of technologies to support force protection missions in Iraq and Afghanistan, including defenses against snipers and rocket propelled grenades. To enhance the force protection capabilities of our deployed forces, the committee recommends an increase of \$3.0 million for the development of counter sniper detection systems in coordination with the Defense Advanced Research Projects Agency, and an additional \$7.5 million for the development and testing of vehicle-based active protection systems (APS) for use on light tactical vehicles. The committee notes that the recent independent technical assessment of APS indicated that the best possible sys-

tem “may be based on ‘best of breed’ solutions developed within multiple programs.”

Unmanned ground vehicle initiative

The budget request included \$131.4 million in PE 63005A for advanced combat vehicle and automotive technologies. The committee notes that section 220 of the Floyd D. Spence National Defense Authorization Act for Fiscal Year 2001 (Public Law 106–398) established a goal that by 2015, one-third of the operational ground combat vehicles acquired through the Army’s Future Combat Systems (FCS) program will be unmanned. The committee understands that the Army believes that given current development and fielding schedules for the FCS program, this goal will be met. Significant technical challenges remain in the development of unmanned ground vehicles, including development of propulsion systems, intelligent navigation systems, human-machine interfaces, and reliability. Therefore, the committee recommends an increase of \$12.0 million for this initiative.

Combat vehicle energy and power technologies

The budget request included \$131.4 million in PE 63005A for advanced combat vehicle and automotive technologies. The committee notes that the Department of Defense’s Energy & Power Technology Initiative includes a thrust on energy storage technologies to support hybrid electric vehicle mobility, including research on batteries, fuel cells, and safety issues. The committee also notes that the Army is developing hybrid systems for use on Future Combat Systems vehicles and other vehicle applications. The committee recommends a number of funding increases which will demonstrate the viability of hybrid technologies in military environments and explore the feasibility of deploying hybrid engines for military applications. The committee recommends increases of \$10.0 million for a program to develop advanced hybrid vehicle technologies including research on engine technology, power electronics, control technology, and other areas; \$4.0 million for advanced solid hydrogen storage technologies for military vehicles; \$3.0 million for research on improving the reliability and reducing the cost for fuel cells in military materiel handling equipment applications; and \$1.5 million for developing manufacturing processes needed to reduce fuel cell costs to the military.

Combat vehicle reliability and readiness technologies

The budget request included \$131.4 million in PE 63005A for advanced combat vehicle and automotive technologies. The Prognostics and Diagnostics for Operational Readiness and Condition-based Maintenance Army Technology Objective has a goal to improve near-term and Future Combat Systems commodity readiness and maintainability through improvements in the capability to detect and predict equipment health status and performance. In coordination with this objective and as part of efforts to improve the readiness of Army forces, the committee recommends an increase of \$1.5 million for research on computer models and simulations to better predict military vehicle reliability, and an increase of \$3.0 million for the development of test facilities to evaluate ad-

vanced combat vehicle power train designs. Further, the committee notes that the Army is planning an initiative to invest in research activities that develop advanced mechanical fastening and joining technologies that will increase vehicle reliability and performance. In support of that effort, the committee recommends an additional \$1.5 million for ground vehicle fastening and joining research.

Leadership training simulators

The budget request included \$18.7 million in PE 63015A for next generation training and simulation systems. The committee understands that the Army's Learning with Adaptive Simulation and Training Technology Objective is developing virtual training simulations that incorporate political and cultural effects of the environment and behaviors of adaptive enemies. The committee also notes that the Subcommittee on Emerging Threats and Capabilities heard testimony indicating that leadership training that improves cultural awareness will enhance operational performance in the future. To support efforts to improve leadership training of this type, and in conjunction with efforts at the Army's Institute for Collaborative Technologies, the committee recommends an increase of \$4.0 million for the development of leadership training models and simulations.

Fuel cells for military applications

The budget request included \$6.8 million in PE 63734A for military engineering advanced technology. The committee notes the Department of Defense's efforts to develop technologies to support continuity of operations missions. The committee also notes that under the Department's Energy and Power Technology Initiative, one of the technical challenges in power distribution technologies is the improvement of component and system reliability and availability. In support of these challenges, the committee recommends an increase of \$3.0 million for the development of fuel cell systems that support continuity of operations missions.

The committee also notes that the Energy and Power Technology Initiative identified an objective of developing fuel cell portable power systems using methanol as a fuel. In support of that objective, the committee recommends an increase of \$3.0 million for the development of direct methanol fuel cells.

Counter rocket, artillery, and mortar radar technologies

The budget request included \$67.0 million in PE 63772A for advanced tactical computer science and technology. The committee understands that the Extended Area Protection and Survivability Army Technology Objective (ATO) has a goal to develop concepts and supporting technologies for a system capable of providing extended area protection and distributed survivability from rocket, artillery, and mortar (RAM) threats. To support this effort, the committee recommends an increase of \$3.0 million to develop radar systems to support counter RAM missions.

Language translation technologies

The budget request included \$67.0 million in PE 63772A for advanced tactical computer science and sensor technology develop-

ment, \$76.3 million in PE 63122D8Z for combating terrorism technology support, and \$137.7 million in PE 61102A for defense research sciences. The Subcommittee on Emerging Threats and Capabilities received testimony highlighting the need for the Department of Defense to significantly improve its language translation capabilities for a variety of operational missions—including intelligence analysis and peace and stability operations. Technologies being developed by the Department include speech and text translators, including handheld and bidirectional systems being designed to assist in translating a growing number of target languages. The committee notes that the Defense Science Board recently emphasized the need to advance these capabilities in its recent “21st Century Strategic Technology Vectors” study. To support these efforts, the committee recommends an increase of \$3.0 million in PE 63772A to continue the development of handheld translation systems, \$2.0 million in PE 63122D8Z for research on Arabic language analyses, and \$3.0 million in PE 61102A for research on document exploitation systems to assist intelligence analysts.

Radiation hardening initiative

The budget request included \$14.4 million in PE 63305A, Army Missile Defense Systems, but no funds for radiation hardening integration. The committee recommends an increase of \$2.0 million for a radiation hardening initiative to improve understanding of radiation transport and effects, modeling and simulation tools, and radiation-hard design approaches. This activity should be closely coordinated with the Joint Radiation Hardened Electronics Oversight Council.

Active protection systems development and integration

The budget request contained \$142.5 million in PE 63653A for the advanced tank armament system, which includes funding for the integration of a suitable active protection system (APS) onto Stryker vehicles. The committee notes a recent December 2006 decision to restructure the Future Combat System (FCS) and designate the APS as a key spin out component, with a plan for fielding available systems on Stryker vehicles first. The committee notes that a recent independent assessment has expressed concern over the Army’s chosen technological approach to APS and the feasibility of its fielding as planned by 2010.

Given the likely acceleration of a number of threats, the committee supports the acceleration of the best possible protection systems to the current force, including tactical vehicles, and considers this a top force protection priority for the Army. Therefore, the committee directs the Army, in conjunction with the Office of the Secretary of Defense, to closely monitor the development and deployment of foreign and domestic APS, including where appropriate through the establishment of data exchange agreements and joint exercises and demonstrations.

To accelerate the fielding of operationally suitable APS onto Stryker vehicles, the committee recommends an increase of \$40.0 million in PE 63653A for technology integration efforts. The committee directs the Secretary of the Army to provide a detailed technical plan and schedule for efforts related to the technological mat-

uration of APS technologies and the integration of APS onto current force vehicles, prior to the obligation of any of these additional authorized funds. Further, the committee directs the Army to include sufficient funding in its future years budget, beginning with the fiscal year 2009 budget, to accomplish the stated goal of integration on Stryker by fiscal year 2010, which may require additional funding for both technological maturation of the APS technologies as well as funding for integration issues.

The budget request included \$142.5 million in PE 64660A for FCS manned ground vehicles and common ground vehicle. Given concerns about the maturity of APS currently under development, the committee recommends an increase of \$25.0 million in PE 64660A to support the development and testing of APS for FCS manned ground vehicles.

Undersea chemical weapons assessment program

The budget request included \$6.1 million in PE 63779A for environmental quality technology, but did not provide any funds for the Undersea Chemical Assessment program. This program will provide a comprehensive definition of risks presented by chemical weapons disposed of by the Department of Defense in selected undersea locations. The committee recommends an increase of \$8.0 million in PE 63779A for the Undersea Chemical Assessment program.

Warfighter information network—tactical

The budget request included \$222.3 million in PE 63782A for the continued research and development of the Warfighter Information Network—Tactical (WIN-T) program. The committee notes with concern that this program has been troubled for a number of years, culminating in its January 2007 Nunn-McCurdy unit cost breach.

In title I of this Act, the committee has directed the Secretary of the Army to consolidate the joint network node program and the WIN-T program into one single Army tactical network program. The committee believes the Army can incrementally provide WIN-T capabilities to the warfighter in the near-term. However, the committee believes the Army cannot spin into the force these incremental improvements without funding support. Therefore, the committee recommends a \$100.0 million increase in funding for WIN-T research, development, test, and evaluation.

The committee also directs the Secretary of the Army, in consultation with the Assistant Secretary of Defense for Networks and Information Integration and the Secretary of the Navy, to report to the committee, no later than 180 days after the enactment of this bill, on whether the Marine Corps should also be part of the single Army tactical network program. The committee is concerned that the two military services are not working in concert on the development of this important and expensive communications technology.

Future medical shelter systems

The budget request included \$12.5 million in PE 63807A for advanced development of medical systems. The committee notes that the Army is in the process of evaluating technologies for advanced combat support hospitals. These systems are vitally important for

the care of military casualties in theater, as well as for responding to domestic natural disasters. The committee recommends an additional \$7.5 million for the next phase of combat support hospital development.

Nickel boron metal coating technology for crew served weapons

The budget request included \$18.2 million in PE 63827 for soldier systems advanced development, but no funding for nickel boron metal coating technology for crew served weapons.

Blowing dust and sand as experienced in Iraq and Afghanistan penetrate weapon mechanisms and contribute to accelerated wear rates and reduced reliability. Worse, these conditions can result in weapons jamming in the middle of combat at great risk to the soldiers. Applying lubricious coatings to selected high-wear parts will significantly reduce or eliminate wear, while doing so to the entire weapon system will allow weapons to be operated without lubrication.

Funding is required to complete development and evaluate performance of nickel boron coatings on the M249 Squad Automatic Weapon to minimize the amount of lubricant needed during weapon functioning.

The committee recommends an increase of \$5.3 million for that purpose.

Integrated broadcast service

The budget request included \$38.2 million for Research, Development, Test, and Evaluation (RDT&E) for the Integrated Broadcast Service program within the Army. This line item funds development of improvements for the Joint Tactical Terminals (JTT) used to receive the broadcast service. The fiscal year 2008 request reflects an increase of \$37.1 million over the fiscal year 2007 funding level, and the projected request for fiscal year 2009 falls back to \$13.7 million. The large single-year rise apparently reflects a decision by the Office of the Secretary of Defense to almost fully fund in 1 year a series of upgrades to all JTT radios. The committee recommends a reduction of \$10.0 million to fund higher priorities because the remaining requirement can be deferred until next year.

Family of heavy tactical vehicles

The budget request included \$2.0 million in PE 64622A for Research, Development, Test, and Evaluation (RDT&E), Army for work associated with the family of heavy tactical vehicles, which includes the variants of the heavy expanded mobility tactical truck. This program element will fund the development of the Army's next generation tactical truck, as part of the Army's Tactical Wheeled Vehicle Modernization Strategy. The committee recommends an increase of \$5.0 million to fund the RDT&E of oil and thermal management systems. Oil and thermal management systems have proven to extend the life of vehicle engines and other engine components, particularly in vehicles designed for long-haul missions.

Light Tactical Wheeled Vehicles

The budget request included \$82.3 million in PE 64642A for technology development for Light Tactical Wheeled Vehicles. Under this account, the Army pursues survivability, mobility, communications, energy and power, and autonomous technology improvements for the High Mobility Multi-purpose Wheeled Vehicle (HMMWV) and the next generation HMMWV, known as the Joint Light Tactical Vehicle (JLTV). The committee recommends an increase of \$3.0 million in PE 64642A for fuel cell vehicle propulsion research. This funding will permit the Army to pursue potential advanced fuel cell technologies and applications in the development of the JLTV.

Future combat systems

The budget request included \$3.6 billion for the Future Combat Systems (FCS). The committee has been, and continues to be, a strong supporter of Army transformation, and believes that the FCS program is the centerpiece of that transformation.

For many years the committee has expressed concern about the lack of strategic mobility for ground combat forces. This issue was illustrated by the problems the Army faced in projecting forces rapidly into the Balkans during the Kosovo crisis, and also by the length of time required to build up ground combat forces and the required logistical stockpiles for both Operation Desert Storm and Operation Iraqi Freedom. These latter operations were aided to some degree by the availability of pre-positioned equipment and by an adversary who failed to take advantage of the risk to U.S. forces from a slow build-up of combat power by launching a pre-emptive strike. Those conditions may not be present the next time ground combat forces must be quickly inserted into a hostile environment.

While strongly supporting the Army's plan to build the Objective Force, which was the term for the transformed force nearly a decade ago, the committee was admittedly skeptical of the Army plan to buy several brigades of interim armored vehicles. The committee believed at the time that the Army should indeed reorganize a number of its units into lighter, more mobile brigades, but believed that could be accomplished using combat vehicles currently in the inventory, such as the upgraded M113A3 armored personnel carrier. The committee was concerned that the added cost of acquiring "off-the-shelf" interim armored vehicles might eventually put the transformation to a new fleet of modern medium-weight combat vehicles at risk.

Responding to committee concerns, the Army did extensive analyses and comparative testing, and reconfirmed its decision, backed by the Secretary of Defense, to build new Interim Brigade Combat Teams with a new family of vehicles—the Strykers.

The committee notes that the Stryker Brigade Combat Teams (SBCT), by all reports, have been very successful in Iraq, and has supported additional funding for Strykers elsewhere in this report. The committee has also expressed concern about the Stryker Mobile Gun System elsewhere in this report, but believes that the SBCTs have provided a hint as to the future potential that the vastly more capable FCS Brigade Combat Teams will bring to the Army. However, adding seven SBCTs has provided only a hint, and

it would be a critical mistake to abandon the Army's core modernization effort, believing that seven Stryker Brigade Combat Teams solve the strategic mobility problem the Army continues to confront, or that marginal modernization of the current force postures the Army for the challenges of the future.

The committee believed that the original FCS program was much too risky, and was fully in agreement with the first program restructure, and in particular supported the addition of previously deferred systems and the spin out of promising FCS technologies to the current force.

Consequently, the committee is concerned about the most recent restructure, which now eliminates or defers four of the systems and stretches the fielding of FCS Brigade Combat Teams over a longer period of time. The committee believes this decision was purely a result of budgetary concerns, and does not reflect either a change in requirements or programmatic difficulties. The committee believes FCS is a well-run program which is well within cost and schedule parameters of the earned value management system.

Most troubling in the latest restructure is the elimination of the Armed Robotic Vehicle (ARV), both the Assault and Reconnaissance, Surveillance, and Target Acquisition (RSTA) variants, which will provide a survivable means for the commander to sense and deliver desired effects on the enemy without jeopardizing the lives of soldiers. The ARV is highly mobile and well suited for both mounted and dismounted forces—the only robotic platform that is capable of maneuvering with the FCS manned ground vehicles, survivable in direct engagements, and lethal enough to defeat the enemy. The committee believes that it is short sighted to eliminate such a capability.

The committee also believes that any proposals or decisions to further curtail or stretch out the FCS program are also extremely short sighted. The Nation cannot afford to mortgage the future to pay current bills by curtailing Army transformation to meet the demands of the current conflict. History teaches that, while we do not know precisely the nature of future conflict, we do know that future conflict will come. If history is a guide, the Americans most at risk will be those who engage in direct ground combat.

The committee believes that the FCS program, the centerpiece of Army transformation and modernization, will provide the American soldier with lethal and survivable systems, and a versatile organization which will allow him to prevail no matter the nature of future conflicts.

The committee recommends an increase of \$90.0 million in PE 64663A to restore the ARV to the FCS program, and encourages the Army to include adequate funding in the future years defense program for that purpose.

Combat identification

The budget request included \$11.3 million in PE 64817A for combat identification. Under this account, the Army seeks to maximize overall combat effectiveness by mitigating incidents of fratricide and maximizing the situational understanding of the warfighter. This is achieved by rapid, reliable identification of friends, foes, and neutrals in the battle space. To accelerate research in this

area, the committee recommends an increase in PE 64817A of \$2.0 million for the research and development of a single channel ground and airborne radio system-based combat identification technology.

High energy laser systems test facility

The budget request included \$2.8 million in PE 65605A for the Department of Defense High Energy Laser Systems Test Facility (HELSTF). The committee understands that this low level of funding will result in a reduction in contractor support personnel and reduces the Department's ability to adequately test planned high energy laser weapon systems such as the Airborne Laser and the High Energy Laser Technology Demonstrator, as well as support for work of the Joint Technology Office for High Energy Lasers. The committee recommends an increase of \$7.5 million for operations at HELSTF.

The committee directs the Secretary of the Army, the Director of the Test Resource Management Center, and the Director of the High Energy Laser Joint Technology Office to report jointly to Congress on a plan, including required funding over the Future Years Defense Program, to develop and maintain adequate personnel, resources, and facilities to test current and future high energy laser systems, no later than March 1, 2008.

HIMARS modular launcher communications system

The budget request included \$54.1 million in PE 63778A for the Multiple Launch Rocket System (MLRS) product improvement program, but no funding for the High Mobility Artillery Rocket System (HIMARS) Modular Launcher Communications System (MLCS).

The HIMARS Operational Requirements Document (ORD) contains a requirement for a sensor-to-effects capability using the M142 HIMARS launchers assigned to active component and National Guard HIMARS units. Sensor-to-effects capability significantly reduces target engagement timelines, improves combat effectiveness, and increases flexibility associated with attacking time-sensitive, high value targets.

The committee notes that work is currently on-going for this system upgrade and additional funding is required in fiscal year 2008 to accelerate this needed capability.

The committee recommends an increase of \$2.5 million in PE 63778A for HIMARS MCLS to accelerate the development, integration, and testing of sensor-to-effects.

Combat vehicle improvement programs

The budget request included \$27.6 million in PE 23735A for combat vehicle improvement programs, but no funding for Vehicle Health Management systems development or for combat vehicle transmission improvement.

Vehicle Health Management is a set of maintenance processes and capabilities derived from real-time assessments of weapon system conditions obtained from embedded sensors and software. The goal of Vehicle Health Management is to perform maintenance only upon evidence of need and to limit the time it takes to troubleshoot failures. Vehicle Health Management represents a conscious effort

to shift equipment maintenance from a reactive, preventive approach at the time of failure to a more routine and predictive approach using real-time vehicle information. It will improve maintenance and readiness, and reduce major sustainability costs.

Funding is needed to support design efforts and to prototype data collection systems on-board the Heavy Brigade Combat Team (HBCT) vehicles, to design and procure network systems to offload the vehicle data, and to analyze the vehicle data to perform failure analysis and failure prediction.

Tank and armored personnel carrier transmissions have not significantly changed in 30 years and are the second largest cost driver in terms of operation and support costs.

Funding is needed for electronic controls for the Abram tank X1100 series transmission. These controls immediately make available a wealth of information and data that can be mined by a Vehicle Health Management system to monitor transmission function and health. Proper diagnosis of faults prior to transmission removal offers one of the most effective means of reducing operating and support costs.

The committee recommends an increase of \$6.0 million for Vehicle Health Management systems development, and \$4.9 million for combat vehicle transmission improvement, for a total of \$38.5 million.

Helicopter autonomous landing system

The budget request included \$325.6 million in PE 23744A for aircraft modifications and product improvement programs, but no funding for the Helicopter Autonomous Landing System (HALS).

Utility flight operations are accomplished today using best available training, tactics, and procedures to minimize flight in degraded visual conditions. However, this is not always possible—for example, one recent unofficial study of all 251 U.S. Army Class A–B rotary wing mishaps ascribed to “human factors” from fiscal years 1985 to 2005 counted 52 landing mishaps. These 52 landing mishaps involved a total of 8 fatalities and 20 major injuries. All these fatalities and all these major injuries except one occurred in degraded visual conditions (brownout, whiteout, or instrument flight rules). Materiel solutions, to include hover symbology and fully coupled flight directors, are being integrated into the UH–60M helicopter and will significantly improve operations in degraded visual conditions.

The materiel solution to counter brownout conditions consists of a three-phase approach. Phase–1 or Brownout Situational Awareness Upgrade (BSAU) is precision hover symbology cockpit display; Phase–2 is two-axis automated hover hold; Phase–3 or Helicopter Autonomous Landing System (HALS) is a visual based “see-through” capability based on radar and/or forward looking infrared technology. Additional funding is needed to bring the HALS Phase–3 design achieved through funding in fiscal year 2006 to a level capable of production for potential application onto both legacy and modernized UH–60 helicopters.

The committee recommends an increase of \$5.0 million for HALS, for a total of \$330.6 million.

Joint tactical ground station

The budget request included \$23.5 million in PE 28053A for Research, Development, Test, and Evaluation (RDT&E) of the Joint Tactical Ground Station (JTAGS). Army and Air Force plans for mobile ground stations to receive and exploit the Space-Based Infrared System (SBIRS) are not synchronized and are not funded across the future-years defense program. The committee recommends a reduction to the request of \$10.0 million, to offset higher funding priorities.

Navy

Title II-RDT and E

(Dollars in Thousands)

<u>Program Element</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2008 Request</u>	<u>Senate Change</u>	<u>Senate Authorized</u>
		RESEARCH, DEVELOPMENT, TEST & EVALUATION, NAVY			
		Basic Research			
0601103N	1	UNIVERSITY RESEARCH INITIATIVES	76,637	9,000	85,637
		Program increase		[9,000]	
0601152N	2	IN-HOUSE LABORATORY INDEPENDENT RESEARCH	16,556		16,556
0601153N	3	DEFENSE RESEARCH SCIENCES	374,052	1,000	375,052
		Science & technology educational outreach programs		[1,000]	
		Applied Research			
0602114N	4	POWER PROJECTION APPLIED RESEARCH	83,419	3,000	86,419
		Infrared materials research		[3,000]	
0602123N	5	FORCE PROTECTION APPLIED RESEARCH	155,936	13,500	169,436
		Undersea perimeter security systems		[3,500]	
		Port security technologies		[2,000]	
		Unmanned sea surface vessel propulsion & power research		[3,000]	
		Energy systems integration research		[2,000]	
		UAV fuel cell technologies		[2,000]	
		Critical composite technologies for SOF medium range		[1,000]	
0602131M	6	MARINE CORPS LANDING FORCE TECHNOLOGY	26,785	4,500	31,285
		Rapid awareness systems		[4,500]	
0602234N	7	MATERIALS, ELECTRONICS AND COMPUTER TECHNOLOGY			
0602235N	8	COMMON PICTURE APPLIED RESEARCH	93,376		93,376

Title II-RDT and E
(Dollars in Thousands)

<u>Program Element</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2008 Request</u>	<u>Senate Change</u>	<u>Senate Authorized</u>
0602236N	9	WARFIGHTER SUSTAINMENT APPLIED RESEARCH	88,297		88,297
0602271N	10	RF SYSTEMS APPLIED RESEARCH RF power technologies	45,451	3,000 [3,000]	48,451
0602435N	11	OCEAN WARFIGHTING ENVIRONMENT APPLIED RESEARCH	49,869		49,869
0602651M	12	JOINT NON-LETHAL WEAPONS APPLIED RESEARCH	6,081		6,081
0602747N	13	UNDERSEA WARFARE APPLIED RESEARCH Vector sensor technology development	68,455	3,000 [3,000]	71,455
0602782N	14	MINE AND EXPEDITIONARY WARFARE APPLIED RESEARCH Advanced Technology Development	59,874		59,874
0603114N	15	POWER PROJECTION ADVANCED TECHNOLOGY Excalibur UAV Free electron laser research	49,684	5,000 [1,000]	54,684
0603123N	16	FORCE PROTECTION ADVANCED TECHNOLOGY Navy manufacturing & repair cell Development of wide-band gap semiconductor materials Navy/USMC fuel cell non tactical vehicle initiative Autonomous superconducting fault current limiting systems Electrochemical field-deployable system for potable water generation	70,850	29,300 [5,000] [5,000] [4,900] [3,000]	100,150
0603235N	17	Fuel cell manufacturability research Single generator operations lithium ion battery COMMON PICTURE ADVANCED TECHNOLOGY	40,782	[3,400] [5,000]	40,782

Title II-RDT and E

(Dollars in Thousands)

<u>Program Element</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2008 Request</u>	<u>Senate Change</u>	<u>Senate Authorized</u>
0603236N	18	WARFIGHTER SUSTAINMENT ADVANCED TECHNOLOGY	102,124		102,124
0603271N	19	RF SYSTEMS ADVANCED TECHNOLOGY	22,676		22,676
0603640M	20	USMC ADVANCED TECHNOLOGY DEMONSTRATION (ATD) Acoustic combat sensors	70,968	5,000	75,968
				[5,000]	
0603651M	21	JOINT NON-LETHAL WEAPONS TECHNOLOGY DEVELOPMEN	10,938		10,938
0603727N	22	NAVY TECHNICAL INFORMATION PRESENTATION SYSTEM			
0603729N	23	WARFIGHTER PROTECTION ADVANCED TECHNOLOGY	12,145		12,145
0603747N	24	UNDERSEA WARFARE ADVANCED TECHNOLOGY	73,626		73,626
0603758N	25	NAVY WARFIGHTING EXPERIMENTS AND DEMONSTRATIONE	41,196		41,196
0603782N	26	MINE AND EXPEDITIONARY WARFARE ADVANCED TECHNOL	26,840		26,840
		Advanced Component Development & Prototypes			
0603207N	27	AIR/OCEAN TACTICAL APPLICATIONS	47,914		47,914
0603216N	28	AVIATION SURVIVABILITY	6,252		6,252
0603237N	29	DEPLOYABLE JOINT COMMAND AND CONTROL	9,475		9,475
0603254N	30	ASW SYSTEMS DEVELOPMENT	16,706		16,706
0603261N	31	TACTICAL AIRBORNE RECONNAISSANCE	4,063		4,063
0603382N	32	ADVANCED COMBAT SYSTEMS TECHNOLOGY	9,331		9,331
0603502N	33	SURFACE AND SHALLOW WATER MINE COUNTERMEASURE:	91,122		91,122
0603506N	34	SURFACE SHIP TORPEDO DEFENSE Sensor arrays for multiple applications (SAMA)	15,967	1,500	17,467
				[1,500]	
0603512N	35	CARRIER SYSTEMS DEVELOPMENT	84,806		84,806

Title II-RDT and E

(Dollars in Thousands)

<u>Program Element</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2008 Request</u>	<u>Senate Change</u>	<u>Senate Authorized</u>
0603513N	36	SHIPBOARD SYSTEM COMPONENT DEVELOPMENT Smart valve	9,450	29,400 [3,000]	38,850
		Power conversion equipment		[2,500]	
		High temperature superconducting AC synchronous propulsion r		[14,400]	
		Shipboard flywheel energy storage system		[9,500]	
0603525N	37	PILOT FISH	132,131		132,131
0603527N	38	RETRACT LARCH	89,601		89,601
0603536N	39	RETRACT JUNIPER	37,405		37,405
0603542N	40	RADIOLOGICAL CONTROL	1,546		1,546
0603553N	41	SURFACE ASW	25,560	4,000	29,560
		Improved surface vessel torpedo tube launcher		[4,000]	
0603559N	42	SSGN CONVERSION			
0603561N	43	ADVANCED SUBMARINE SYSTEM DEVELOPMENT	134,882	29,500	164,382
		Undersea missile launch study (ULMS)		[25,000]	
		Twinline thin line towed array		[4,500]	
0603562N	44	SUBMARINE TACTICAL WARFARE SYSTEMS	9,865		9,865
0603563N	45	SHIP CONCEPT ADVANCED DESIGN	30,858	4,000	34,858
		Next generation shipboard monitoring		[4,000]	
0603564N	46	SHIP PRELIMINARY DESIGN & FEASIBILITY STUDIES	18,736		18,736
0603570N	47	ADVANCED NUCLEAR POWER SYSTEMS	166,196		166,196
0603573N	48	ADVANCED SURFACE MACHINERY SYSTEMS			

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(Dollars in Thousands)

<u>Program Element</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2008 Request</u>	<u>Senate Change</u>	<u>Senate Authorized</u>
0603576N	49	CHALK EAGLE	211,201		211,201
0603581N	50	LITTORAL COMBAT SHIP (LCS)	217,502		217,502
0603582N	51	COMBAT SYSTEM INTEGRATION	53,427		53,427
0603609N	52	CONVENTIONAL MUNITIONS	8,941		8,941
0603611M	53	MARINE CORPS ASSAULT VEHICLES	288,220	-100,000	188,220
		Expeditionary fighting vehicle (EFV)		[-100,000]	
0603612M	54	USMC MINE COUNTERMEASURES SYSTEMS - ADV DEV	657		657
0603635M	55	MARINE CORPS GROUND COMBAT/SUPPORT SYSTEM	80,403	20,000	100,403
		Joint light tactical vehicle (JLTV) - transfer from Title XV		[20,000]	
0603654N	56	JOINT SERVICE EXPLOSIVE ORDNANCE DEVELOPMENT	83,361		83,361
0603658N	57	COOPERATIVE ENGAGEMENT	33,283		33,283
0603713N	58	OCEAN ENGINEERING TECHNOLOGY DEVELOPMENT	5,122		5,122
0603721N	59	ENVIRONMENTAL PROTECTION	19,850		19,850
0603724N	60	NAVY ENERGY PROGRAM	5,335		5,335
0603725N	61	FACILITIES IMPROVEMENT	4,131		4,131
0603734N	62	CHALK CORAL	28,297		28,297
0603739N	63	NAVY LOGISTIC PRODUCTIVITY	3,547	4,000	7,547
		Highly integrated optical interconnects for advanced air vehicles		[4,000]	
0603746N	64	RETRACT MAPLE	346,144		346,144
0603748N	65	LINK PLUMERIA	88,748		88,748
0603751N	66	RETRACT ELM	79,144		79,144

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(Dollars in Thousands)

<u>Program Element</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2008 Request</u>	<u>Senate Change</u>	<u>Senate Authorized</u>
0603755N	67	SHIP SELF DEFENSE	10,954		10,954
0603764N	68	LINK EVERGREEN	31,607		31,607
0603787N	69	SPECIAL PROCESSES	40,940		40,940
0603790N	70	NATO RESEARCH AND DEVELOPMENT	9,934		9,934
0603795N	71	LAND ATTACK TECHNOLOGY	31,021		31,021
0603851M	72	NONLETHAL WEAPONS	45,892		45,892
0603857N	73	ALL SERVICE COMBAT IDENTIFICATION EVALUATION TEAM			
0603860N	74	JOINT PRECISION APPROACH AND LANDING SYSTEMS	70,811		70,811
0603879N	75	SINGLE INTEGRATED AIR PICTURE (SIAP) SYSTEM ENGINEE	46,450		46,450
0603889N	76	COUNTERDRUG RDT&E PROJECTS			
0603925N	77	DIRECTED ENERGY AND ELECTRIC WEAPON SYSTEMS			
0604272N	78	TACTICAL AIR DIRECTIONAL INFRARED COUNTERMEASURE	27,569	4,000	31,569
		High power fiber laser - base pod		[4,000]	
0604327N	79	HARD AND DEEPLY BURIED TARGET DEFEAT SYSTEM (HDB	126,434	-126,434	
		Conventional Trident missile (CTM)		[-126,434]	
0604450N	80	JOINT AIR-TO-GROUND MISSILE (JAGM)	15,000		15,000
0604707N	81	SPACE AND ELECTRONIC WARFARE (SEW) ARCHITECTURE/	42,295		42,295
0604787N	82	JOINT WARFARE TRANSFORMATION PROGRAMS			
		System Development & Demonstration			
0604212N	83	OTHER HELO DEVELOPMENT	46,815		46,815
0604214N	84	AV-8B AIRCRAFT - ENG DEV	17,360		17,360

Title II-RDT and E
(Dollars in Thousands)

<u>Program Element</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2008 Request</u>	<u>Senate Change</u>	<u>Senate Authorized</u>
0604215N	85	STANDARDS DEVELOPMENT	106,242		106,242
0604216N	86	MULTI-MISSION HELICOPTER UPGRADE DEVELOPMENT	78,151		78,151
0604218N	87	AIR/OCEAN EQUIPMENT ENGINEERING	5,162		5,162
0604221N	88	P-3 MODERNIZATION PROGRAM	8,621		8,621
0604230N	89	WARFARE SUPPORT SYSTEM	2,911		2,911
0604231N	90	TACTICAL COMMAND SYSTEM	86,921		86,921
0604234N	91	ADVANCED HAWKEYE	808,993		808,993
0604245N	92	H-1 UPGRADES	3,608		3,608
0604261N	93	ACOUSTIC SEARCH SENSORS	18,325		18,325
0604262N	94	V-22A	117,997		117,997
0604264N	95	AIR CREW SYSTEMS DEVELOPMENT	24,267		24,267
0604269N	96	EA-18	272,699		272,699
0604270N	97	ELECTRONIC WARFARE DEVELOPMENT	41,064		41,064
0604273N	98	VH-71A EXECUTIVE HELO DEVELOPMENT	270,971		270,971
0604280N	99	JOINT TACTICAL RADIO SYSTEM - NAVY (JTRS-NAVY)	853,676		853,676
0604300N	100	SC-21 TOTAL SHIP SYSTEM ENGINEERING Permanent magnet motor system Advanced wireless encryption module	621,544	15,000 [9,000]	636,544
0604307N	101	SURFACE COMBATANT COMBAT SYSTEM ENGINEERING	142,810	[6,000]	142,810
0604311N	102	LPD-17 CLASS SYSTEMS INTEGRATION	4,300		4,300
0604329N	103	SMALL DIAMETER BOMB (SDB)	9,832		9,832

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<u>Program Element</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2008 Request</u>	<u>Senate Change</u>	<u>Senate Authorized</u>
0604366N	104	STANDARD MISSILE IMPROVEMENTS	231,791		231,791
0604373N	105	AIRBORNE MCM	54,761		54,761
0604378N	106	NAVAL INTEGRATED FIRE CONTROL - COUNTER AIR SYSTEM	11,497		11,497
0604501N	107	ADVANCED ABOVE WATER SENSORS	121,494		121,494
0604503N	108	SSN-688 AND TRIDENT MODERNIZATION	114,789	4,400	119,189
		Improved submarine thin line towed array handler & array reliabi		[4,400]	
0604504N	109	AIR CONTROL	4,166		4,166
0604507N	110	ENHANCED MODULAR SIGNAL PROCESSOR			
0604512N	111	SHIPBOARD AVIATION SYSTEMS	28,100		28,100
0604518N	112	COMBAT INFORMATION CENTER CONVERSION	17,139	4,000	21,139
		Combat information center conversion		[4,000]	
0604558N	113	NEW DESIGN SSN	223,958	6,000	229,958
		Submarine electronic chart updates		[6,000]	
0604561N	114	SSN-21 DEVELOPMENTS	2,457		2,457
0604562N	115	SUBMARINE TACTICAL WARFARE SYSTEM	53,703		53,703
0604567N	116	SHIP CONTRACT DESIGN/ LIVE FIRE T&E	62,404	4,900	67,304
		LHA[R] design - transfer from NDSF		[4,900]	
0604574N	117	NAVY TACTICAL COMPUTER RESOURCES			
0604601N	118	MINE DEVELOPMENT	2,092		2,092
0604603N	119	UNGUIDED CONVENTIONAL AIR-LAUNCHED WEAPONS			
0604610N	120	LIGHTWEIGHT TORPEDO DEVELOPMENT	27,056		27,056

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<u>Program Element</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2008 Request</u>	<u>Senate Change</u>	<u>Senate Authorized</u>
0604618N	121	JOINT DIRECT ATTACK MUNITION			
0604654N	122	JOINT SERVICE EXPLOSIVE ORDNANCE DEVELOPMENT	10,382		10,382
0604703N	123	PERSONNEL, TRAINING, SIMULATION, AND HUMAN FACTORS	8,830		8,830
0604721N	124	BATTLE GROUP PASSIVE HORIZON EXTENSION SYSTEM			
0604727N	125	JOINT STANDOFF WEAPON SYSTEMS	24,851		24,851
0604755N	126	SHIP SELF DEFENSE (DETECT & CONTROL)	33,064		33,064
0604756N	127	SHIP SELF DEFENSE (ENGAGE: HARD KILL) Phalanx next generation	67,366	9,800	77,166
				[9,800]	
0604757N	128	SHIP SELF DEFENSE (ENGAGE: SOFT KILL/EW) NULKA decoy research & development	34,323	9,000	43,323
				[9,000]	
0604761N	129	INTELLIGENCE ENGINEERING	1,959		1,959
0604771N	130	MEDICAL DEVELOPMENT Hemostatic agent research	7,973	4,000	11,973
				[4,000]	
0604777N	131	NAVIGATION/ID SYSTEM	42,121		42,121
0604784N	132	DISTRIBUTED SURVEILLANCE SYSTEM			
0604800N	133	JOINT STRIKE FIGHTER (JSF) Excessive unearned award fee carry over Continue alternate engine development	1,707,372	220,300	1,927,672
				[-19,700]	
				[240,000]	
0604910N	134	SMART CARD			
0605013M	135	INFORMATION TECHNOLOGY DEVELOPMENT	22,181		22,181
0605013N	136	INFORMATION TECHNOLOGY DEVELOPMENT	54,098		54,098

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<u>Program Element</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2008 Request</u>	<u>Senate Change</u>	<u>Senate Authorized</u>
0605172N	137	MULTINATIONAL INFORMATION SHARING (MINIS)			
0605212N	138	CH-53K RDTE	417,161		417,161
0605500N	139	MULTI-MISSION MARITIME AIRCRAFT (MMA)	880,106		880,106
0304785N	140	TACTICAL CRYPTOLOGIC SYSTEMS	39,053		39,053
		RDT&E Management Support			
0604256N	141	THREAT SIMULATOR DEVELOPMENT	23,924		23,924
0604258N	142	TARGET SYSTEMS DEVELOPMENT	32,376		32,376
0604759N	143	MAJOR T&E INVESTMENT	37,614		37,614
0605152N	144	STUDIES AND ANALYSIS SUPPORT - NAVY	7,516		7,516
0605154N	145	CENTER FOR NAVAL ANALYSES	49,360		49,360
0605155N	146	FLEET TACTICAL DEVELOPMENT			
0605502N	147	SMALL BUSINESS INNOVATIVE RESEARCH			
0605804N	148	TECHNICAL INFORMATION SERVICES	694		694
0605853N	149	MANAGEMENT, TECHNICAL & INTERNATIONAL SUPPORT	49,498		49,498
0605856N	150	STRATEGIC TECHNICAL SUPPORT	3,452		3,452
0605861N	151	RDT&E SCIENCE AND TECHNOLOGY MANAGEMENT	68,180		68,180
0605862N	152	RDT&E INSTRUMENTATION MODERNIZATION	1,423		1,423
0605863N	153	RDT&E SHIP AND AIRCRAFT SUPPORT	184,541		184,541
0605864N	154	TEST AND EVALUATION SUPPORT	336,130		336,130
0605865N	155	OPERATIONAL TEST AND EVALUATION CAPABILITY	12,176		12,176
0605866N	156	NAVY SPACE AND ELECTRONIC WARFARE (SEW) SUPPORT	2,439		2,439

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0605867N	157	SEW SURVEILLANCE/RECONNAISSANCE SUPPORT	29,071		29,071
0605873M	158	MARINE CORPS PROGRAM WIDE SUPPORT	20,166		20,166
0305885N	159	TACTICAL CRYPTOLOGIC ACTIVITIES	1,508		1,508
0804758N	160	SERVICE SUPPORT TO JFCOM, JNTC	5,078		5,078
0909999N	161	FINANCING FOR CANCELLED ACCOUNT ADJUSTMENTS			
		Operational Systems Development			
0603660N	162	ADVANCED DEVELOPMENT PROJECTS	[]		[]
0604227N	163	HARPOON MODIFICATIONS	43,470		43,470
0604402N	164	UNMANNED COMBAT AIR VEHICLE (UCAV) ADVANCED COMF	161,665		161,665
0101221N	165	STRATEGIC SUB & WEAPONS SYSTEM SUPPORT	81,398	-6,000	75,398
		RRW Phase 3		[-15,000]	
		LINAC		[9,000]	
0101224N	166	SSBN SECURITY TECHNOLOGY PROGRAM	33,109		33,109
0101226N	167	SUBMARINE ACOUSTIC WARFARE DEVELOPMENT	4,149		4,149
0101402N	168	NAVY STRATEGIC COMMUNICATIONS	36,531		36,531
0203761N	169	RAPID TECHNOLOGY TRANSITION (RTT)	44,756		44,756
0204136N	170	F/A-18 SQUADRONS	44,891		44,891
0204152N	171	E-2 SQUADRONS	22,691		22,691
0204163N	172	FLEET TELECOMMUNICATIONS (TACTICAL)	23,108		23,108
0204229N	173	TOMAHAWK AND TOMAHAWK MISSION PLANNING CENTER (11,405		11,405
0204311N	174	INTEGRATED SURVEILLANCE SYSTEM	27,740		27,740

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0204413N	175	AMPHIBIOUS TACTICAL SUPPORT UNITS (DISPLACEMENT CI	1,845		1,845
0204571N	176	CONSOLIDATED TRAINING SYSTEMS DEVELOPMENT	6,987		6,987
0204574N	177	CRYPTOLOGIC DIRECT SUPPORT	1,443		1,443
0204575N	178	ELECTRONIC WARFARE (EW) READINESS SUPPORT	34,340		34,340
0205601N	179	HARM IMPROVEMENT	34,762		34,762
0205604N	180	TACTICAL DATA LINKS	5,534		5,534
0205620N	181	SURFACE ASW COMBAT SYSTEM INTEGRATION	11,200		11,200
0205632N	182	MK-48 ADCAP	17,941		17,941
0205633N	183	AVIATION IMPROVEMENTS	100,284	4,000	104,284
		Structural life tracking		[4,000]	
0205658N	184	NAVY SCIENCE ASSISTANCE PROGRAM	3,473		3,473
0205675N	185	OPERATIONAL NUCLEAR POWER SYSTEMS	71,720		71,720
0206313M	186	MARINE CORPS COMMUNICATIONS SYSTEMS	280,140		280,140
0206623M	187	MARINE CORPS GROUND COMBAT/SUPPORTING ARMS SYS	57,177	13,700	70,877
		Ultrasonic consolidation of embedded sensors		[3,900]	
		Anti-sniper infrared targeting system (ASITS)		[9,800]	
0206624M	188	MARINE CORPS COMBAT SERVICES SUPPORT	12,946		12,946
0207161N	189	TACTICAL AIM MISSILES	4,445		4,445
0207163N	190	ADVANCED MEDIUM RANGE AIR-TO-AIR MISSILE (AMRAAM)	4,579		4,579
0208058N	191	JOINT HIGH SPEED VESSEL (JHSV)	18,934		18,934
0301303N	192	MARITIME INTELLIGENCE	[]		[]

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0301323N	193	COLLECTION MANAGEMENT	[]		[]
0301327N	194	TECHNICAL RECONNAISSANCE AND SURVEILLANCE	[]		[]
0303109N	195	SATELLITE COMMUNICATIONS (SPACE) UHF gap risk reduction IPv6	736,572	13,000 [10,000]	749,572
0303140N	196	INFORMATION SYSTEMS SECURITY PROGRAM	28,393		28,393
0303158M	197	JOINT COMMAND AND CONTROL PROGRAM (JC2)	1,007		1,007
0303158N	198	JOINT COMMAND AND CONTROL PROGRAM (JC2)	5,015		5,015
0305149N	199	COBRA JUDY	132,679		132,679
0305160N	200	NAVY METEOROLOGICAL AND OCEAN SENSORS-SPACE (ME)	4,887		4,887
0305188N	201	JOINT C4ISR BATTLE CENTER (JBC)			
0305192N	202	MILITARY INTELLIGENCE PROGRAM (MIP) ACTIVITIES	5,444		5,444
0305204N	203	TACTICAL UNMANNED AERIAL VEHICLES	50,185		50,185
0305205N	204	ENDURANCE UNMANNED AERIAL VEHICLES	116,666		116,666
0305206N	205	AIRBORNE RECONNAISSANCE SYSTEMS	50,677		50,677
0305207N	206	MANNED RECONNAISSANCE SYSTEMS	22,488		22,488
0305208N	207	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	19,350		19,350
0307207N	208	AERIAL COMMON SENSOR (ACS)	16,606		16,606
0308601N	209	MODELING AND SIMULATION SUPPORT	7,832		7,832
0702207N	210	DEPOT MAINTENANCE (NON-IF)	19,402		19,402
0702239N	211	AVONICS COMPONENT IMPROVEMENT PROGRAM	1,635		1,635

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0708011N	212	INDUSTRIAL PREPAREDNESS Materials stress measurement technologies	56,445	2,500 [2,500]	58,945
0708730N	213	MARITIME TECHNOLOGY (MARITECH) National Shipbuilding Research Program		15,000 [15,000]	15,000
	999	CLASSIFIED PROGRAMS	1,219,225	-1,045,007	174,218
Total, RDT&E Navy			17,075,536	-779,141	16,296,395

Navy science and technology educational outreach

The budget request included \$374.1 million in PE 61153N for defense research sciences. The committee notes that many expert studies, including efforts by the services and the National Academies of Sciences have concluded that a greater emphasis must be placed on K–12 educational activities in math and science in order to increase the likelihood that the nation will have enough scientific and engineering talent to meet its future needs. The need for a highly qualified pool of technical specialists is particularly acute for the Department of Defense, given its need for clearable scientists and engineers. To support initiatives to stimulate math and science education and outreach efforts by Navy scientists and engineers, the committee recommends an increase of \$1.0 million for naval science and technology educational outreach activities.

Infrared materials research

The budget request included \$83.4 million in PE 62114N for applied research in power projection technologies. The committee notes that the Navy and Marine Corps have a number of initiatives developing infrared seeker technologies, and that the Army has official technology objectives in third-generation infrared technologies and low-cost, high-resolution infrared focal plane arrays. In support of these efforts, and in conjunction with ongoing efforts of the Army's small business innovative research program, the committee recommends an increase of \$3.0 million for infrared materials research for military applications.

Undersea perimeter security technologies

The budget request included \$155.9 million in PE 62123N for applied research on force protection technologies. The Navy's Maritime Domain Awareness science and technology focus area has a specific technology objective of improving homeland and port defense monitoring capabilities by developing "new systems and protocols for target identification and tracking using fixed and deployable cueing systems." Consistent with this technology objective, the committee recommends an increase of \$3.5 million for the development of a deployable undersea threat detection, classification, and response system; and an increase of \$2.0 million for the development of deployable, rapid under-hull inspection capabilities.

Navy energy and power technologies

The budget request included \$155.9 million in PE 62123N for applied research on force protection technologies. The committee notes that the Navy is seeking to develop next generation shipborne directed energy weaponry, which will require advanced power and energy systems, as well alternative energy technologies for a variety of platforms. Consistent with the Navy's High Energy and Pulse Power Technology Objective which seeks to develop energy storage power system architectures and pulsed power control systems, the committee recommends an additional \$2.0 million to develop energy delivery technologies for advanced naval weapons systems. Consistent with the Navy's Energy Storage Technology Objective to provide reliable power sources for all non-nuclear systems, the committee recommends an additional \$2.0 million for the

development of fuel cells for unmanned aerial vehicle applications, and an additional \$3.0 million for propulsion systems for unmanned surface vessels.

Composites research for special operations craft

The budget request included \$155.9 million in PE 62123N for applied research on force protection technologies. The committee recommends an additional \$1.0 million for critical composites technologies for special operations forces medium range endurance craft.

Situational awareness processing technologies

The budget request included \$26.8 million in PE 62131M for applied research on force protection technologies. The committee notes that one of the Marine Corps' science and technology objectives is the development of "improved situational awareness for warfighters at all echelons." Consistent with that objective, the committee recommends an additional \$4.5 million for applied research on the distribution of tactical information to individual warfighters.

Navy electronics research

The budget request included \$45.5 million in PE 62271N for radio frequency systems applied research. The committee notes that next generation Navy radars, communications, and electronic warfare systems will all depend on advanced high power microelectronics. The Navy's Power and Energy science and technology focus area includes the specific objective of developing new materials to increase the efficiency and power density of Navy systems. To complement these efforts, the committee recommends an increase of \$3.0 million for research on advanced semiconductor radio frequency power technologies.

Undersea sensor arrays

The budget request included \$68.5 million in PE 62747N for applied research on undersea warfare technologies. The committee notes that the Navy's Maritime Domain Awareness science and technology focus area has a vision to "locate and track any target of interest on, under or above the water . . . using integrated networks of persistent sensors." This focus area has a specific technology objective of developing tactical sensor networks that are secure, survivable, self-healing, and adaptable. The committee further notes that the Chief of Naval Operations has indicated that critical anti-submarine warfare enhancements are among the Navy's highest unfunded priorities. Consistent with those priorities and goals, the committee recommends an additional \$3.0 million for the development of advanced sensor arrays to enhance maritime domain awareness.

Tactical unmanned air vehicles

The budget request included \$49.7 million in PE 63114N for advanced power projection technologies. The committee has long supported the efforts of the services to increase the number of unmanned air systems being used for military operations. The com-

mittee notes that the Marine Corps' highly responsive loitering munitions science and technology objective seeks to develop munitions which can be deployed aboard an unmanned air vehicle. In support of this goal, the committee recommends an increase of \$1.0 million for development of tactical unmanned air vehicles in coordination with Army efforts in this area.

Free electron laser research

The budget request included \$49.7 million in PE 63114N for advanced technologies for power projection. The committee notes that the Navy has explored the use of free electron lasers as a weapons system, as well as for industrial manufacturing applications. The committee recommends an increase of \$4.0 million for research on the use of free electron lasers for manufacturing of military systems.

Force protection advanced technology

The budget request included \$70.8 million in PE 63123N for force protection advanced technology. This program addresses applied research associated with providing force protection capability for all naval platforms.

The budget request included no funding for development of a transportable manufacturing and repair cell. This cell would reduce operating and support costs, while maintaining equipment readiness in theater. The cell would be deployable by ships and large ground vehicles, and would provide precision, on-demand manufacturing of critical parts for the Navy and Marine Corps. The committee recommends an increase of \$5.0 million for the development of a transportable manufacturing and repair cell.

The budget request included no funding for continuing the development of wide band gap 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 \$5.0 million for the continued development of wide band gap semiconductor substrate material.

The budget request included no funding for any initiative to leverage rapidly developing ongoing advances in hydrogen-powered fuel cell vehicle technology to enable revolutionary changes in the Department of the Navy non-tactical vehicle fleet. Fuel cells powered by hydrogen could totally change the present dependence on petroleum as the logistics fuel and could offer the ability to run systems silently and with significantly reduced thermal signatures for missions requiring low probability of detection. In previous years, the Department of the Navy conducted several short-term demonstrations of hydrogen fuel cell powered vehicles. The committee recommends an increase of \$4.9 million for an expanded demonstration of fuel cell vehicles, to include an extended vehicle range refueling capability enhancement to include testing that could establish the basis for a potential full qualification of a hydrogen-powered fuel cell vehicle for fleet operations.

The budget request included no funding for development of autonomous superconducting fault current limiting systems. Modern electric power generation and distribution systems on naval ships

are susceptible to catastrophic high current surges (i.e., fault currents) that may result in permanent equipment damage and total power system shutdowns. Efficient, reliable, and stable shipboard power systems are critical to the operation of present and future naval surface combatants. Conventional hardware systems (e.g., fuses, circuit breakers, etc.) provide some degree of protection, but are insufficient to meet the critical requirements for reliable, uninterrupted power under the most adverse conditions of warfare. The committee recommends an increase of \$3.0 million to develop a current limiting system to help address current and future shipboard power systems issues.

The budget request included no funding for continued development of an electrochemical field-deployable system for generating potable water. The Department of Defense Appropriations Act for Fiscal Year 2007 (Public Law 109–289) provided \$1.0 million to accomplish Phase I objectives to develop, establish, and demonstrate an economical process to make sodium hypochlorite, and team with potential industrial and medical end users. If the program is to succeed, the Navy needs to complete Phase I and begin Phase II of the program which would: (i) conduct long-term testing of sub-scale electrochemical cell membrane modules; (ii) demonstrate a sub-scale technology unit; and (iii) begin concept design of full-scale electrochemical cell membrane modules. The committee recommends an increase of \$3.0 million to complete Phase I and begin Phase II of this activity.

The budget request included no funding for improving the capability to manufacture fuel cells to help accelerate the application of fuel cells for a wide range of Department of Defense electrical power needs, including ships and submarines, ground vehicles, mobile electric power for bases and other field equipment, and aircraft. The committee recommends an increase of \$3.4 million to enable the Department of the Navy to advance fuel cell manufacturing feasibility and readiness for field testing.

The budget request included no funding for development of a lithium battery technology that could replace one of the three generators normally in operation or reserve aboard all large Navy ships. The primary purpose would be to save the costs of fuel consumed by the primary reserve generator, which must operate constantly as a back-up source of power for the ship's primary propulsion and electrical systems. Such a battery system could provide a lower cost, higher quality source of electrical power that would replace redundant back-up power sources dedicated to subsystems throughout the ship. The battery would also eliminate the possibility of a ship experiencing a catastrophic loss of power ("going dark") due to a cascading failure of generators and an inability to restart the main engines following a loss of main power. The committee recommends an increase of \$5.0 million to enable the development of such lithium battery technology.

The committee recommends a total authorization of \$100.1 million in PE 63123N for force protection advanced technology.

Ground sensor networks

The budget request included \$71.0 million in PE 63640M for Marine Corps advanced technology demonstrations. The committee

notes that small arms fire accounts for a large number of coalition casualties in Iraq and Afghanistan, and that a number of services and defense agencies are pursuing technological solutions to meet urgent needs of deployed forces. To support these efforts, the committee recommends an increase of \$5.0 million for the development of ground sensor networks that can detect and locate hostile fire.

Navy sensor arrays

The budget request included \$16.0 million in PE 63506N, but included no funding to develop new technology sensors that would exploit the advantages of these sensors in arrays and integrate them into micro-arrays. The committee understands that there have been some innovative developments in sensor technology that offer significant promise for the fielding of better sensor arrays for torpedo defense and for other potential applications on the battlefield. The committee recommends an increase of \$1.5 million to pursue better array technology.

Shipboard system component development

The budget request included \$9.4 million in PE 63513N for shipboard system component development, but included no funding for Smart Valve development, power conversion equipment for high density power generation packages, high temperature superconductor alternating current (HTS-AC) synchronous marine propulsion motor development, or shipboard flywheel energy storage systems.

Smart Valve is an advancement in control system technology applied to the design for bleed air regulating, control, and relief valves on existing and future gas turbine naval vessels. Existing bleed air valves for gas turbine ships are subject to high maintenance costs and reliability concerns. Smart Valve provides an advanced linear electro-mechanical actuator design for accurate and quick response, and includes self-diagnostic capability for preventive, condition-based maintenance. Increased service life and improved functional design with Smart Valves results in reduced maintenance and reduced life cycle cost. The committee recommends an increase of \$3.0 million to complete development and testing of a prototype Smart Valve.

The development of component technologies for power system management is critical to the success of the Navy's efforts to field the all-electric warship. Power conversion equipment for high density power generation is one of the key enabling capabilities required by the integrated power distribution systems required by the all-electric warship. The committee is aware that ongoing efforts to develop next generation power conversion equipment for the DDG-1000 destroyer and CG(X) cruiser programs requires funding to complete the proof of concept. The committee recommends an increase of \$2.5 million to complete development of power conversion equipment for an advanced high density power generation system.

The Navy has been developing and testing a 36.5 megawatt prototype HTS-AC synchronous propulsion motor. The Navy will take delivery of a prototype of such a motor for final testing during fiscal year 2007. Additional funding is required in fiscal year 2008 to

support full power testing of the prototype motor, and to complete the preliminary design for militarization of the HTS-AC motor and associated drive system for potential application to a future surface combatant. The committee recommends an increase of \$14.4 million to continue development and testing of the HTS-AC synchronous marine propulsion motor.

Flywheels have long been targeted as an energy storage technology for emerging applications, and as such, are included in the Militarily Critical Technologies list. In particular, the Navy has identified a list of critical shipboard applications of flywheel energy storage systems that includes: "Dark Start," uninterrupted power to essential loads, leveling loads faced by the electrical system, and single generator operation. Additional efforts would develop and test a flywheel energy storage system with greater power density and output that is fully adapted to the shipboard environment. The committee recommends an increase of \$9.5 million to continue development and testing of a flywheel energy storage system.

The committee recommends a total authorization of \$38.8 million in PE 63513N for shipboard system component development.

Surface vessel torpedo tubes

The budget request included no funds in PE 63513N for developing better torpedo tube technology for surface ships. The Navy has been managing a Small Business Innovative Research (SBIR) project to develop a modular, gas generator launch canister. This project is employing commercial, off-the-shelf (COTS), automobile-style air bags for launch energy. Employing such long shelf life COTS components could greatly reduce the maintenance burden of keeping air flask-based torpedo tubes in operational condition. Additional funding in fiscal year 2008 would continue fabrication and testing of two advanced development models (ADMs) that could launch lightweight torpedoes from unmanned surface vessels (USV) planned for the Littoral Combat Ship. These ADMs could also serve as the basis for an option to backfit during the Arleigh Burke class destroyer modernization program. Therefore, the committee recommends an increase of \$4.0 million in PE 63513N to continue development of an improved launch capability for surface vessel torpedo tubes.

Advanced submarine system development

The budget request included \$134.9 million in PE 63561N for advanced submarine systems development. The design and development efforts in these programs are to evaluate a broad range of system and technology alternatives to directly support and enhance the mission capability of current submarines and future submarine concepts.

The budget request included no funding to begin studies that would lead to developing a replacement for the Ohio class strategic missile submarine program which was designed in the 1970s. The Navy has begun low level studies under a program called the Undersea Launch Missile Study (ULMS). The efforts within ULMS will involve exploring new technologies, conceptual design of ship configurations, supporting ship systems, consideration of strategic payloads, and development of other payloads.

However, there appears to be insufficient work to maintain the skill set among submarine designers until the Navy would otherwise start designing a replacement for the Ohio class. A recent report by the RAND Corporation evaluating the submarine design industrial base concluded that it would be less expensive to sustain some number of workers in excess of those needed to meet the residual design demands during such a gap. One means of achieving this goal would be to begin the more extensive design activities earlier than the Navy would otherwise start them to support a specific date to start building the next class. The committee believes that the Navy should start that effort in fiscal year 2008 and recommends an increase of \$25.0 million for that purpose.

The budget request included \$13.5 million for a variety of advanced submarine sensors, including the twin line, thin line towed array. Twin line towed array geometries lead to improved gain and better target motion analysis by resolving the right-left ambiguity of a single line array without the need for ship maneuvering. This approach would provide an efficient means of achieving significant improvement in detection, fire control, and self-defense capabilities. The committee recommends an additional \$4.5 million to demonstrate twin line, thin line towed array technology.

The committee recommends a total authorization of \$164.4 million in PE 63561N for advanced submarine system development.

Next generation shipboard monitoring

The budget request included \$30.9 million in PE 63563N for Ship Concept Advanced Design, but included no funding for next generation shipboard monitoring. The Navy has placed a priority on reducing operating and maintenance costs for in-service and future ship classes, which requires that all ships in the fleet transition to condition-based maintenance. Condition-based maintenance requires ships to be equipped with a system that effectively monitors equipment performance, performs diagnostics, and provides predictive analysis for plant operation and maintenance. Additional funding for next generation shipboard monitoring is necessary to integrate and implement open system diagnostic data infrastructure and monitoring systems for shipboard equipment. The committee recommends an increase of \$4.0 million in PE 63563N for next generation shipboard monitoring.

Expeditionary fighting vehicle

The budget request included \$288.2 million in PE 63611M for the Expeditionary Fighting Vehicle (EFV). The EFV is a high speed, amphibious, armored tracked vehicle for transporting marines from amphibious ships over the horizon to shore and inland. The Department of Defense Office of Program Analysis and Evaluation directed a reduction to the Marine Corps' acquisition objective, which was reduced from 1,013 to 573 vehicles in fiscal year 2006.

The EFV program entered the system development and design phase in December 2000, and was scheduled to award a Low Rate Initial Production (LRIP) contract late in fiscal year 2006. Operational assessment of the vehicle's performance during 2006 determined that the EFV, while meeting most key performance parameters, fell critically short of requirements for system reliability.

Therefore, the Department deferred LRIP and conducted an independent review, which determined that redesign of the EFV would be required in order to correct significant system engineering deficiencies.

The compounding impacts of a 45 percent reduction to the EFV program's acquisition objective and a 3 or 4 year further delay to the LRIP decision resulted in a critical Nunn-McCurdy breach. The committee is awaiting the Secretary of Defense's determination on whether the EFV program meets the certification requirements under section 2433 of title 10, United States Code.

The Department's reliance upon the EFV test program to reveal failures in fundamental systems engineering for this major program reflects a disturbing trend in systems acquisition. Equally troubling is the belated acknowledgment that the vehicle design has been overly-influenced by performance requirements that are unreasonable and unnecessary.

If the EFV program is certified by the Secretary of Defense, it would resume development in the third quarter of the current fiscal year. The resultant under-execution in fiscal year 2007 provides significant carryover of funding into fiscal year 2008. The committee recommends a reduction of \$100.0 million in fiscal year 2008 in PE 63611M.

The committee is aware that the Department's corrective action plan includes production of new vehicles, which adds significant cost and schedule to the development effort. The committee is concerned that the Department arrived at this decision independent of root cause analysis of the operational assessment results. The committee directs the Secretary of the Navy to submit a report to the congressional defense committees providing the root cause analysis for the EFV reliability failures prior to obligation of funding toward production of a new prototype EFV. The report shall include the Department's assessment correlating the reliability failures to the requirement to produce new test vehicles.

Joint light tactical vehicle

The budget request included \$80.4 million in PE 63635M for Research, Development, Test, and Evaluation (RDT&E) for Marine Corps Ground Combat/Support Systems. The war-related budget request for fiscal year 2008 also included \$35.8 million for the same program element. Of this \$35.8 million, \$20.0 million is requested for acceleration of the development of the Joint Light Tactical Vehicle (JLTV). The JLTV development program has nothing to do with ongoing military operations and should be funded exclusively in the base budget. The committee recommends a reduction to the war-related budget request for JLTV of \$20.0 million and an increase of \$20.0 million for JLTV development in the base budget.

Optical interconnect

The budget request included \$3.5 million in PE 63739N for Navy logistics productivity initiatives, but include no funding to develop low cost, high quality fiber optic interconnect technology for military aerospace application. The Department of Defense continues to demand increasing data processing, communication, and system control capabilities. The next generation data and communication

management systems needed for weapons systems will depend upon tightly integrated optical fiber solutions, also known as optical interconnect. This solution optimizes space utilization while achieving high bandwidth, decreased weight, immunity to electromagnetic interference, resistance to corrosion, and improved safety and security. The Navy has requirements for next generation optical interconnect technology for several aircraft platform systems, and anticipates that this technology could be applied to Navy vessels as well. The committee recommends an increase of \$4.0 million to develop this important technology.

Tactical aircraft direct infrared countermeasures development

The budget request included \$27.6 million in PE 64272N for developing and testing airborne electronic attack systems under the tactical aircraft direct infrared countermeasures (TADIRCM) development. The TADIRCM program develops electronic warfare systems for the United States Navy, United States Marine Corps, and the United States Army tactical aircraft, Marine Corps helicopters, Navy surface combatants, data link vulnerability assessments, Navy and Marine Corps jammers, and electronic warfare devices for emerging threats and emergency contingencies. The Navy down selected to one contractor in fiscal year 2005 for the pointer/tracker/laser systems to ensure the project did not exceed the budget. Therefore, the budget request for TADIRCM included no funding for taking advantage of different technical approaches potentially resulting from recent successful testing of a high power fiber laser (HPFL).

Given the seriousness of the threat posed by missiles with infrared seekers, the committee believes that the Department of Defense should pursue promising new approaches whenever such new testing results become available. The committee believes that a demonstration could provide important information to the Navy, which would permit accelerating initial operational capability by several years. Therefore, the committee recommends an increase of \$4.0 million for conducting an HPFL demonstration.

Conventional Trident modification

The budget request included a total of \$175.0 million for the conventional Trident modification (CTM), with \$126.4 million in hard and deeply buried target defeat systems, PE 64327N; \$36.0 million in Trident II modifications, Weapons Procurement, Navy (WPN) line 1; and \$13.0 million in strategic systems missile equipment, Other Procurement, Navy (OPN) line 108. The committee recommends no funding for the CTM and further recommends that all of the funding for CTM be transferred to PE 65104D8Z for common prompt global strike concepts, discussed elsewhere in this title.

Permanent magnet motor

The budget request included \$621.5 million in PE 64300N for DD-1000 destroyer total ship systems engineering. The budget request included no funding for completing the development and testing of the permanent magnet motor (PMM).

Present Navy and Marine Corps electric propulsion and power generation systems are several times larger and heavier than mechanical drive equivalents, limited by very heavy generation equipment and propulsion motors. The PMM was developed to resolve this. Congress provided funding in fiscal year 2006 which the Navy and the contractor team used to complete factory testing, ship the PMM engineering development model to the Navy's land based test site, and begin testing.

Because of the promise of this technology for future ship applications, the committee recommends an increase of \$9.0 million to incorporate changes resulting from land based testing, repackaging PMM design to reflect evolving DDG-1000 requirements, and perform shock analysis.

Wireless encryption technology

The budget request included \$621.5 million in PE 64300N for DD-1000 destroyer total ship systems engineering, but included no funding to develop wireless encryption technology. With the reduced manning planned on the DDG-1000 and other vessels, the Navy will have to place greater reliance on automation and having the crews stay connected to the ships' computing environment. Absent better wireless encryption technology, the goal of being connected to all information systems will be problematic for very sensitive information. The committee recommends an increase of \$6.0 million to develop better wireless encryption technology for use aboard Navy vessels.

Improved towed array handler

The budget request included \$114.8 million for SSN-688 and Trident submarine modernization, but included no funding for developing or testing improved handling gear for submarine towed arrays. The committee understands that additional funding this year would complete the initial phase of the program. The Navy has now gathered data about stresses encountered by arrays during reeling cycles. The next step is to use this data to design engineering changes to both the handling system and the array that would preserve system performance while increasing system reliability and lowering life cycle costs of the combined system.

The committee recommends an increase of \$4.4 million to complete the design, and develop and test prototype system changes to improve thin-line towed array system reliability.

Combat information center conversion

The budget request included \$17.1 million in PE 64518N for Combat Information Center Conversion. The Combat Information Center Conversion is an essential upgrade for Navy anti-submarine warfare (ASW), including development of net-centric capabilities, improved command and control, incorporation of an open architecture computing environment, and upgrades to signal processing and display technologies. The Chief of Naval Operations has included critical ASW enhancements on the Navy's unfunded priorities list. The committee recommends an increase of \$4.0 million to PE 64518N to accelerate the development of the ASW dead-reck-

oning table and other display requirements, in conjunction with the Combat Information Center Conversion.

Submarine electronic chart updates

The budget request included \$224.0 million in PE 64558N, but include no funding for a program to update electronic charts for submarines.

Navy instructions mandate the use of electronic chart display products across the Navy. This requirement was conceived in stand-alone, display workstation applications, which no longer represent the state-of-the-practice of net-ready, web-service environments. The committee is aware that the Navy conducted a Small Business Innovative Research (SBIR) effort that focused on the demonstration of net-ready, web-service updates of electronic charts for submarines. The committee recommends an increase of \$6.0 million to: (i) obtain certification of the common geographic display processing improvements already developed for submarines; (ii) adapt the results of this effort to Navy-wide applications; (iii) evaluate Navy instructions on the use of electronic chart systems to compare those requirements with best commercial practices; and (iv) establish a Navy certification benchmark for state-of-the-practice of net-ready, web-service environments.

Next generation Phalanx

The budget request included \$67.4 million in PE 64756N for ship self-defense (hard kill), but included no funding for next generation Phalanx. The Phalanx weapon system is the Navy's principal close-in weapon system for ship self-defense, and has proven to be extremely adaptive for performance against emerging air and surface target sets. The continually evolving nature of the threat, unique challenges posed by operations in the littorals, increased emphasis on single ship probability of raid annihilation, and fact of life technology obsolescence require continued development effort to sustain the superior performance of this critical ship self-defense system. The committee recommends an increase of \$9.8 million in PE 64756N for the continued development of the next generation Phalanx.

NULKA anti-ship missile decoy system

The budget request included \$34.3 million for ship self-defense soft-kill systems development in PE 64757N, including \$6.0 million for various development activities related to the NULKA anti-ship missile decoy system.

The Navy has identified a series of development activities associated with the NULKA system that are required to understand and deal with emerging threats:

- (1) an improved payload that would provide radio frequency coverage of more than one band of the spectrum to deal with anti-ship missiles;
- (2) better countermeasures techniques for advanced anti-ship cruise missiles with advanced seekers;
- (3) an improved guidance and propulsion system to allow more precise positioning of the decoy during operations;
- (4) increased duty cycle; and

(5) additional systems engineering and software support.

The committee recommends an increase of \$9.0 million for the NULKA development program to continue these efforts.

Navy medical research

The budget request included \$8.0 million in PE 64771N for medical development activities. The committee notes that field reports indicate that many battlefield deaths are caused by uncontrolled hemorrhage. The Navy's Warfighter Performance and Protection science and technology focus has a specific objective to improve casualty care and prevention. In support of that effort, the committee recommends an increase of \$4.0 million for the development of technologies to control internal hemorrhage due to battlefield injuries.

Joint Strike Fighter research and development

The budget request included \$1,707.4 million in PE 64800N and \$1,708.9 million in PE 64800F to continue development and testing of the Joint Strike Fighter (JSF).

In recent analysis, the Government Accountability Office (GAO) investigated the size of award fees that the JSF program was not awarding, but retaining to provide additional incentives in future periods. Portions of this "roll over" amount can be awarded to the contractor at the discretion of the Government to provide performance incentives in designated target areas. However, March 2006 Department of Defense (DOD) guidance states that "rolling over" unearned award fees should be the exception rather than the rule. Since the March 2006 guidance, the JSF program has continued the practice of rolling over 100 percent of unearned award fees for the air system contract. The air system contract has a balance of \$58.4 million in its cumulative reserve award fee pool. In addition, there is a balance of \$22.1 million in the cumulative reserve award fee pool for "subjective" criteria for the F135 propulsion contract. The size of the award fee "roll over" has been growing steadily since the first award fee period in 2001, as unearned award fees were rolled over into the cumulative reserve award fee pool.

Given the 2006 DOD guidance and past award fee reserve pool activity for both contracts, GAO believes that a balance of \$36.0 million in the air system contract and \$5.0 million in the F135 propulsion contract cumulative award fee reserve pools would provide sufficient funding for future target areas. Therefore, approximately \$39.5 million in previously unearned award fees should be excess to requirements in fiscal year 2008. The committee recommends a decrease of \$19.7 million in each of these two budget lines.

Navy support of the reliable replacement warhead

The budget request included \$81.3 million in Research, Development, Test, and Evaluation, Navy (RD TEN), PE 101221N, for strategic submarine and weapons system support of which \$15.0 million was for phase 3 support to the reliable replacement warhead (RRW). The committee recommends a reduction of \$15.0 million. The committee recommends no funds for RRW activities beyond phase 2A in fiscal year 2008.

Linear accelerator

The budget request included \$81.3 million in PE 11221N, Research, Development, Test, and Evaluation, Navy (RD TEN), but no funding for the Crane linear accelerator (LINAC). The committee recommends an increase of \$9.0 million for the LINAC to simulate the high radiation environment in space. The committee directs the Navy to develop and use this in conjunction with the Joint Radiation Hardened Electronics Oversight Council.

Structural life tracking

The budget request included \$2.2 million in PE 25633N for the Navy's Aircraft Equipment Reliability and Maintainability Improvement program (AERMIP). The AERMIP effort is the only Navy program that provides engineering support for in-service, out-of-production aircraft equipment, and provides increased readiness at reduced operational and support cost. The committee recommends an increase of \$4.0 million in PE 25633N to fund initiatives for parts fatigue tracking for military rotary-wing aircraft through structural life tracking of Navy and Marine Corps helicopters.

Ultrasonic consolidation technology

The budget request included \$57.2 million in PE 26623M for the development of Marine Corps ground combat and supporting arms systems, but no funding for the Sense and Respond Support system. The committee understands that the Marine Corps will be entering the final year of a study to determine whether ultrasonic consolidation technology can be embedded in a variety of components of the Light Armored Vehicle (LAV) as part of a Sense and Respond system for vehicle health monitoring. The committee recommends an increase of \$3.9 million for the LAV Sense and Respond system.

Anti-sniper infrared targeting system

The budget request included \$6.2 million in PE 26623M for the development of joint and Marine Corps unique improvements to infantry weapons technology, but included no funding for the Anti-Sniper Infrared Targeting System (ASITS).

The system employs infrared thermal targeting technology to passively detect and locate sources of fire in real-time, and may be mounted on ground vehicles or low flying aircraft, or permanently emplaced. ASITS is particularly effective against incoming fire from concealed positions, and provides a unique capability to enhance survivability for urban operations and countersniper applications. Funding for accelerated development and fielding of a prototype system has been included on the Commandant of the Marine Corps' unfunded priorities list.

The committee recommends an increase of \$9.8 million in PE 26623M for ASITS.

Satellite communications (space)

The budget request included \$746.5 million in PE 33109N for satellite communications (space) including \$611.6 million for the Multiple User Objective System (MUOS) satellite. MUOS is the

Navy's next generation ultra high frequency (UHF) satellite. The first MUOS satellite is currently scheduled to launch in fiscal year 2010. The Ultra High Frequency Follow-on (UFO) satellite, the legacy UHF satellite system, is failing at a somewhat faster pace than anticipated. At the current failure rate, there will be a UHF communications capability gap beginning in January 2008 and continuing for approximately 23 months, until the launch of the first MUOS satellite. The committee recommends an increase of \$10.0 million to evaluate the option to purchase UHF payloads that could be flown on commercial satellites to see if reducing the communications gap would be feasible.

Internet protocol version 6

The budget request included \$736.6 in PE 33109N, Research, Development, Test, and Evaluation, Navy (RD TEN) for satellite communication space, but no funds for internet protocol version 6 (IPv6). The committee recommends an additional \$3.0 million for IPv6 efforts to determine benchmarks, validate network connectivity, and test next generation warfighter applications in a service orientated architecture for transitioning from the current internet protocol version 4 (IPv4), to IPv6.

Navy manufacturing research

The budget request included \$56.4 million in PE 78011N for industrial preparedness activities. The committee notes that the Navy's Affordability, Maintainability, and Reliability science and technology focus area has a specific objective to develop condition-based maintenance systems in order to reduce acquisition and life cycle costs of Navy platforms through intelligent diagnostics. In support of that goal, the committee recommends an increase of \$2.5 million for systems to measure stress on airframe structures during maintenance and manufacturing.

National Shipbuilding Research Program—Advanced Shipbuilding Enterprise

The budget request included no funding in PE 78730N for maritime technology. The National Shipbuilding Research Program/Advanced Shipbuilding Enterprise (NSRP-ASE) is a collaborative effort between the Navy and industry which has yielded significant productivity improvements for Navy ship construction and repair. Under this program the Navy provides funding which is matched and exceeded by industry investment. Using this approach, the Navy has achieved a high return on investment by providing near-term savings and avoiding significant future costs. The committee believes that continuation of the NSRP-ASE effort is a vital element of the overarching objective of improving the affordability of naval warship construction and maintaining a healthy, innovative shipbuilding industrial base.

The committee recommends an increase of \$15.0 million in PE 78730N for the NSRP-ASE.

Air Force

Title II-RDT and E
(Dollars in Thousands)

<u>Program Element</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2008 Request</u>	<u>Senate Change</u>	<u>Senate Authorized</u>
		RESEARCH, DEVELOPMENT, TEST & EVALUATION, AIR FORCE			
		Basic Research			
0601102F	1	DEFENSE RESEARCH SCIENCES	258,259		258,259
0601103F	2	UNIVERSITY RESEARCH INITIATIVES	104,304	19,000	123,304
		High-energy laser systems research		[3,000]	
		Military decision cycle time research		[3,000]	
		Secure grid research		[3,000]	
		Program increase		[10,000]	
0601108F	3	HIGH ENERGY LASER RESEARCH INITIATIVES	12,636		12,636
		Applied Research			
0602015F	4	MEDICAL DEVELOPMENT			
0602102F	5	MATERIALS	122,794	3,000	125,794
		Advanced carbon fiber research & testing initiative		[3,000]	
0602201F	6	AEROSPACE VEHICLE TECHNOLOGIES	131,948	1,500	133,448
		Optical connector research		[1,500]	
0602202F	7	HUMAN EFFECTIVENESS APPLIED RESEARCH	79,856		79,856
0602203F	8	AEROSPACE PROPULSION	179,161	3,500	182,661
		X-51B scramjet research		[3,500]	
0602204F	9	AEROSPACE SENSORS	108,055	1,000	109,055
		Net centric sensor grid research		[1,000]	
0602500F	10	MULTI-DISCIPLINARY SPACE TECHNOLOGY			

Title II-RDT and E
(Dollars in Thousands)

<u>Program Element</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2008 Request</u>	<u>Senate Change</u>	<u>Senate Authorized</u>
0602601F	11	SPACE TECHNOLOGY Nuclear test seismic research	109,566	12,200 [11,800]	121,766
		Rocket payload shielding technologies		[400]	
0602602F	12	CONVENTIONAL MUNITIONS	57,804		57,804
0602605F	13	DIRECTED ENERGY TECHNOLOGY	54,883		54,883
0602702F	14	COMMAND CONTROL AND COMMUNICATIONS	116,705	2,000	118,705
		Cyber situational awareness research		[2,000]	
0602805F	15	DUAL USE SCIENCE AND TECHNOLOGY PROGRAM	50,303		50,303
0602890F	16	HIGH ENERGY LASER RESEARCH			
0207170F	17	JOINT HELMET MOUNTED CUEING SYSTEM (JHMCS)	[]		[]
0301555F	18	CLASSIFIED PROGRAMS	[]		[]
0301556F	19	SPECIAL PROGRAM			
		Advanced Technology Development			
0603112F	20	ADVANCED MATERIALS FOR WEAPON SYSTEMS	39,730	7,000	46,730
		Metals affordability initiative		[5,000]	
		Deployable fuel cell processors		[2,000]	
0603203F	21	ADVANCED AEROSPACE SENSORS	55,549		55,549
0603211F	22	AEROSPACE TECHNOLOGY DEV/DEMO	64,922	2,500	67,422
		Titanium structures initiative		[2,500]	
0603216F	23	AEROSPACE PROPULSION AND POWER TECHNOLOGY	117,990		117,990
0603231F	24	CREW SYSTEMS AND PERSONNEL PROTECTION TECHNOLOGY	28,558		28,558

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<u>Program Element</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2008 Request</u>	<u>Senate Change</u>	<u>Senate Authorized</u>
0603270F	25	ELECTRONIC COMBAT TECHNOLOGY	23,743		23,743
0603311F	26	BALLISTIC MISSILE TECHNOLOGY			
0603400F	27	JOINT UNMANNED COMBAT AIR SYSTEMS (J-UCAS) ADVANC			
0603401F	28	ADVANCED SPACECRAFT TECHNOLOGY	78,704	5,000	83,704
		Thin film amorphous solar cells		[5,000]	
0603422F	29	GLOBAL POSITIONING SYSTEM (GPS) EXTENSION PROGRAM	70,758	-70,758	
		GPS extension		[-70,758]	
0603444F	30	MAUI SPACE SURVEILLANCE SYSTEM (MSSS)	5,237		5,237
0603500F	31	MULTI-DISCIPLINARY ADVANCED DEVELOPMENT SPACE TEI			
0603601F	32	CONVENTIONAL WEAPONS TECHNOLOGY	16,904		16,904
0603605F	33	ADVANCED WEAPONS TECHNOLOGY	43,999		43,999
0603789F	34	C3I ADVANCED DEVELOPMENT	27,357	2,000	29,357
		Optical interconnects research		[2,000]	
0603801F	35	SPECIAL PROGRAMS			
0603924F	36	HIGH ENERGY LASER ADVANCED TECHNOLOGY PROGRAM	3,815		3,815
0207418F	37	TACTICAL AIRBORNE CONTROL SYSTEMS			
0301555F	38	CLASSIFIED PROGRAMS	[]		[]
0301566F	39	SPECIAL PROGRAM	[]		[]
		Advanced Component Development & Prototypes			
0603260F	40	INTELLIGENCE ADVANCED DEVELOPMENT	4,930		4,930
0603287F	41	PHYSICAL SECURITY EQUIPMENT	466		466

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<u>Program Element</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2008 Request</u>	<u>Senate Change</u>	<u>Senate Authorized</u>
0603421F	42	NAVSTAR GLOBAL POSITIONING SYSTEM III	587,226		587,226
0603430F	43	ADVANCED EHF MILSATCOM (SPACE)	603,179		603,179
0603432F	44	POLAR MILSATCOM (SPACE)	178,754		178,754
0603438F	45	SPACE CONTROL TECHNOLOGY	37,604	50,000	87,604
		Self awareness SSA		[50,000]	
0603742F	46	COMBAT IDENTIFICATION TECHNOLOGY	26,054		26,054
0603790F	47	NATO RESEARCH AND DEVELOPMENT	4,280		4,280
0603791F	48	INTERNATIONAL SPACE COOPERATIVE R&D	619		619
0603845F	49	TRANSFORMATIONAL SATCOM (TSAT)	963,585		963,585
0603850F	50	INTEGRATED BROADCAST SERVICE	21,192		21,192
0603851F	51	INTERCONTINENTAL BALLISTIC MISSILE	26,519		26,519
0603854F	52	WIDEBAND GAPFILLER SYSTEM RDT&E (SPACE)	19,213		19,213
0603858F	53	SPACE RADAR		80,000	80,000
		Space radar technology study		[80,000]	
0603859F	54	POLLUTION PREVENTION	2,838		2,838
0603860F	55	JOINT PRECISION APPROACH AND LANDING SYSTEMS	7,544		7,544
0604015F	56	NEXT GENERATION BOMBER			
0604327F	57	HARD AND DEEPLY BURIED TARGET DEFEAT SYSTEM (HDB)			
0604400F	58	JOINT UNMANNED COMBAT AIR SYSTEMS (J-UCAS) ADVANC			
0604855F	59	OPERATIONALLY RESPONSIVE LAUNCH			

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<u>Program Element</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2008 Request</u>	<u>Senate Change</u>	<u>Senate Authorized</u>
0604856F	60	COMMON AERO VEHICLE (CAV) CAV	32,806	-32,806 [-32,806]	
0604857F	61	OPERATIONALLY RESPONSIVE SPACE ORS	87,032	15,000 [15,000]	102,032
0207423F	62	ADVANCED COMMUNICATIONS SYSTEMS			
0305178F	63	NATIONAL POLAR-ORBITING OPERATIONAL ENVIRONMENTA System Development & Demonstration	334,871		334,871
0603840F	64	GLOBAL BROADCAST SERVICE (GBS)	29,407		29,407
0604012F	65	JOINT HELMET MOUNTED CUEING SYSTEM (JHMCS)	20,319		20,319
0604222F	66	NUCLEAR WEAPONS SUPPORT	159,126		159,126
0604226F	67	B-1B	12,622		12,622
0604233F	68	SPECIALIZED UNDERGRADUATE FLIGHT TRAINING			
0604239F	69	F-22			
0604240F	70	B-2 ADVANCED TECHNOLOGY BOMBER Transfer from APAF 23 for restructured radar modernization	244,019	38,000 [38,000]	282,019
0604261F	71	PERSONNEL RECOVERY SYSTEMS CSAR-X	290,059	-153,300 [-153,300]	136,759
0604270F	72	ELECTRONIC WARFARE DEVELOPMENT	101,649		101,649
0604280F	73	JOINT TACTICAL RADIO			
0604287F	74	PHYSICAL SECURITY EQUIPMENT	34		34
0604329F	75	SMALL DIAMETER BOMB (SDB)	145,191		145,191

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0604421F	76	COUNTERSPACE SYSTEMS Space control test	53,412	10,200 [5,200]	63,612
		RAIDRS Block 20		[5,000]	
0604425F	77	SPACE SITUATION AWARENESS SYSTEMS Space based SSA	187,804	52,300 [35,000]	240,104
		Space fence		[9,800]	
		JSIDS		[7,500]	
0604429F	78	AIRBORNE ELECTRONIC ATTACK	20,007		20,007
0604441F	79	SPACE BASED INFRARED SYSTEM (SBIRS) HIGH EMD SBIRS GEO-4	587,004	100,000 [100,000]	687,004
0604443F	80	ALTERNATIVE INFRARED SPACE SYSTEM (AIRSS) AIRSS	230,887	-230,887 [-230,887]	
0604600F	81	MUNITIONS DISPENSER DEVELOPMENT	1,985		1,985
0604602F	82	ARMAMENT/ORDNANCE DEVELOPMENT	1,988		1,988
0604604F	83	SUBMUNITIONS	10,623		10,623
0604617F	84	AGILE COMBAT SUPPORT			
0604618F	85	JOINT DIRECT ATTACK MUNITION			
0604706F	86	LIFE SUPPORT SYSTEMS	12,649		12,649
0604735F	87	COMBAT TRAINING RANGES	17,657		17,657
0604740F	88	INTEGRATED COMMAND & CONTROL APPLICATIONS (IC2A)	189		189
0604750F	89	INTELLIGENCE EQUIPMENT	1,469		1,469

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0604762F	90	COMMON LOW OBSERVABLES VERIFICATION SYSTEM (CLO'			
0604800F	91	JOINT STRIKE FIGHTER (JSF) Excessive unearned award fee carry over Continue alternate engine development	1,780,874	220,300 [-19,700] [240,000]	2,001,174
0604851F	92	INTERCONTINENTAL BALLISTIC MISSILE			
0604853F	93	EVOLVED EXPENDABLE LAUNCH VEHICLE PROGRAM (SPAC			
0605011F	94	RDT&E FOR AGING AIRCRAFT	17,021		17,021
0605807F	95	TEST AND EVALUATION SUPPORT	3,044		3,044
0207434F	96	LINK-16 SUPPORT AND SUSTAINMENT	199,363		199,363
0207443F	97	FAMILY OF INTEROPERABLE OPERATIONAL PICTURES (FIOI			
0207450F	98	E-10 SQUADRONS	39,703		39,703
0207451F	99	SINGLE INTEGRATED AIR PICTURE (SIAP)	4,976		4,976
0207701F	100	FULL COMBAT MISSION TRAINING	87,096		87,096
0305176F	101	COMBAT SURVIVOR EVADER LOCATOR			
0401138F	102	JOINT CARGO AIRCRAFT (JCA)	42,368		42,368
0401318F	103	CV-22	16,688		16,688
		RDT&E Management Support			
0604256F	104	THREAT SIMULATOR DEVELOPMENT	39,892		39,892
0604759F	105	MAJOR T&E INVESTMENT	59,064		59,064
0605101F	106	RAND PROJECT AIR FORCE	30,999		30,999
0605306F	107	RANCH HAND II EPIDEMIOLOGY STUDY			

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<u>Program Element</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2008 Request</u>	<u>Senate Change</u>	<u>Senate Authorized</u>
0605502F	108	SMALL BUSINESS INNOVATION RESEARCH			
0605712F	109	INITIAL OPERATIONAL TEST & EVALUATION	30,203		30,203
0605807F	110	TEST AND EVALUATION SUPPORT	737,558		737,558
0605860F	111	ROCKET SYSTEMS LAUNCH PROGRAM (SPACE)	15,145	13,700	28,845
		BMRST		[13,700]	
0605864F	112	SPACE TEST PROGRAM (STP)	47,430		47,430
0605976F	113	FACILITIES RESTORATION AND MODERNIZATION - TEST ANI	59,131		59,131
0605978F	114	FACILITIES SUSTAINMENT - TEST AND EVALUATION SUPPOF	30,865		30,865
0804731F	115	GENERAL SKILL TRAINING			
0909999F	116	FINANCING FOR CANCELLED ACCOUNT ADJUSTMENTS			
1001004F	117	INTERNATIONAL ACTIVITIES	4,041		4,041
		Operational Systems Development			
0605024F	118	ANTI-TAMPER TECHNOLOGY EXECUTIVE AGENCY	10,930		10,930
0605798F	119	ANALYSIS SUPPORT GROUP	[]		[]
0101113F	120	B-52 SQUADRONS	41,916		41,916
0101120F	121	ADVANCED CRUISE MISSILE			
0101122F	122	AIR-LAUNCHED CRUISE MISSILE (ALCM)	4,672		4,672
0101313F	123	STRAT WAR PLANNING SYSTEM - USSTRATCOM	20,340		20,340
0101314F	124	NIGHT FIST - USSTRATCOM	5,296		5,296
0101815F	125	ADVANCED STRATEGIC PROGRAMS	[]		[]
0102326F	126	REGION/SECTOR OPERATION CONTROL CENTER MODERNIZ	23,495		23,495

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0203761F	127	WARFIGHTER RAPID ACQUISITION PROCESS (WRAP) RAPID	14,245		14,245
0205219F	128	MQ-9 UAV	61,069	14,000	75,069
		Upgrade MQ-9 SIGINT payload		[10,000]	
		Predator trainer upgrade		[4,000]	
0207131F	129	A-10 SQUADRONS	1,963		1,963
0207133F	130	F-16 SQUADRONS	90,620		90,620
0207134F	131	F-15E SQUADRONS	101,251		101,251
0207136F	132	MANNED DESTRUCTIVE SUPPRESSION			
0207138F	133	F-22A SQUADRONS	743,593		743,593
0207141F	134	F-117A SQUADRONS			
0207161F	135	TACTICAL AIM MISSILES	7,927		7,927
0207170F	137	JOINT HELMET MOUNTED CUEING SYSTEM (JHMCS)	[]		[]
0207163F	136	ADVANCED MEDIUM RANGE AIR-TO-AIR MISSILE (AMRAAM)	36,838		36,838
0207224F	138	COMBAT RESCUE AND RECOVERY			
0207247F	139	AF TENCAP	11,526		11,526
0207248F	140	SPECIAL EVALUATION PROGRAM			
0207253F	141	COMPASS CALL	4,603		4,603
0207268F	142	AIRCRAFT ENGINE COMPONENT IMPROVEMENT PROGRAM	139,042		139,042
0207277F	143	CSAF INNOVATION PROGRAM			
0207325F	144	JOINT AIR-TO-SURFACE STANDOFF MISSILE (JASSM)	12,152		12,152
0207410F	145	AIR & SPACE OPERATIONS CENTER (AOC)	111,557		111,557

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0207412F	146	CONTROL AND REPORTING CENTER (CRC)	16,505		16,505
0207417F	147	AIRBORNE WARNING AND CONTROL SYSTEM (AWACS)	152,721		152,721
0207418F	148	TACTICAL AIRBORNE CONTROL SYSTEMS	3,387		3,387
0207423F	149	ADVANCED COMMUNICATIONS SYSTEMS	33,584		33,584
0207424F	150	EVALUATION AND ANALYSIS PROGRAM	650,608		650,608
0207433F	151	ADVANCED PROGRAM TECHNOLOGY			
0207438F	152	THEATER BATTLE MANAGEMENT (TBM) C4I	9,961		9,961
0207445F	153	FIGHTER TACTICAL DATA LINK	39,545		39,545
0207446F	154	BOMBER TACTICAL DATA LINK	37,130		37,130
0207448F	155	C2ISR TACTICAL DATA LINK	1,809		1,809
0207449F	156	COMMAND AND CONTROL (C2) CONSTELLATION	45,049		45,049
0207581F	157	JOINT SURVEILLANCE/TARGET ATTACK RADAR SYSTEM (JS JSTARS radar technology insertion program (RTIP) backfit	65,924	275,400 [275,400]	341,324
0207590F	158	SEEK EAGLE	22,969		22,969
0207591F	159	ADVANCED PROGRAM EVALUATION			
0207601F	160	USAF MODELING AND SIMULATION	23,044		23,044
0207605F	161	WARGAMING AND SIMULATION CENTERS	6,490		6,490
0207637F	162	DISTRIBUTED TRAINING AND EXERCISES	7,522		7,522
0208006F	163	MISSION PLANNING SYSTEMS	105,371		105,371
0208021F	164	INFORMATION WARFARE SUPPORT	12,111		12,111

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<u>Program Element</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2008 Request</u>	<u>Senate Change</u>	<u>Senate Authorized</u>
0208161F	165	SPECIAL EVALUATION SYSTEM Special evaluation system	760,312	150,000 [150,000]	910,312
0301310F	166	NATIONAL AIR INTELLIGENCE CENTER	[]	[]	[]
0301314F	167	COBRA BALL	[]	[]	[]
0301315F	168	MISSILE AND SPACE TECHNICAL COLLECTION Classified program	[]	[1,500] [1,500]	[]
0301324F	169	FOREST GREEN	[]	[]	[]
0301386F	170	GDIP COLLECTION MANAGEMENT	[]	[]	[]
0302015F	171	E-4B NATIONAL AIRBORNE OPERATIONS CENTER (NAOC)	19,529		19,529
0303112F	172	AIR FORCE COMMUNICATIONS (AIRCOM)	2,022		2,022
0303131F	173	MINIMUM ESSENTIAL EMERGENCY COMMUNICATIONS NETV	103,846		103,846
0303140F	174	INFORMATION SYSTEMS SECURITY PROGRAM	229,657		229,657
0303141F	175	GLOBAL COMBAT SUPPORT SYSTEM	10,631		10,631
0303150F	176	GLOBAL COMMAND AND CONTROL SYSTEM	3,397		3,397
0303158F	177	JOINT COMMAND AND CONTROL PROGRAM (JC2)	5,841		5,841
0303601F	178	MILSATCOM TERMINALS	388,491		388,491
0304111F	179	SPECIAL ACTIVITIES Classified program	[]	[64,100] [20,000]	[]
0304260F	180	AIRBORNE SIGINT ENTERPRISE Classified program	139,627	[44,100]	139,627

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0304311F	181	SELECTED ACTIVITIES Classified program	[]	[206,600] [206,600]	[]
0304348F	182	ADVANCED GEOSPATIAL INTELLIGENCE (AGI)	[]		[]
0305099F	183	GLOBAL AIR TRAFFIC MANAGEMENT (GATM)	6,681		6,681
0305110F	184	SATELLITE CONTROL NETWORK (SPACE)	27,256		27,256
0305111F	185	WEATHER SERVICE Operations risk management visualization & integration (ORM-)	39,747	6,000 [6,000]	45,747
0305114F	186	AIR TRAFFIC CONTROL, APPROACH, AND LANDING SYSTEM	4,672		4,672
0305116F	187	AERIAL TARGETS	7,376		7,376
0305124F	188	SPECIAL APPLICATIONS PROGRAM	[]		[]
0305127F	189	FOREIGN COUNTERINTELLIGENCE ACTIVITIES	[]		[]
0305128F	190	SECURITY AND INVESTIGATIVE ACTIVITIES	829		829
0305142F	191	APPLIED TECHNOLOGY AND INTEGRATION	[]		[]
0305159F	192	DEFENSE RECONNAISSANCE SUPPORT ACTIV (SPACE) Classified program	[]	[-1,985,400] [190,000]	[]
		Classified program		[-293,500]	
		Classified program		[-1,131,900]	
		Classified program - prior year savings		[-700,000]	
		Classified program - prior year savings		[-50,000]	
0305160F	193	DEFENSE METEOROLOGICAL SATELLITE PROGRAM (SPACE)			

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0305164F	194	NAVSTAR GLOBAL POSITIONING SYSTEM (USER EQUIPME GPS user equipment	93,267	60,000 [60,000]	153,267
0305165F	195	NAVSTAR GLOBAL POSITIONING SYSTEM (SPACE AND CON	120,931		120,931
0305172F	196	COMBINED ADVANCED APPLICATIONS	[]		[]
0305173F	197	SPACE AND MISSILE TEST AND EVALUATION CENTER	3,089		3,089
0305174F	198	SPACE WARFARE CENTER	1,678		1,678
0305182F	199	SPACELIFT RANGE SYSTEM (SPACE)	27,300		27,300
0305193F	200	INTELLIGENCE SUPPORT TO INFORMATION OPERATIONS (IC	1,134		1,134
0305202F	201	DRAGON U-2			
0305206F	202	AIRBORNE RECONNAISSANCE SYSTEMS	64,869		64,869
0305207F	203	MANNED RECONNAISSANCE SYSTEMS	12,672		12,672
0305208F	204	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	107,117		107,117
0305219F	205	MQ-1 PREDATOR A UAV Upgrade MQ-1 SIGINT payload	22,296	10,000 [10,000]	32,296
0305220F	206	GLOBAL HAWK UAV	298,501		298,501
0305221F	207	NETWORK-CENTRIC COLLABORATIVE TARGETING NCCT	8,641	25,000 [25,000]	33,641
0305887F	208	INTELLIGENCE SUPPORT TO INFORMATION WARFARE	5,362		5,362
0305906F	209	NCMC - TW/AA SYSTEM	11,882		11,882
0305910F	210	SPACETRACK (SPACE)			
0305913F	211	NUDET DETECTION SYSTEM (SPACE)	38,974		38,974

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0305917F	212	SPACE ARCHITECT	10,821	7,000	17,821
0305924F	213	NATIONAL SECURITY SPACE OFFICE NSSO		[7,000]	
0305940F	214	SPACE SITUATION AWARENESS OPERATIONS SAA operations	23,980	16,800	40,780
0307141F	215	NASS, IO TECHNOLOGY INTEGRATION & TOOL DEV	15,681	[16,800]	15,681
0308699F	216	SHARED EARLY WARNING (SEW)	3,152		3,152
0401115F	217	C-130 AIRLIFT SQUADRON C-130 de-icing system	188,069	3,000	191,069
0401119F	218	C-5 AIRLIFT SQUADRONS (IF)	203,585	[3,000]	203,585
0401130F	219	C-17 AIRCRAFT (IF)	181,734		181,734
0401132F	220	C-130J PROGRAM	74,223		74,223
0401133F	221	AEROMEDICAL EVACUATION			
0401134F	222	LARGE AIRCRAFT IR COUNTERMEASURES (LAIRCM)	19,324		19,324
0401218F	223	KC-135S	8,766		8,766
0401219F	224	KC-10S	36,790		36,790
0401221F	225	KC-135 TANKER REPLACEMENT Use prior year funds for execution	314,454	-140,000	174,454
0401314F	226	OPERATIONAL SUPPORT AIRLIFT	4,868	[-140,000]	
0401839F	227	AIR MOBILITY TACTICAL DATA LINK			4,868

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0408011F	228	SPECIAL TACTICS / COMBAT CONTROL Combat casualty management system for AFSOC	5,225	3,600	8,825
0702207F	229	DEPOT MAINTENANCE (NON-IF)	1,510	[3,600]	1,510
0702806F	230	ACQUISITION AND MANAGEMENT SUPPORT	22,317		22,317
0708011F	231	INDUSTRIAL PREPAREDNESS Laser materials processing	39,906	2,000	41,906
0708012F	232	LOGISTICS SUPPORT ACTIVITIES		[2,000]	
0708610F	233	LOGISTICS INFORMATION TECHNOLOGY (LOGIT)	114,176		114,176
0708611F	234	SUPPORT SYSTEMS DEVELOPMENT	11,076		11,076
0804757F	235	JOINT NATIONAL TRAINING CENTER	3,128		3,128
0808716F	236	OTHER PERSONNEL ACTIVITIES	115		115
0901202F	237	JOINT PERSONNEL RECOVERY AGENCY	5,377		5,377
0901212F	238	SERVICE-WIDE SUPPORT (NOT OTHERWISE ACCOUNTED FOR)	6,495		6,495
0901218F	239	CIVILIAN COMPENSATION PROGRAM	8,070		8,070
0901220F	240	PERSONNEL ADMINISTRATION	16,832		16,832
0901538F	241	FINANCIAL MANAGEMENT INFORMATION SYSTEMS DEVELOPMENT	47,105		47,105
	999	CLASSIFIED PROGRAMS	9,824,956	-1,713,200	8,111,756
Total, RDT&E Air Force			26,711,940	-1,129,951	25,581,989

Air Force basic research

The budget request included \$104.3 million in PE 61103F for university research initiatives. The committee notes that this is a reduction from the fiscal year 2007 requested levels and is concerned about the commitment of the Air Force to protecting the funding levels of previously devolved science and technology, including the joint high energy laser programs and university research initiatives. At the same time, as the Air Force is reducing its investments in basic research, it is increasing investments in biological sciences, while not sufficiently supporting university research in areas of critical concern to the Air Force including propulsion and information sciences. To enhance investments in the development of necessary future Air Force capabilities and to support the training of the next generation of technical, military, and business leaders, the committee recommends a number of increases to Air Force basic research programs. The committee recommends an increase of \$3.0 million for research on high energy lasers for detection, inspection and non-destructive testing applications; an increase of \$3.0 million for research to improve the security of critical military networks; and an increase of \$3.0 million for research on reducing military decision making cycle times.

Carbon fiber research

The budget request included \$122.8 million in PE 62102F for applied research on materials. The committee notes that there is a growing need for advanced composite materials to support a number of next generation air platforms. As indicated by the 2006 JASON report "Reducing DOD Fossil-Fuel Dependence," reducing vehicle weight through the use of advanced materials such as carbon reinforced polymers could lead to significant enhancements in the fuel efficiency of military platforms. Therefore, the committee recommends an increase of \$3.0 million for research on advanced carbon fiber materials for Air Force applications.

Optical components for air vehicles

The budget request included \$131.9 million in PE 62201F for applied research on aerospace vehicle technologies. The committee notes that the National Research Council, in its recent study "Future Air Force Needs for Survivability," highlighted the need for better control of electronic emissions as an important element in reducing aircraft signatures. Therefore, consistent with current Air Force Small Business Innovative Research efforts, the committee recommends an additional \$1.5 million in PE 62201F for research on optical components to replace electric components for potential use in onboard aircraft communications and flight control systems.

Scramjet technologies

The budget request included \$179.2 million in PE 62203F for applied research on aerospace propulsion. The committee notes the role that hypersonic technologies can play in future Air Force operations, by enabling capabilities such as prompt global strike and space access. The committee notes the need for robust research funding and flight test schedules, clearly established technical goals for demonstration programs, and well-defined transition

pathways to formal acquisition programs. The committee believes that it is the role of the Hypersonics Joint Technology Office, established in the John Warner National Defense Authorization Act for Fiscal Year 2007 (Public Law 109–364), to oversee and ensure that all of the Department of Defense’s research, development, test, and evaluation programs in hypersonics are executed in this manner. In order to enhance Department efforts in developing hypersonic strike capabilities, the committee recommends an increase of \$3.5 million for scramjet research.

Network centric collaboration technologies

The budget request included \$108.1 million in PE 62204F for applied research on aerospace sensors. The committee notes that the Chief of Staff of the Air Force’s unfunded priorities list included research on collaboration for sensor technology to allow a network of sensors to work securely in hostile operating environments. To support this need, the committee recommends an increase of \$1.0 million for the development of secure collaborative sensor grids for military operations.

Air Force seismic research for nuclear test monitoring

The budget request included \$109.6 million in PE 62601F, Research, Development, Test, and Evaluation, Air Force (RDTEAF), for space technology including \$6.8 million for seismic technologies to support national requirements for monitoring nuclear explosions. The committee recommends an additional \$11.8 million to improve operational seismic capability. The recent North Korean nuclear test highlighted a need for additional monitoring capability.

Acoustic shields for rocket payloads

The budget request included \$109.6 million in PE 62601F for space technology. The committee notes the need to develop robust space technologies for use as the Department of Defense tries to develop operationally responsive space systems. The committee recommends an increase of \$400,000 for research on acoustic shielding technology to protect rocket payloads.

Cyber attack mitigation

The budget request included \$116.7 million in PE 62702F for applied research on command, control, and communications. The Information Assurance and Survivability Technology Base Defense Technology Objective includes the specific technical challenge of designing sensors to detect highly sophisticated, stealthy, distributed attacks spread out over time; detecting subtle integrity attacks; and developing algorithms for self-repair. In support of this objective, the committee recommends an increase of \$2.0 million for the development of advanced systems for the detection and defeat of malicious software on military networks and information systems.

Aerospace metals research

The budget request included \$39.7 million in PE 63112F for advanced materials for weapons systems. The committee notes that the Fighter/Attack/Strike Propulsion Defense Technology Objective has identified a technical challenge of improving a number of air-

craft engine performance parameters with advanced materials and designs, as well as with lower cost manufacturing processes. In support of that effort, the committee recommends an increase of \$5.0 million to support advanced aerospace metals research and manufacturing.

Deployable fuel cell processors

The budget request included \$39.7 million in PE 63112F for advanced materials for weapons systems. The committee has supported efforts to develop energy efficient technologies specific to military applications that can increase operational performance while reducing energy costs and reducing logistics burdens on deployed forces. The committee notes that the Department of Defense has a number of ongoing efforts, including the Energy and Power Technology science and technology initiative, that seek to develop deployable energy and power systems. To support those efforts, the committee recommends an increase of \$2.0 million for the development of deployable fuel cell processors as part of systems intended to replace conventional generators and provide efficient, reliable, and environmentally safe power to bare base and Air Expeditionary Force operations.

Aerospace titanium research

The budget request included \$64.9 million in PE 63211F for aerospace technology development and demonstration. The Department of Defense's Materials and Processes Defense Technology Objectives (DTO) include a focus on materials and processes for affordable aircraft structures. The committee notes that the cost of next generation platforms such as the F-35 and unmanned air vehicles will be reduced through the development of low cost, reliable titanium structures. Therefore, in coordination with the Affordable Aircraft Structures DTO, the committee recommends an increase of \$2.5 million for research on affordable aerospace titanium structures.

Thin film amorphous solar arrays

The budget request included \$78.7 million in PE 63401F for advanced spacecraft technology. The committee recommends an increase of \$5.6 million. Fiscal year 2008 will be the last year of a successful development and demonstration program of advanced solar arrays for space systems using thin film amorphous substrates. These solar arrays are 10 times cheaper, 3 to 5 times lighter, and significantly more efficient than current solar arrays. The recently launched TacSat-2 has included these innovative solar cells as part of its suite of research and demonstration activities. The committee believes these solar cells could be a key element of future TacSats and other small operational responsive satellites where weight and power efficiency are key program requirements.

High integrity global positioning system

The budget request included \$70.8 million for the High Integrity Global Positioning System (IGPS) technology concept demonstrator in PE 63422F. The committee recommends no funding for IGPS in PE 63422F. The budget request also included \$10.0 million for

IGPS in PE 1160403BB. The committee recommends the amount of the budget request in PE 116040BB.

The committee believes that the IGPS, if successful, could provide a limited set of users an enhanced jam resistant and accurate Global Positioning Signal (GPS). The committee is nevertheless concerned that the potential development, transition, and user equipment costs, coupled with a rather limited useful life, make IGPS a low priority given the other demands on space systems funding. If, however, the Department of Defense can identify a specific user community that would share in the development costs and that would make a commitment to the purchase of user equipment, the committee would reconsider a request for IGPS in the future.

Optical interconnects for battlefield communications

The budget request included \$27.4 million in PE 63789F for command, control, communications, and information (C3I) advanced development. The committee notes that the most recent Defense Technology Objectives (DTO) endorsed by the Department of Defense include the development of optical networking technology with a potential payoff of developing networks for controlling vehicle actuators and flight control computing. Consistent with that objective and with efforts in the Air Force Small Business Innovative Research program, the committee recommends an additional \$2.0 million for the development of optical interconnects for battlefield communications.

Space control technology

The budget request included \$37.6 million for Research, Development, Test, and Evaluation, Air Force (RDTEAF), PE 63438F, for space control technology. The committee recommends an increase of \$50.0 million for the self-awareness space situational awareness program to develop a suite of sensors to detect and locate threats to a satellite and provide notification and characterization of nearby objects. This program is included on the Chief of Staff of the Air Force's unfunded priority list.

Space radar technology study

The budget request included no funds in Research, Development, Test, and Evaluation, Air Force (RDTEAF), PE 63858F. The committee recommends an increase of \$80.0 million for space radar technology evaluation, testing, and development.

The committee supports the need to develop a single common radar system to support space radar capabilities, which would support equally the intelligence community and the warfighter. The committee is concerned, however, that the current program is unaffordable and may not provide the persistent capabilities for surface moving target indications that are desired. Radar options other than the current option may be more affordable and could provide some advantages when compared with the current program in the near-term. The approach to the near-term space radar capability should be joint so that the requirements of both the warfighter and the intelligence community are met, and the concepts of operations and tasking are developed jointly.

Work on the longer-term approach to space radar capabilities is equally important. These longer-term approaches should be based on new radar applications that are affordable and timed to fit within longer-term planning for space budgets and programs. Using the funds recommended, the committee directs that the Secretary of the Air Force and the Director of National Intelligence, acting through the Joint Program Office (JPO) established by the Air Force and the National Reconnaissance Office (NRO), explore future radar technologies in a science and technology environment with a focus on reducing the cost of space radars and increasing utility. The JPO should continue to validate operational concepts for both the near- and longer-term space radar systems.

Common aero vehicle

The budget request included \$32.8 million for the Common Aero Vehicle (CAV) in PE 64856F. The committee recommends no funding for the CAV and further recommends that all of the funding for the CAV be transferred to PE 65104D8Z for common prompt global strike concepts, discussed elsewhere in this title.

Operationally responsive space

The budget request included \$87.0 million for Operationally Responsive Space (ORS) in Research, Development, Test, and Evaluation, Air Force (RDTEAF), in PE 64857F. The committee recommends an increase of \$15.0 million to have a more balanced program. The budget request supports launch and space vehicle work, but the committee believes additional attention is needed on sensor development as well.

The new ORS office is in the process of standing up with good participation by all of the military services and laboratories. This new office will work with the United States Strategic Command to explore fully the potential opportunities for ORS capabilities. Like many new ideas, such as Global Positioning Systems, the uses and benefits are unknown at the outset. The committee continues to believe that the ORS concept holds considerable promise and is encouraged by the increased interest which has developed over the past 2 years. Some recent successes, such as the launch of TacSat 2, have begun to demonstrate potential applications of small, responsive, low cost satellite and launch vehicles.

The committee directs the new ORS program to submit to the congressional defense committees at the conclusion of the first 6 months of operations, a report outlining any issues that the office has encountered, progress made, and highlighting any legislative or other requirements that the office needs in order to be successful.

Combat search and rescue replacement vehicle

The budget request included \$280.0 million in PE 64261F for the Combat Search and Rescue Replacement Vehicle (CSAR-X). The primary mission of the CSAR-X is to recover downed aircrew and isolated personnel from hostile or denied territory.

The Air Force anticipated beginning CSAR-X system integration and demonstration activities in early fiscal year 2007, immediately after awarding the system development contract. However, these activities have been delayed because bid protests by competitors

were sustained, requiring the Air Force to reopen the competition. These delays have affected the program's funding needs in two areas. First, \$165.3 million in fiscal year 2007 funding apparently exceeds current needs as integration and demonstration activities slip into the next fiscal year. This funding, however, will still be available to support activities that occur in fiscal year 2008. Also, many development activities originally planned for fiscal year 2008 are likely to move into future fiscal years, thus making up to \$80.0 million of the fiscal year 2008 request premature to needs. As a result, the fiscal year 2008 budget request could be reduced by \$245.3 million, were it not for the fact that the Air Force already intends to reprogram \$92.0 million of the fiscal year 2007 funds to other high priority programs.

Although the committee strongly supports the CSAR-X program, there is no need to authorize more funding for the program than is necessary to keep it on the revised schedule. Therefore, the committee recommends a decrease of \$153.3 million.

Rapid attack identification detection and reporting system

The budget request included \$53.4 million in PE 64221, Research, Development, Test, and Evaluation, Air Force (RDTEAF), for counterspace systems, including \$13.8 million for Rapid Attack Identification Detection and Reporting system (RAIDRS) Block 20. The committee recommends an additional \$5.0 million for RAIDRS Block 20. RAIDRS is a sensor system that will be able to detect and assess attacks on satellites. This program is on the Chief of Staff of the Air Force's unfunded priority list.

Space control test capability

The budget request included \$53.4 million in PE 64421F, Research, Development, Test, and Evaluation, Air Force (RDTEAF), for counterspace systems, but no funds for the space control test capability. The committee recommends an additional \$5.2 million for the space control test capability to continue the capability to test future space control options and determine costs in a simulated environment.

Space situation awareness systems

The budget request included \$187.8 million for Research, Development, Test, and Evaluation, Air Force (RDTEAF), PE 64425F, for Space Situation Awareness. The committee recommends an increase of \$35.0 million for Space-based Space Surveillance (SBSS) Block 10. SBSS is a program to develop a constellation of optical sensing satellites to find and track objects in Earth orbit, primarily those in Geosynchronous Earth Orbit (GEO). The additional funding would support the first SBSS satellite. This program is on the Chief of Staff of the Air Force's unfunded priority list.

Space fence

The budget request included \$187.8 million in Space Situation Awareness systems Research, Development, Test, and Evaluation, Air Force (RDTEAF), PE 64425F, including \$4.1 million to develop and field a new space fence. The committee recommends an increase of \$9.8 million for the space fence. The space fence is a net-

work of ground radars that detect and track small objects in Earth orbit with a primary focus on objects in low Earth orbit. The new system should increase by an order of magnitude the number of space particles that can be detected and tracked to avoid collision and damage to space satellites. This program is on the Chief of Staff of the Air Force's unfunded priority list.

Joint space intelligent decision support

The budget request included \$187.8 million in PE 64425F, Research, Development, Test, and Evaluation, Air Force (RDTEAF), for Space Situation Awareness systems, but no funds for joint space intelligent decision support (JSIDS). The committee recommends an additional \$7.5 million for JSIDS to support space situational awareness data analysis.

Space-Based Infrared Satellite System High GEO

The budget request included \$587.0 million in Research, Development, Test, and Evaluation, Air Force (RDTEAF), PE 64441F, for Space-Based Infrared Satellite System (SBIRS) High. The committee recommends an increase of \$100.0 million to address non-recurring and other obsolescence issues to support SBIRS High GEO satellites three and four. As a result of the time elapsed between the acquisition of the SBIRS High GEO satellites one and two and the planned acquisition of satellites three and four, some significant redesign work is necessary. This gap has served to highlight an issue in the allocation between research and development funding for constellations with a small number of satellites. While the committee does not support incremental funding of satellite programs, production or acquisition gaps in these small constellations, in certain limited circumstances may dictate treatment of these later satellites as research and development satellites. This problem is limited to constellations of no more than four satellites and occurs when substantial nonrecurring costs are incurred.

The committee directs the Secretary of Defense to submit a report no later than August 1, 2007 outlining the budgetary and programmatic implications of utilizing Research and Development funds for small constellations of satellites in limited circumstances, including when such a funding approach might be appropriate. The committee also directs the Secretary to address in the report alternative approaches and options to fund satellite development and testing, including the establishment of a single Air Force budget line for space research, development, and testing.

Alternate infrared satellite system

The budget request included \$230.9 million for the Alternate Infrared Satellite System (AIRSS) in PE 64443F. The committee recommends no funding for the AIRSS.

The AIRSS was initiated in fiscal year 2007 to provide an alternative approach for overhead non-imaging infrared (ONIR) for missile attack early warning at a time when the Spaced-based Infrared Satellite System (SBIRS) was suffering from repeated cost and schedule overruns. When the SBIRS program generated two Nunn-McCurdy breaches in a 2-year period, there was serious concern

about whether the SBIRS–GEO portion of the program was salvageable.

Early missile attack warning is an essential capability that was to be performed by the SBIRS combination of highly elliptical orbit (HEO) and geosynchronous orbit (GEO) satellites as a replacement to the Defense Satellite Program (DSP). With the uncertainty in the SBIRS program, the Air Force wanted to explore alternatives in the event SBIRS–GEO was canceled after the first two GEO satellites. Since that time, and through the significant efforts of Air Force program managers and leadership, the SBIRS–GEO, while still facing a number of technical and cost challenges, has significantly improved.

With the improvement in the SBIRS–GEO program the Air Force started to look at AIRSS as a follow-on to SBIRS. The committee does not believe that AIRSS is appropriately structured at this point to be a follow-on satellite program and that the SBIRS–GEO should be able to provide the necessary missile attack early warning, technical intelligence, and battle space characterization for the next decade. The committee does support the Air Force's desire to explore next generation ONIR technologies in a science and technology environment, and urges the Air Force to include a request for such a technology development program in its fiscal year 2009 budget request.

Ballistic missile range safety technology

The budget request included \$15.1 million in PE 65860F, Research, Development, Testing, and Evaluation, Air Force (RDTEAF), for Rocket Systems Launch Program, but no funds for the Ballistic missile range safety technology (BMRST). The committee recommends an additional \$13.7 million for BMRST to continue certification of integration of additional units requested by several space launch ranges, including the Eastern and Western ranges, White Sands Missile Range, Pacific Missile Range, and Wallops Island launch facilities.

MQ–9 Reaper

The budget request included \$61.1 million for development of the MQ–9 Reaper unmanned aerial vehicle (UAV) in PE 25219F. Military forces operating in Iraq, Afghanistan, and elsewhere today are reliant on a small number of greatly over-taxed airborne systems that are able to provide signals intelligence intercept and precise direction-finding (SIGINT–DF). In addition, some specialized aircraft not designed or intended for direct support to tactical forces currently must be used heavily for this purpose.

The Air Force is completing development of the scaleable Airborne Signals Intelligence Payload (ASIP). The so-called “2-box” configuration provides intercept and DF capabilities. This system would enable the MQ–9 Reaper to conduct area surveillance and use the SIGINT–DF capability to locate targets accurately enough to find them with on-board imaging systems. This in turn would enable the Reaper hunter-killer to prosecute the targets.

The committee recommends an increase of \$10.0 million to integrate the ASIP 2-box payload on the existing MQ–9s for use in ongoing operations.

Predator trainer upgrade

The budget request included \$61.1 million in 25219F for research and development for the MQ-9 Reaper unmanned aerial vehicle (UAV), including \$0.5 million for developing an operator simulator. The MQ-9 is a derivative of the MQ-1 Predator UAV, and, hence, much of the ground support and training equipment for the MQ-9 will be the same equipment or product-improved versions of similar Predator equipment. The committee believes that the Air Force should be proceeding more rapidly to develop and field upgrades to the Predator trainer system to ensure that operators and ground support personnel will develop and maintain the necessary skills to conduct effective operations when the MQ-9 systems are delivered. The committee recommends an increase of \$4.0 million to develop an upgraded Predator trainer to support the MQ-9 Reaper with improved performance, visual systems, and sensors.

Joint surveillance target attack radar system research and development

The budget request included \$65.9 million in PE 27581F for research and development projects for the E-8 joint surveillance target attack radar system (JSTARS) and \$291.6 million requested in fiscal year 2008 war-related research and development for JSTARS. In addition, the budget request included \$39.7 million in PE 27450F for the E-10 aircraft program and \$178.4 million requested in fiscal year 2008 war-related research and development for E-10 development.

The funding requested for the war-related JSTARS research and development included \$251.0 million that would not be needed until fiscal year 2009 or fiscal year 2010. Although the committee strongly supports the JSTARS program, there is no need to authorize more funding for the program than is necessary to maintain the obligation schedule within the Air Force's own plans. Therefore, the committee recommends a decrease of \$251.0 million in war-related research and development funding.

The E-10 aircraft was supposed to be a test bed for the multi-platform radar technology insertion program (MP-RTIP). The Air Force intends to field this MP-RTIP sensor suite on a number of air vehicles, including the Global Hawk unmanned aerial vehicle (UAV). The Air Force has now decided to cancel the E-10 program, but has not yet decided what to do instead. One possibility, which the Chief of Staff of the Air Force has discussed, would be to begin a program to modernize some or all of the existing E-8 JSTARS aircraft with an MP-RTIP radar system. In fact, the original Air Force plan was to backfit some number of these aircraft with the improved radar.

With the cancellation of the E-10 program, the committee believes that the Air Force should pursue another path to fielding the capability that would be provided by having the MP-RTIP radar on a platform larger than the Global Hawk. Therefore, the committee recommends a decrease of \$178.4 million in the war-related funding for E-10 research and development and an increase in PE 27851F of \$275.4 million, consisting of \$178.4 million from the cancelled E-10 program and an additional \$97.0 million to begin the

effort to backfit MP-RTIP radar technology to the E-8 JSTARS aircraft.

Weather service research and development

The budget request included \$39.7 million in PE 35111F for research and development projects for the Air Force weather weapon system (AFWWS), but included no funding to develop operations risk management visualization and integration (ORM-VIZ) upgrades for the system.

AFWSS and its warfighter application are charged with providing regional and tactical weather observations and forecasts to Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) systems used by commanders, planners, and operators throughout the world. The Air Force needs to upgrade AFWWS to provide commanders and mission planners with a better appreciation of the uncertainty of weather forecasts and observations. Such an upgrade should enable them to better determine the risk of ongoing and planned operations. The AFWWS is currently capable of calculating the needed uncertainty but is unable to provide computer-to-computer transfer of such information. Therefore, the committee recommends an increase of \$6.0 million to upgrade the AFWSS and integrate all vital information (terrain, weather, risk assessment) into one visual display.

Classified program

The committee recommends an increase of \$190.0 million to PE 35172F, Research, Development, Test, and Evaluation, Air Force (RDTEAF) for a classified item on the Chief of Staff of the Air Force's unfunded priority list.

Global Positioning System user equipment

The budget request included \$120.9 million in Research, Development, Test, and Evaluation, Air Force (RDTEAF), PE 3516F, for Global Positioning System (GPS) user equipment. The committee recommends an increase of \$60.0 million to develop the next generation of GPS user equipment that could utilize the GPS M code. There are already two GPS IIR-M satellites on orbit, there will be a third one launched by the end of fiscal year 2007, and four additional satellites will be launched in fiscal year 2008 and there is no user equipment available to utilize the M code. This program is on the Chief of Staff of the Air Force's unfunded priority list.

MQ-1 Predator signals intelligence direction finding

The budget request included \$22.3 million in PE 35219F for development of the Predator MQ-1 unmanned aerial vehicle (UAV). In another section of this report, the committee presented a rationale for equipping many more tactical reconnaissance and hunter-killer aircraft with signals intelligence (SIGINT) and precise direction-finding (DF). The committee recommended integrating the Airborne Signals Intelligence Payload (ASIP) "2-box" SIGINT-DF on the MQ-9 Reaper UAV. The same logic applies to the Predator UAV.

The MQ-1 Predator that the Air Force is currently procuring does not have the payload capacity to carry the 2-box configuration of ASIP. However, the MQ-1C Warrior that the Army is preparing to produce will be able to support the full 2-box payload. In another section of this report, the committee directs that the Air Force convert the MQ-1 production line to the MQ-1C variant in fiscal year 2008. In conjunction with that changeover, the committee recommends an increase of \$10.0 million to integrate the ASIP 2-box on the MQ-1C.

Network-centric collaborative targeting

The budget request included \$8.6 million in PE 35221F for the Network-Centric Collaborative Targeting (NCCT) program. This innovative program networks airborne and national systems to enable tipping and cueing in near real-time based on commander's guidance to prosecute time-sensitive or otherwise critical targets. This networking program is necessary because it is usually impossible for a single sensor to provide all the data necessary to perform wide-area surveillance, detection, identification, localization, tracking, and support to target attack—but combinations of existing sensors can accomplish these tasks if properly networked. The speed of collaboration required, however, can exceed the ability of human operators to coordinate. Instead, "machine-to-machine" communication and automatic action are necessary, based on rules and guidance established in advance by appropriate authorities.

An example of such interactions might be using one signal's intelligence platform to automatically cue others to tune receivers to assist in geolocating a hostile emitter, then tipping an imagery system to locate and positively identify the target for attack.

The NCCT capability is being fielded to Rivet Joint, Senior Scout, the Distributed Common Ground System, air and space operations centers, and the Airborne Overhead Interoperability Office. Through these systems, many of the most important collection sensors will be able to participate and contribute—but not all. For example, the Joint STARS, Guardrail, EP-3, and Compass Call platforms are not tied into this network. The committee recommends an increase of \$25.0 million to integrate these platforms into the NCCT network. In the future, the signals intelligence and imagery systems on Global Hawk, Predator, and Reaper should be integrated as well.

National Security Space Office

The budget request included \$10.8 million for the National Security Space Office (NSSO) in PE 35924F. The committee recommends an increase of \$7.0 million to increase the capabilities of the NSSO. NSSO is a multidisciplinary multiservice office within the Department of Defense (DOD) that was established to provide independent technical and other advice with respect to space systems and space architectures. All DOD space programs, including the National Reconnaissance Office (NRO), were to support and participate in the work of this office to ensure close coordination and integration of white and black space. In the past year the NRO decided not to participate in this office. The committee believes that this decision is shortsighted and in the long run will serve

only to exacerbate the differences between the two space communities. The committee directs the Director of the NRO to resume full participation in the NSSO in fiscal year 2008 and to submit a notification to the congressional defense committees by December 1, 2007, describing the participation and the number of NRO personnel who are assigned to the NSSO office.

Space situational awareness operations

The budget request included \$23.9 million in PE 35940F for space situational awareness operations. The committee recommends an increase of \$16.8 million. The increase would provide additional funding for a variety of increases in operating costs for space situational awareness capabilities, including providing funds for the commercial and foreign entities program. This program is on the Commander of the Air Force Space Command's unfunded priority list.

C-130 deicing system

The budget request included \$188.1 million in PE 41115F for the developing and testing modifications to the Air Force's fleet of 434 C-130 aircraft. The C-130 is the primary intra-theater airlift aircraft in the U.S. military's inventory, and its continued viability is critical to the success of current and future operations. The committee recommends an increase of \$3.0 million in PE 41115F for ground-based engine testing, flight testing, and certification of metal fiber brushes in the C-130 aircraft's propeller deicing system.

KC-135 tanker replacement

The budget request included \$314.5 million in PE 41221F for a KC-135 replacement, called the KC-X. This program is intended to produce the Air Force's next generation aerial refueling aircraft.

The committee notes that prior year unobligated appropriations of \$173.5 million are available for the execution of the KC-X development program. The Air Force's request for proposals issued to industry on January 30, 2007, identified \$250.0 million as the likely funding level available for KC-X developmental activities in fiscal year 2008. The committee fully supports the recapitalization of the KC-135 fleet and understands that a reduced funding request for fiscal year 2008 should not have a significant effect on the program execution.

The committee recommends a decrease of \$140.0 million in PE 41221F for KC-X development.

Combat casualty management system

The budget request included \$5.2 million in PE 48011F for research and development projects for improving the capability of the battlefield airman, but included no funding to improve the ability of combat medical personnel to operate more effectively within the personnel recovery system. The improvements needed to operate on today's battlefield include the capability to remotely activate communications links to tactical command centers or from low flying aircraft such as unmanned aerial vehicles (UAVs). Such improvements would involve providing combat medical personnel with on-

going situational awareness of the total battle space and aid in: minimizing the risk of exposure of personnel recovery aircraft and crews to battlefield threats; providing the ability to bring supplies to a medic where needed; increasing signal strength for distance and non-line-of-sight detection; and locating and tracking multiple survivors within the battle space.

The committee recommends an increase of \$3.6 million to develop such improvements to the combat casualty management system.

Laser processing of materials

The budget request included \$39.9 million in PE 78011F for industrial preparedness activities. The committee notes that advanced aircraft will incorporate advanced composite materials. Reducing the manufacture and processing costs of these materials can reduce the life cycle costs of many future major acquisition programs. Therefore, the committee recommends an additional \$2.0 million for development of advanced laser manufacturing tools for polymer composite materials.

Defense-wide

Title II-RDT and E
(Dollars in Thousands)

<u>Program Element</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2008 Request</u>	<u>Senate Change</u>	<u>Senate Authorized</u>
RESEARCH, DEVELOPMENT, TEST & EVALUATION, DEFENSE-WIDE					
Basic Research					
0601000BR	1	DTRA BASIC RESEARCH INITIATIVE	5,000		5,000
0601101E	2	DEFENSE RESEARCH SCIENCES	152,622		152,622
0601111D8Z	3	GOVERNMENT/INDUSTRY COSPONSORSHIP OF UNIVERSITY Semiconductor Focus Research Center program		5,000	5,000
0601114D8Z	4	DEFENSE EXPERIMENTAL PROGRAM TO STIMULATE COMPE	5,878	[5,000]	5,878
0601120D8Z	5	NATIONAL DEFENSE EDUCATION PROGRAM	44,372		44,372
0601384BP	6	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM Superstructural particle evaluation	72,003	3,000	75,003
Applied Research					
0602000D8Z	7	JOINT MUNITIONS TECHNOLOGY	15,542		15,542
0602227D8Z	8	MEDICAL FREE ELECTRON LASER Program increase		8,000	8,000
0602228D8Z	9	HISTORICALLY BLACK COLLEGES AND UNIVERSITIES (HBCU	15,150		15,150
0602234D8Z	10	LINCOLN LABORATORY RESEARCH PROGRAM	29,524		29,524
0602303E	11	INFORMATION & COMMUNICATIONS TECHNOLOGY	229,739		229,739
0602304E	12	COGNITIVE COMPUTING SYSTEMS	179,728		179,728
0602383E	13	BIOLOGICAL WARFARE DEFENSE	99,137		99,137

Title II-RDT and E

(Dollars in Thousands)

<u>Program Element</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2008 Request</u>	<u>Senate Change</u>	<u>Senate Authorized</u>
0602384BP	14	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM Chem-bio IR detector	305,327	4,500	309,827
		Chem-bio protective textile fabric		[2,000]	
		Chemical agent fate model verification		[1,500]	
0602670D8Z	15	HUMAN, SOCIAL AND CULTURE BEHAVIOR MODELING (HSCE)	7,300	[1,000]	7,300
0602702E	16	TACTICAL TECHNOLOGY	374,717		374,717
0602715E	17	MATERIALS AND BIOLOGICAL TECHNOLOGY	306,022		306,022
0602716BR	18	WMD DEFEAT TECHNOLOGY			
0602716E	19	ELECTRONICS TECHNOLOGY	213,529		213,529
0602717BR	20	WMD DEFENSE TECHNOLOGIES			
0602718BR	21	WEAPONS OF MASS DESTRUCTION DEFEAT TECHNOLOGIE: Blast mitigation & protection analysis	182,416	31,500	213,916
		Comprehensive national incident management system		[1,000]	
		Classified program		[4,000]	
0303153K	22	JOINT SPECTRUM CENTER		[26,500]	
1160401BB	23	SPECIAL OPERATIONS TECHNOLOGY DEVELOPMENT Foliage penetration (FOPEN) radar technologies	21,282	2,500	23,782
1160407BB	24	SOF MEDICAL TECHNOLOGY DEVELOPMENT Advanced Technology Development	2,388	[2,500]	2,388
0603000D8Z	25	INSENSITIVE MUNITIONS - ADVANCED DEVELOPMENT	6,000		6,000
0603002D8Z	26	MEDICAL ADVANCED TECHNOLOGY			

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0603121D8Z	27	SO/LIC ADVANCED DEVELOPMENT	32,669		32,669
0603122D8Z	28	COMBATING TERRORISM TECHNOLOGY SUPPORT Arabic language analysis systems	76,276	2,000	78,276
				[2,000]	
0603160BR	29	COUNTERPROLIFERATION INITIATIVES - PROLIFERATION PF	213,240		213,240
0603175C	30	BALLISTIC MISSILE DEFENSE TECHNOLOGY Directly printed electronic components	118,569	4,000	122,569
				[4,000]	
0603225D8Z	31	JOINT DOD-DOE MUNITIONS TECHNOLOGY DEVELOPMENT	23,488		23,488
0603286E	32	ADVANCED AEROSPACE SYSTEMS	86,385		86,385
0603287E	33	SPACE PROGRAMS AND TECHNOLOGY	224,551		224,551
0603384BP	34	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM - ADVANC Semiconducting metal oxide sensors Improved CBR filters Raman chemical ID system	232,302	8,000	240,302
				[2,000]	
				[2,000]	
				[4,000]	
0603618D8Z	35	JOINT ELECTRONIC ADVANCED TECHNOLOGY	9,219		9,219
0603648D8Z	36	JOINT CAPABILITY TECHNOLOGY DEMONSTRATIONS	194,352		194,352
0603662D8Z	37	NETWORKED COMMUNICATIONS CAPABILITIES	40,000		40,000
0603665D8Z	38	BIOMETRICS SCIENCE AND TECHNOLOGY Standoff biometrics technology	8,000	4,000	12,000
				[4,000]	
0603670D8Z	39	HUMAN, SOCIAL AND CULTURE BEHAVIOR MODELING (HSCE)	9,000		9,000

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0603680D8Z	40	DEFENSE-WIDE MANUFACTURING SCIENCE AND TECHNOLOGY High performance defense manufacturing technology research Disruptive manufacturing technologies research	10,000	20,000 [10,000]	30,000
0603711D8Z	41	JOINT ROBOTICS PROGRAM/AUTONOMOUS SYSTEMS	11,256		11,256
0603712S	42	GENERIC LOGISTICS R&D TECHNOLOGY DEMONSTRATIONS Emerging critical interconnect technology program UAV battery technologies Vehicle fuel cell & hydrogen logistics program Solid hydrogen storage initiative Biofuels program	18,736	28,000 [4,000] [2,000] [10,000] [6,000] [3,000] [3,000]	46,736
0603713S	43	DEPLOYMENT AND DISTRIBUTION ENTERPRISE TECHNOLOGY			
0603716D8Z	44	STRATEGIC ENVIRONMENTAL RESEARCH PROGRAM Enhanced water remediation research	68,874	2,500 [2,500]	71,374
0603720S	45	MICROELECTRONICS TECHNOLOGY DEVELOPMENT AND SL			
0603727D8Z	46	JOINT WARFIGHTING PROGRAM	11,060		11,060
0603739E	47	ADVANCED ELECTRONICS TECHNOLOGIES	220,548		220,548
0603745D8Z	48	SYNTHETIC APERTURE RADAR (SAR) COHERENT CHANGE DETECTION	6,500		6,500
0603750D8Z	49	ADVANCED CONCEPT TECHNOLOGY DEMONSTRATIONS			
0603755D8Z	50	HIGH PERFORMANCE COMPUTING MODERNIZATION PROGRAM High performance computing modeling & simulation	187,587	2,000 [2,000]	189,587

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0603760E	51	COMMAND, CONTROL AND COMMUNICATIONS SYSTEMS	256,868		256,868
0603764E	52	LAND WARFARE TECHNOLOGY	24,711		24,711
0603765E	53	CLASSIFIED DARPA PROGRAMS	188,188		188,188
0603766E	54	NETWORK-CENTRIC WARFARE TECHNOLOGY	151,641		151,641
0603767E	55	SENSOR TECHNOLOGY	196,462		196,462
0603768E	56	GUIDANCE TECHNOLOGY	127,777		127,777
0603769SE	57	DISTRIBUTED LEARNING ADVANCED TECHNOLOGY DEVELO	13,282		13,282
0603781D8Z	58	SOFTWARE ENGINEERING INSTITUTE	29,851		29,851
0603805S	59	DUAL USE TECHNOLOGY			
0603826D8Z	60	QUICK REACTION SPECIAL PROJECTS	109,514	17,500	127,014
		Small craft integrated common operating picture		[1,500]	
		APS comparative testing		[15,000]	
		APS technical assessment		[1,000]	
0603828D8Z	61	JOINT EXPERIMENTATION	112,017	6,200	118,217
		Asymmetric warfare initiative		[1,500]	
		Cultural & societal modeling & simulation		[3,200]	
		Joint Urban Fires Prototype		[1,500]	
0603832D8Z	62	JOINT WARGAMING SIMULATION MANAGEMENT OFFICE	37,837		37,837
0603941D8Z	63	TEST & EVALUATION SCIENCE & TECHNOLOGY	62,889	1,000	63,889
		Test range & resource analysis		[1,000]	
0603942D8Z	64	TECHNOLOGY TRANSFER	2,234		2,234

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1160402BB	65	SPECIAL OPERATIONS ADVANCED TECHNOLOGY DEVELOPI Advanced generator technologies Portable power sources development Standoff precision guided munitions Advanced tactical airborne C4ISR systems	29,935	14,000 [2,000] [3,000] [6,000] [3,000]	43,935
		Advanced Component Development & Prototypes			
0603161D8Z	66	NUCLEAR AND CONVENTIONAL PHYSICAL SECURITY EQUIP	38,060		38,060
0603228D8Z	67	PHYSICAL SECURITY EQUIPMENT			
0603527D8Z	68	RETRACT LARCH	22,365		22,365
0603709D8Z	69	JOINT ROBOTICS PROGRAM	11,860		11,860
0603714D8Z	70	ADVANCED SENSOR APPLICATIONS PROGRAM Fund ongoing programs - Transfer from RDDW 999		20,000 [20,000]	20,000
0603851D8Z	71	ENVIRONMENTAL SECURITY TECHNICAL CERTIFICATION PR	33,199		33,199
0603881C	72	BALLISTIC MISSILE DEFENSE TERMINAL DEFENSE SEGMENT THAAD Arrow Short-range ballistic missile defense	962,585	165,000 [105,000] [35,000] [25,000]	1,127,585
0603882C	73	BALLISTIC MISSILE DEFENSE MIDCOURSE DEFENSE SEGME European 3rd site construction	2,520,064	-85,000 [-85,000]	2,435,064
0603883C	74	BALLISTIC MISSILE DEFENSE BOOST DEFENSE SEGMENT BMD boost (ABL)	548,759	-200,000 [-200,000]	348,759

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0603884BP	75	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM Real-time viral agent detectors	57,160	4,000 [4,000]	61,160
0603884C	76	BALLISTIC MISSILE DEFENSE SENSORS	778,163		778,163
0603886C	77	BALLISTIC MISSILE DEFENSE SYSTEM INTERCEPTOR	227,499		227,499
0603888C	78	BALLISTIC MISSILE DEFENSE TEST & TARGETS	586,150		586,150
0603889C	79	BALLISTIC MISSILE DEFENSE PRODUCTS			
0603890C	80	BALLISTIC MISSILE DEFENSE SYSTEMS CORE BMD systems core	482,016	-50,000 [-50,000]	432,016
0603891C	81	SPECIAL PROGRAMS - MDA BMD special programs	323,250	-150,000 [-150,000]	173,250
0603892C	82	AEGIS BMD Aegis BMD	1,059,103	75,000 [75,000]	1,134,103
0603893C	83	SPACE TRACKING & SURVEILLANCE SYSTEM Space tracking & surveillance system	331,525	-55,000 [-55,000]	276,525
0603894C	84	MULTIPLE KILL VEHICLE	271,151		271,151
0603895C	85	BALLISTIC MISSILE DEFENSE SYSTEM SPACE PROGRAMS BMD space testbed	27,666	-10,000 [-10,000]	17,666
0603896C	86	BALLISTIC MISSILE DEFENSE COMMAND AND CONTROL, BA	258,913		258,913
0603897C	87	BALLISTIC MISSILE DEFENSE HERCULES	53,658		53,658
0603898C	88	BALLISTIC MISSILE DEFENSE JOINT WARFIGHTER SUPPORT	48,787		48,787
0603904C	89	BALLISTIC MISSILE DEFENSE JOINT NATIONAL INTEGRATION	104,012		104,012

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0603905C	90	BALLISTIC MISSILE DEFENSE CONCURRENT TEST, TRAINING			
0603906C	91	REGARDING TRENCH	2,000		2,000
0603920D8Z	92	HUMANITARIAN DEMINING	14,013		14,013
0603923D8Z	93	COALITION WARFARE	14,047		14,047
0604016D8Z	94	DEPARTMENT OF DEFENSE CORROSION PROGRAM	4,983		4,983
0604648D8Z	95	JOINT CAPABILITY TECHNOLOGY DEMONSTRATIONS	2,960		2,960
0604670D8Z	96	HUMAN, SOCIAL AND CULTURE BEHAVIOR MODELING (HSCE	5,700		5,700
0604787D8Z	97	JOINT SYSTEMS INTEGRATION COMMAND (JSIC)	19,375		19,375
0604828D8Z	98	JOINT FIRES INTEGRATION AND INTEROPERABILITY TEAM	16,596		16,596
0605017D8Z	99	REDUCTION OF TOTAL OWNERSHIP COST	25,225		25,225
0303191D8Z	100	JOINT ELECTROMAGNETIC TECHNOLOGY (JET) PROGRAM	3,482		3,482
		System Development & Demonstration			
0603713S	101	DEPLOYMENT AND DISTRIBUTION ENTERPRISE TECHNOLOX	25,000		25,000
0604051D8Z	102	DEFENSE ACQUISITION CHALLENGE PROGRAM (DACP)	28,970		28,970
0604161D8Z	103	NUCLEAR AND CONVENTIONAL PHYSICAL SECURITY EQUIPI	3,281		3,281
0604384BP	104	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM	247,935		247,935
0604618D8Z	105	MANPADS DEFENSE PROGRAM			
0604709D8Z	106	JOINT ROBOTICS PROGRAM	2,911		2,911
0604764K	107	ADVANCED IT SERVICES JOINT PROGRAM OFFICE (AITS-JPC	9,832		9,832
0604771D8Z	108	JOINT TACTICAL INFORMATION DISTRIBUTION SYSTEM (JTII	16,527		16,527
0605000BR	109	WEAPONS OF MASS DESTRUCTION DEFEAT CAPABILITIES	15,394		15,394

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0605013BL	110	INFORMATION TECHNOLOGY DEVELOPMENT			
0605015BL	111	INFORMATION TECHNOLOGY DEVELOPMENT-STANDARD PF	11,297		11,297
0605016D8Z	112	FINANCIAL MANAGEMENT SYSTEM IMPROVEMENTS			
0605018BTA	113	DEFENSE INTEGRATED MILITARY HUMAN RESOURCES SYS	79,300		79,300
0605018SE	114	DEFENSE INTEGRATED MILITARY HUMAN RESOURCES SYS			
0605019D8Z	115	ACQUISITION DOMAIN			
0605020BTA	116	BUSINESS TRANSFORMATION AGENCY R&D ACTIVITIES	127,970		127,970
0605021SE	117	HOMELAND PERSONNEL SECURITY INITIATIVE	1,800		1,800
0605140D8Z	118	TRUSTED FOUNDRY	43,604		43,604
0605648D8Z	119	DEFENSE ACQUISITION EXECUTIVE (DAE) PILOT PROGRAM	5,838		5,838
0303129K	120	DEFENSE MESSAGE SYSTEM			
0303141K	121	GLOBAL COMBAT SUPPORT SYSTEM	18,129		18,129
0303158K	122	JOINT COMMAND AND CONTROL PROGRAM (JC2)	70,283		70,283
0305840K	123	ELECTRONIC COMMERCE			
0901200D8Z	124	BMMP DOMAIN MANAGEMENT AND SYSTEMS INTEGRATION			
		RD&E Management Support			
0603704D8Z	125	SPECIAL TECHNICAL SUPPORT			
0603712S	126	GENERIC LOGISTICS R&D TECHNOLOGY DEMONSTRATIONS	4,000		4,000
0603757D8Z	127	TRAINING TRANSFORMATION (T2)	51,752		51,752
0604140D8Z	128	CAPITAL ASSET MANAGEMENT SYSTEM-MILITARY EQUIPME			
0604774D8Z	129	DEFENSE READINESS REPORTING SYSTEM (DRRS)	11,886		11,886

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0604875D8Z	130	JOINT SYSTEMS ARCHITECTURE DEVELOPMENT	14,437		14,437
0604940D8Z	131	CENTRAL TEST AND EVALUATION INVESTMENT DEVELOPMENT SAM hardware simulators	133,772	4,000 [4,000]	137,772
0604942D8Z	132	ASSESSMENTS AND EVALUATIONS	1,645		1,645
0604943D8Z	133	THERMAL VICAR	7,822		7,822
0605100D8Z	134	JOINT MISSION ENVIRONMENT TEST CAPABILITY (JMETC)	6,925		6,925
0605104D8Z	135	TECHNICAL STUDIES, SUPPORT AND ANALYSIS Prompt global strike	31,263	208,200 [208,200]	239,463
0605110D8Z	136	USD(A&T)--CRITICAL TECHNOLOGY SUPPORT	4,021		4,021
0605117D8Z	137	FOREIGN MATERIAL ACQUISITION AND EXPLOITATION	52,683		52,683
0605124D8Z	138	DEFENSE TRAVEL SYSTEM			
0605126J	139	JOINT THEATER AIR AND MISSILE DEFENSE ORGANIZATION	53,653		53,653
0605128D8Z	140	CLASSIFIED PROGRAM USD(P)			
0605130D8Z	141	FOREIGN COMPARATIVE TESTING	32,919		32,919
0605161D8Z	142	NUCLEAR MATTERS-PHYSICAL SECURITY	4,513		4,513
0605170D8Z	143	SUPPORT TO NETWORKS AND INFORMATION INTEGRATION	11,152		11,152
0605200D8Z	144	GENERAL SUPPORT TO USD (INTELLIGENCE)	4,574		4,574
0605384BP	145	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM	99,053		99,053
0605502BR	146	SMALL BUSINESS INNOVATION RESEARCH			
0605502C	147	SMALL BUSINESS INNOVATIVE RESEARCH - MDA			
0605502D8Z	148	SMALL BUSINESS INNOVATIVE RESEARCH			

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0605502E	149	SMALL BUSINESS INNOVATIVE RESEARCH			2,162
0605790D8Z	150	SMALL BUSINESS INNOVATION RESEARCH/CHALLENGE ADA	2,162		
0605798D8Z	151	DEFENSE TECHNOLOGY ANALYSIS	11,927		11,927
0605798S	152	DEFENSE TECHNOLOGY ANALYSIS			
0605799D8Z	153	FORCE TRANSFORMATION DIRECTORATE	20,585		20,585
0605801KA	154	DEFENSE TECHNICAL INFORMATION CENTER (DTIC)	51,800		51,800
0605803SE	155	R&D IN SUPPORT OF DOD ENLISTMENT, TESTING AND EVAL	9,326		9,326
0605804D8Z	156	DEVELOPMENT TEST AND EVALUATION	18,712		18,712
0605898E	157	MANAGEMENT HQ - R&D	52,992		52,992
0606100D8Z	158	BUDGET AND PROGRAM ASSESSMENTS	5,750		5,750
0301555G	159	CLASSIFIED PROGRAMS	[]		[]
0301556G	160	SPECIAL PROGRAM	[]		[]
0303166D8Z	161	SUPPORT TO INFORMATION OPERATIONS (IO) CAPABILITIES	28,652		28,652
0303169D8Z	162	INFORMATION TECHNOLOGY RAPID ACQUISITION	5,197		5,197
0305193D8Z	163	INTELLIGENCE SUPPORT TO INFORMATION OPERATIONS (IC	9,932		9,932
0305193G	164	INTELLIGENCE SUPPORT TO INFORMATION OPERATIONS (IC	[]		[]
0305400D8Z	165	WARFIGHTING AND INTELLIGENCE-RELATED SUPPORT	827		827
0901585C	166	PENTAGON RESERVATION	6,058		6,058
0901598C	167	MANAGEMENT HQ - MDA	85,906		85,906
0901598D8W	168	IT SOFTWARE DEV INITIATIVES	888		888
0909999E	169	FINANCING FOR CANCELLED ACCOUNT ADJUSTMENTS			

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		Operational Systems Development			
0604130V	170	DEFENSE INFORMATION SYSTEM FOR SECURITY (DISS)	34,417		34,417
0605127T	171	PARTNERSHIP FOR PEACE (PFPP) INFORMATION MANAGEM	2,000		2,000
0607384BP	172	CHEMICAL AND BIOLOGICAL DEFENSE (OPERATIONAL SYST	7,716		7,716
0607828D8Z	173	JOINT INTEGRATION AND INTEROPERABILITY	53,892		53,892
0204571J	174	JOINT STAFF ANALYTICAL SUPPORT	7,744		7,744
0208043J	175	CLASSIFIED PROGRAMS	1,694		1,694
0208045K	176	C4I INTEROPERABILITY	76,179		76,179
0301011G	177	CRYPTOLOGIC ACTIVITIES	[]	[558,525]	[]
		Classified programs		[558,525]	
0301144K	178	JOINT/ALLIED COALITION INFORMATION SHARING	26,321		26,321
0301301L	179	GENERAL DEFENSE INTELLIGENCE PROGRAM	[]		[]
0301318BB	180	HUMINT (CONTROLLED)	[]	[400]	[]
		Classified program		[400]	
0301398L	181	MANAGEMENT HQ - GDIP	[]		[]
0301555BB	182	CLASSIFIED PROGRAMS	[]		[]
0301556BB	183	SPECIAL PROGRAM	[]		[]
0302016K	184	NATIONAL MILITARY COMMAND SYSTEM-WIDE SUPPORT	713		713
0302019K	185	DEFENSE INFO INFRASTRUCTURE ENGINEERING AND INTEC	5,548		5,548
0303126K	186	LONG-HAUL COMMUNICATIONS - DCS	16,487		16,487
0303131K	187	MINIMUM ESSENTIAL EMERGENCY COMMUNICATIONS NETV	9,482		9,482

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0303135G	188	PUBLIC KEY INFRASTRUCTURE (PKI)	9,389		9,389
0303136G	189	KEY MANAGEMENT INFRASTRUCTURE (KMI)	52,090		52,090
0303140D8Z	190	INFORMATION SYSTEMS SECURITY PROGRAM	13,256		13,256
0303140G	191	INFORMATION SYSTEMS SECURITY PROGRAM	394,314	31,000	425,314
		ISSP tech base		[30,000]	
		Software assurance & education research		[1,000]	
0303140K	192	INFORMATION SYSTEMS SECURITY PROGRAM	2,300		2,300
0303148K	193	DISA MISSION SUPPORT OPERATIONS			
0303149J	194	C4I FOR THE WARRIOR	3,624		3,624
0303149K	195	C4I FOR THE WARRIOR			
0303150K	196	GLOBAL COMMAND AND CONTROL SYSTEM	47,237		47,237
0303153K	197	JOINT SPECTRUM CENTER	18,653		18,653
0303170K	198	NET-CENTRIC ENTERPRISE SERVICES (NCES)	43,424		43,424
0303610K	199	TELEPORT PROGRAM	5,798		5,798
0304210BB	200	SPECIAL APPLICATIONS FOR CONTINGENCIES	15,687		15,687
0304345BQ	201	NATIONAL GEOSPATIAL-INTELLIGENCE PROGRAM (NGP)	[]	[600]	[]
		Commercial imagery		[200,000]	
		Classified program		[-199,400]	
0305102BQ	202	DEFENSE GEOSPATIAL-INTELLIGENCE PROGRAM	[]		[]
0305125D8Z	203	CRITICAL INFRASTRUCTURE PROTECTION (CIP)	12,667		12,667
0305127BZ	204	FOREIGN COUNTERINTELLIGENCE ACTIVITIES	[]		[]

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0305146BZ	205	DEFENSE JOINT COUNTERINTELLIGENCE ACTIVITIES	2,951		2,951
0305183L	206	DEFENSE HUMAN INTELLIGENCE (HUMINT) PROGRAM (DHIP)	[]		[]
0305186D8Z	207	POLICY R&D PROGRAMS	4,627		4,627
0305193L	208	INTEL SUPPORT TO INFORMATION OPERATIONS	[]		[]
0305199D8Z	209	NET CENTRICITY	10,243		10,243
0305202G	210	DRAGON U-2 (JMIP)	[]		[]
0305206G	211	AIRBORNE RECONNAISSANCE SYSTEMS	[]		[]
0305207G	212	MANINED RECONNAISSANCE SYSTEMS	[]		[]
0305208BQ	213	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	[]		[]
0305208G	214	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	[]		[]
0305208K	215	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	15,800		15,800
0305208L	216	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	[]		[]
0305219BB	217	MQ-1 PREDATOR A UAV	13,100		13,100
0305866L	218	DIA SUPPORT TO SOUTHCOM INTEL ACTIVITIES	[]		[]
0305880L	219	COMBATANT COMMAND INTELLIGENCE OPERATIONS	[]		[]
0305883L	220	HARD AND DEEPLY BURIED TARGET (HDBT) INTEL SUPPORT	[]		[]
0305884L	221	INTELLIGENCE PLANNING AND REVIEW ACTIVITIES	[]		[]
0305885G	222	TACTICAL CRYPTOLOGICAL ACTIVITIES	[]	[69,200]	[]
		Classified program		[69,200]	
0305889G	223	COUNTERDRUG INTELLIGENCE SUPPORT	[]		[]
0307141G	224	NASS, IO TECHNOLOGY INTEGRATION AND TOOL DEV	[]		[]

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0307207G	225	AERIAL COMMON SENSOR (ACS)	[]		[]
0708011S	226	INDUSTRIAL PREPAREDNESS Manufacturing supply chain research Castings research Military high pressure packaging program Defense fuel cell manufacturing Industrial base innovation fund	20,114	42,000 [3,000] [2,000] [4,000] [3,000] [30,000]	62,114
0708012S	227	LOGISTICS SUPPORT ACTIVITIES	2,846		2,846
0902298J	228	MANAGEMENT HEADQUARTERS (JCS)	3,210		3,210
1001018D8Z	229	NATO JOINT STARS	41,466		41,466
11304358B	230	STORM	27,107		27,107
11602798B	231	SMALL BUSINESS INNOVATIVE RESEARCH/SMALL BUS TECH			
11604038B	232	SPECIAL OPERATIONS AVIATION SYSTEMS ADVANCED DEVI	60,750		60,750
11604048B	233	SPECIAL OPERATIONS TACTICAL SYSTEMS DEVELOPMENT	42,262		42,262
11604058B	234	SPECIAL OPERATIONS INTELLIGENCE SYSTEMS DEVELOPM	35,783		35,783
11604088B	235	SOF OPERATIONAL ENHANCEMENTS	53,418		53,418
11604218B	236	SPECIAL OPERATIONS CV-22 DEVELOPMENT	23,473		23,473
11604258B	237	SPECIAL OPERATIONS AIRCRAFT DEFENSIVE SYSTEMS	5,195		5,195
11604268B	238	OPERATIONS ADVANCED SEAL DELIVERY SYSTEM (ASDS) D	20,292		20,292
11604278B	239	MISSION TRAINING AND PREPARATION SYSTEMS (MTPS)	6,405		6,405
11604288B	240	UNMANNED VEHICLES (UV)	1,500		1,500

Title II-RDT and E
(Dollars in Thousands)

<u>Program Element</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2008 Request</u>	<u>Senate Change</u>	<u>Senate Authorized</u>
1160429BB	241	MC-130J SOF TANKER RECAPITALIZATION	12,701		12,701
	999	CLASSIFIED PROGRAMS	3,483,300	608,725	4,092,025
		Transfer to PE 63714D8Z (RDDW 70)		[-20,000]	
		Other classified adjustments		[628,725]	
		Total, RDT&E Defense-Wide	20,559,850	771,625	21,331,475

Title II-RDT and E
(Dollars in Thousands)

<u>Program Element</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2008 Request</u>	<u>Senate Change</u>	<u>Senate Authorized</u>
		OPERATIONAL TEST & EVALUATION, DEFENSE			
		RDT&E Management Support			
0605118D8Z	1	OPERATIONAL TEST AND EVALUATION	48,627		48,627
0605118OTE	2	OPERATIONAL TEST AND EVALUATION			
0605131D8Z	3	LIVE FIRE TESTING			
0605131OTE	4	LIVE FIRE TEST AND EVALUATION	11,133		11,133
0605804D8Z	5	DEVELOPMENT TEST AND EVALUATION			
0605814OTE	6	OPERATIONAL TEST ACTIVITIES AND ANALYSES	120,504		120,504
		Total, Operational Test & Evaluation, Defense	180,264		180,264
		TOTAL RDT&E	75,117,194	-458,167	74,669,027

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Semiconductor focus center research program

The budget request included no funding in PE 61111D8Z for Government/Industry Cosponsorship of University Research (GICUR) in semiconductor technology. This is despite the fact that in the January 2007 report to Congress entitled “Response to Findings and Recommendations of the Defense Science Board Task Force on High Performance Microchip Supply,” the Under Secretary of Defense for Acquisition, Technology, and Logistics indicated that the GICUR program “is a shared commitment between industry and the Department to sponsor next generation semiconductor electronics research,” which “capitalizes on university-based research, education, and training in technologies of strategic importance to national defense and also to industry.” The committee recommends an additional \$5.0 million in PE 61111D8Z for the semiconductor focus center research program. The committee directs that the Director of Defense Research and Engineering ensures that this funding is combined with an adequate cost-sharing investment from industry partners, and is executed in coordination with similar authorized funding requested in PE 61101E.

Further, the committee directs the Director of Defense Research and Engineering to comply with the recommendation of the Defense Science Board Task Force on High Performance Microchip Supply to develop an “. . . estimate of Department of Defense 5- and 10-year future microelectronics needs (including processes and design methods)” as well as to “collect and organize known and projected technology requirements.” This estimate shall be delivered to the congressional defense committees no later than October 1, 2008.

Superstructural particle evaluation

The budget request included \$72.0 million in PE 61384BP for chemical and biological defense basic research. This basic research improves the understanding of the scientific processes for protecting against chemical and biological agents. The committee recommends an increase of \$3.0 million in PE 61384BP to continue work in superstructural particle evaluation and characterization with targeted reaction analysis. This program shows potential as an enabling technology for other efforts in the chemical and biological defense area.

Medical free electron laser

The budget request included no funding for the Medical Free Electron Laser (MFEL) program. The Department of Defense describes the program as developing “advanced, medical laser-based technology applications focusing on rapid diagnosis and treatment of battlefield medical problems,” while addressing “military mission and unique medical challenges on the battlefield.” The Department further noted that “most laser-based medical procedures used in surgery . . . for Operation Enduring Freedom and Operation Iraqi Freedom casualties have a research base and lineage” from the MFEL program. Therefore, the committee recommends an additional \$8.0 million in PE 62227D8Z for the continuation of competitive research awards under the MFEL program. Further, the committee directs the Secretary of Defense to develop a strategic plan

for the continuation of militarily relevant medical laser research, technology development, and technology transition to operational users, and to deliver that plan to the congressional defense committees along with the fiscal year 2009 budget request.

Chemical and biological infrared detector

The budget request included \$305.3 million in PE 62384BP for chemical and biological defense applied research, but did not include any funds to develop miniaturized infrared detection technology. The committee recommends an increase of \$2.0 million in PE 62384BP to continue development and miniaturization of an advanced infrared detection system for chemical and biological agents. The objective is to demonstrate a functional prototype that operates at high speed and sensitivity with minimal false alarm rates. This technology may provide an end product with significantly lower logistical burden than other technologies.

Chemical and biological protective textile fabric

The budget request included \$305.3 million in PE 62384BP for chemical and biological defense applied research, but included no funds for research and development of protective fabrics based on advanced molecular matrices. The committee recommends an increase of \$1.5 million in PE 62384BP for development of novel textile fabrics for protection against exposure to chemical and biological warfare agents. The committee notes that development of novel protective fabric concepts is currently a major thrust of the Department of Defense Chemical and Biological Defense Program, and this research could lead to important contributions in future protective fabric development.

Verification and validation of chemical agent persistence models

The budget request included \$305.3 million in PE 62384BP for chemical and biological defense applied research, but included no funding for the verification and validation of chemical agent persistence models. The committee recommends an increase of \$1.0 million in PE 62384BP, to complete verification and validation of chemical agent persistence models to help ensure U.S. forces are capable of operating effectively in a chemically contaminated environment.

The committee notes that the agent fate program is a joint service program that focuses on the acquisition of chemical warfare agent data and the development of models from that data. The continuation of the agent fate effort to validate and verify chemical agent persistence models meets a Defense Technology Objective, and will help U.S. military forces protect themselves and their equipment in a chemically contaminated environment.

Blast mitigation and protection

The budget request included \$182.4 million in PE 62718BR for technologies to defeat weapons of mass destruction (WMD). The committee recommends an increase of \$1.0 million in PE 62718BR for blast mitigation and protection analysis and software development to improve the Vulnerability Assessment and Protection Op-

tion analytic tool used by the Defense Threat Reduction Agency to predict the effects of explosive blasts on buildings, and to design mitigation and protection options for military facilities. Terrorist attacks using high explosives have become more sophisticated and powerful. This requires improved analytic and predictive capabilities for external and internal blast effects, identification of critical vulnerabilities, and designing protective measures against blast.

Comprehensive national incident management system

The budget request included \$182.4 million in PE 62718BR for technologies to defeat weapons of mass destruction (WMD). The committee recommends an increase of \$4.0 million in PE 62718BR for the Comprehensive National Incident Management system being developed by the Defense Threat Reduction Agency (DTRA) to improve national capabilities to analyze potential catastrophic events such as pandemic influenza and terrorist attacks using weapons of mass destruction. This technology has the potential to significantly improve the ability of the Department of Defense to analyze and plan for such catastrophic events, including its ability to provide support to civil authorities for consequence management of such events.

Advanced technologies for special operations

The budget request included \$21.3 million in PE 1160401BB, \$2.4 million in PE 1160407BB, and \$29.9 million in PE 1160402BB for science and technology efforts to support the development of special operations capabilities. The committee notes that United States Special Operations Command (SOCOM) has highlighted “tagging, tracking, and locating” as a key technology challenge and plans to invest \$17.6 million in the fiscal year 2008 budget in related research. The committee recommends an additional \$2.5 million in PE 1160401BB for the development of multi-sensor data fusion systems to enhance detection and discrimination of targets hidden in foliage.

Special Operations Command has also highlighted the development of “alternative and advanced lightweight power sources” as a priority technology challenge. Consistent with that assessment, and with efforts in the SOCOM Small Business Innovative Research program, the committee recommends an additional \$2.0 million in PE 1160402BB for research on systems to produce mobile electric power from a variety of fuels. Further, the committee recommends an additional \$3.0 million in PE 1160402BB for the development of portable fuel cell systems for battlefield communications equipment. Special Operations Command has identified the development of systems that can reduce signatures across the spectrum without mission impact to enhance clandestine operations capability as a major technology challenge. To support efforts to address this challenge, the committee recommends an additional \$3.0 million in PE 1160402BB to reduce antenna signatures and improve performance on airborne platforms. To support SOCOM’s urgent need to enable precision fires in urban terrain and other operational settings, the committee recommends an increase of \$6.0 million in PE 1160402BB for development of standoff precision guided munitions.

Directly printed electronic components

The budget request included \$118.6 million in PE 63175C for ballistic missile defense technology development. The committee recommends an increase of \$4.0 million in PE 63175C for development of directly printed electronic components for missile defense applications. Such components could have increased performance, greater reliability, and smaller size than currently available technology.

Semi-conducting metal oxide sensors

The budget request included \$232.3 million in PE 63384BP for chemical and biological defense advanced technology. The committee recommends an increase of \$2.0 million in PE 63384BP to develop miniaturized semi-conducting metal oxide sensor array technology for chemical warfare agents and toxic industrial chemicals. This technology effort meets the Department of Defense Chemical and Biological Defense Program objective to develop small, integrated chemical vapor sensors by targeting permissive exposure levels.

Improved chemical, biological, and radiological filters

The budget request included \$232.3 million in PE 63384BP for chemical and biological defense advanced technology development, but included no funds for developing improved chemical, biological, and radiological (CBR) filtration capabilities. The committee recommends an increase of \$2.0 million in PE 63384BP for design, engineering, and prototyping of improved CBR filters. Improved filters would fill a requirement for enhanced collective protection capability against a wider spectrum of threat agents. Such filters would be multi-use and multi-platform configurable, for use in buildings, ships, and shelters.

Raman chemical identification system

The budget request included \$232.2 million in PE 63384BP for chemical and biological defense advanced technology development, but included no funding to develop a miniaturized Raman chemical agent identification system. The committee recommends an increase of \$4.0 million in PE 63384BP for development of a handheld Raman chemical identification system that is smaller and more reliable than existing systems, in order to improve the ability of U.S. forces to rapidly identify unknown chemical agents and substances.

Biometrics technologies

The budget request included \$8.0 million in PE 63665D8Z for biometrics science and technology. The 2007 "Report of the Defense Science Board Task Force on Defense Biometrics" highlighted the need for improvements in the ability to perform biometric identification at standoff ranges, and recommended support of research efforts into "extended-range human biometric identifiability and tracking." Therefore, the committee recommends an additional \$4.0 million for the development of systems to perform clandestine identification of moving subjects at variable distances.

Manufacturing technologies

The budget request included \$10.0 million in PE 63680D8Z for defense-wide manufacturing science and technology programs. The committee commends the Department of Defense for understanding the need to advance manufacturing technologies to support the defense industrial base, improve the performance of defense systems, and reduce life cycle costs. In title II, subtitle D of the National Defense Authorization Act for Fiscal Year 2006 (Public Law 109–163), the committee established the high performance defense manufacturing technology research and development program with a goal to identify and transition advanced manufacturing processes and technologies whose utilization would create significant productivity and efficiency gains in the defense manufacturing base. The committee notes that this legislation has been endorsed by the Defense Science Board (DSB) Task Force on the Manufacturing Technology Program. The committee recommends an increase of \$10.0 million in PE 63680D8Z to continue activities under this program, including development of test beds and prototypes of advanced manufacturing technologies, diffusion of advanced manufacturing processes throughout the industrial base, and the development of technology roadmaps to ensure that the Department can access required manufacturing and technology capabilities in critical defense technologies.

The committee notes that the DSB recommended an increased investment in research on “disruptive” manufacturing technologies, which can radically alter traditional manufacturing processes and change the industrial base. These types of innovations would allow the Department to gain easier access to affordable low-volume, state-of-the-art production capabilities, as is often needed in the acquisition of defense unique technologies of low density, high demand systems. The DSB indicated that investments in areas such as nanomanufacturing and flexible manufacturing processes would be of high value to the Department. To support these efforts, the committee recommends an increase of \$10.0 million in PE 63680D8Z for longer-term research into disruptive manufacturing techniques.

Printed circuit board technologies

The budget request included \$18.7 million in PE 63712S for generic logistics research and development technology demonstrations. The committee notes that the National Research Council Committee on Manufacturing Trends in Printed Circuit Technology recommended that the Department of Defense “should ensure access to new printed circuit board (PrCB) technology by expanding its role in fostering new PrCB design and manufacturing technology.” In support of that recommendation the committee recommends an increase of \$4.0 million for the development of emerging critical interconnect and printed circuit board technology.

Energy efficiency technologies

The budget request included \$18.7 million in PE 63712S for generic logistics research and development (R&D) technology demonstrations. The committee is aware of a growing number of studies from organizations including the JASONs technical study

group, the Defense Science Board, and the Energy Security Task Force that highlight the need for the Department of Defense to closely examine its energy use and technologies for improving energy efficiency. The use of energy efficient technologies by the Department can result in cost savings, enhanced operational performance, and reduce dependence on foreign oil. The committee also notes that the Marine Corps submitted an urgent request for renewable energy systems to be deployed in Iraq. Finally, the committee notes that Executive Order 13423 calls on federal agencies to increase their use of renewable energy for power, and for federal fleets to increase their consumption of non-petroleum-based fuels by 10 percent annually.

The committee supports efforts by the Department to invest in energy efficient and alternative energy technologies. To support these efforts the committee recommends increases of \$10.0 million to continue the Vehicle Fuel Cell Program established in the National Defense Authorization Act for Fiscal Year 2003 (Public Law 107-314), \$6.0 million for research on solid hydrogen storage materials and systems appropriate for military applications, \$3.0 million for research on the production and use of biofuels for military operations, and \$3.0 million for the development of deployable microgrid systems that can utilize a variety of energy sources to produce installation and vehicle power.

Unmanned air vehicle batteries

The budget request included \$18.7 million in PE 63712S for generic logistics technology demonstrations. The committee has strongly endorsed the use of unmanned aerial vehicles (UAVs) for a growing number of military missions. The committee notes that one limiting factor in the use of UAVs on the battlefield is the limited power available on the platforms, which can limit both UAV flight range as well as the specific missions of each platform. In order to address this issue, the committee recommends an increase of \$2.0 million for research on advanced battery technologies for UAVs.

Water remediation research

The budget request included \$68.9 million in PE 63716D8Z for the strategic environmental research program. The committee understands that the Department of Defense has identified a large number of active and formerly used defense sites with issues of groundwater contamination. Many of these sites will require environmental remediation. To support those efforts, the committee recommends an additional \$2.5 million for water remediation research.

High performance computing modeling and simulation

The budget request included \$187.6 million in PE 63755D8Z for the high performance computing modernization program. The committee notes that one of the Army's major future force technology areas is advanced simulation technologies. These technologies are being developed to provide increasingly realistic training and mission rehearsal environments to support military operations and acquisition efforts. In order to support those efforts, the committee

recommends an increase of \$2.0 million for high performance computing modeling and simulation research.

Small craft common operating picture technology

The budget request included \$109.5 million in PE 63826D8Z for quick reaction special projects. The committee notes that the Navy's asymmetric and irregular warfare science and technology focus area has a specific technical objective of improving riverine surveillance capabilities, through the development of a "common and persistent maritime picture on and below the surface and shore." To support those efforts, the committee recommends an increase of \$1.5 million for the development of technology to provide a common tactical operating picture to riverine craft.

Active protection systems comparative testing

The budget request included \$109.5 million in PE 63826D8Z for quick reaction special projects. The committee recommends an increase of \$15.0 million for the comparative testing of foreign and domestic active protection systems as required elsewhere in this report. The committee further recommends an increase of \$1.0 million for the assessment of current and future active protection systems as described elsewhere in this report.

Joint warfare experimentation

The budget request included \$112.0 million in PE 63828D8Z for joint experimentation. The committee notes that Joint Forces Command (JFCOM) is playing the lead role in the development of joint operational concepts and in the development of joint experiments and wargames to test new operational concepts, capabilities, and technologies. The committee notes that JFCOM is conducting experiments to understand how multiple federal agencies, including the Department of Defense, should interact with each other and state and local entities in carrying out homeland defense missions. To support these efforts the committee recommends an increase of \$1.5 million for wargaming and experimentation to simulate terrorist attacks against domestic military facilities. The committee also is supportive of JFCOM efforts to enhance Department language and cultural awareness capabilities and recommends an increase of \$3.2 million to continue the development of cultural and societal modeling and simulation tools. The committee also commends JFCOM efforts in the development of urban operations concepts and capabilities and recommends an increase of \$1.5 million to fund the JFCOM unfunded requirement for the development of a joint urban fires prototype.

Range readiness analyses

The budget request included \$62.9 million in PE 63941D8Z for test and evaluation science and technology. The committee notes that the "Annual Report of the Test Resource Management Center" highlighted the fact that Department of Defense test facilities and ranges need to be protected against diminution in mission capability as an unintended consequence of environmental laws and encroachment. The committee recommends an additional \$1.0 million

for analysis of issues that may affect military mission readiness and test activities on and between installations and ranges.

Terminal High Altitude Area Defense

The budget request included \$858.3 million in PE 63881C for the Terminal High Altitude Area Defense (THAAD) system. The committee recommends an increase of \$105.0 million in PE 63881C, of which \$40.0 million is to begin development of the Evolved THAAD Interceptor, \$40.0 million is to increase the missile production rate to four per month, and \$25.0 million is to conduct additional flight testing of the THAAD system.

The THAAD system is expected to have significant capability to defend against short-, medium-, and intermediate-range ballistic missiles, including potential Iranian missiles that could be launched at Europe. With evolutionary upgrades to the THAAD interceptor, the system would increase significantly its defensive area and its capability, to include the possibility of defending against some intercontinental ballistic missiles. The additional funding recommended would permit the Evolved THAAD Interceptor upgrade to begin development so that it could be tested and demonstrated on an accelerated schedule. This is not intended to interfere with the existing THAAD program of record.

The committee notes that the THAAD system is designed to have nine launchers per fire unit, but that initially the system will have only three launchers per fire unit, with eight interceptors per launcher. The Commander of the Joint Force Component Command for Integrated Missile Defense told the committee in April 2007 that recent analyses indicate a need to nearly double the number of planned THAAD interceptors, currently 96. The committee believes that the Missile Defense Agency (MDA) should plan and budget for a significantly larger number of THAAD interceptors to meet the needs of regional combatant commanders, as well as for a robust flight test program. The additional funding recommended to increase the interceptor production rate would permit production at rates that better meet the needs of combatant commanders.

The committee is disappointed that the MDA eliminated three flight tests from the THAAD testing program for budget reasons and because of difficulty delivering targets on time. This reduction is contrary to the direction provided by Congress last year for the Department of Defense to place priority on the development, testing, fielding, and improvement of effective, near-term ballistic missile defense systems, specifically including the THAAD system.

The testing reduction adds risk to the THAAD program, and increases the number of critical factors that must be accomplished in individual tests. It also eliminates two near-term flight tests. The additional funding recommended by the committee is intended to restore a THAAD flight test to reduce risk and allow a more measured pace of demonstrating critical factors in each test.

The committee is disappointed that the THAAD flight test program has suffered from target failures and target delivery delays, despite the availability to MDA of considerable sums of money for the targets program. The committee urges MDA to improve its performance on supplying reliable targets to the THAAD program and other element and system flight tests.

Arrow missile defense program

The budget request included \$73.6 million in PE 63881C for the Israeli Arrow missile defense program, including \$55.0 million for the Arrow System Improvement program, and \$12.4 million for co-production of the Arrow interceptor missile. The committee recommends an increase of \$35.0 million in PE 63881C for the Arrow missile defense program, including \$25.0 million for increased co-production of the Arrow interceptor missile, and \$10.0 million for the United States and Israel to conduct a detailed analysis of the potential for the Terminal High Altitude Area Defense (THAAD) system to serve as a follow-on to the Arrow system to provide an upper tier defense of Israel against longer-range and more advanced ballistic missiles armed with unconventional warheads.

The Arrow co-production program provides a means to increase the near-term inventory of operational Arrow interceptors. The Arrow system provides defense of Israel and defense of U.S. forces deployed in the region, thus allowing U.S. freedom of action in future contingencies. The Arrow system is designed to be interoperable with deployed U.S. missile defense assets.

The committee notes that the THAAD system is planned to have the capability to defend an area the size of Israel against regional ballistic missiles that could leak through Israel's improved Arrow weapon system. The committee believes that Israel should consider seriously the option of purchasing the THAAD system, rather than beginning a development program for a new upper tier interceptor system that would replicate the capabilities of THAAD. The committee urges the Department of Defense to assist in this effort.

Short-range ballistic missile defense

The budget request included \$962.6 million in PE 63881C for terminal-phase missile defense efforts, of which \$7.0 million is for short-range ballistic missile defense (SRBMD) research and development cooperation between the United States and Israel on the Israeli "David's Sling" weapon system. The committee recommends an increase of \$25.0 million in PE 63881C for acceleration of the SRBMD development effort.

The short-range missile and rocket attacks by Hezbollah against Israel in the summer of 2006 reinforced the importance of developing affordable and effective short-range ballistic missile defense capabilities. The Missile Defense Agency wants to ensure that the technology developed for the David's Sling weapon system can be fully interoperable with the U.S. Ballistic Missile Defense system. The program seeks to produce an interceptor missile costing \$350,000, which is less than 15 percent of the cost of a Patriot missile.

This program development objective is on an accelerated schedule to allow rapid demonstration and fielding of an initial capability by Israel starting as early as 2009.

Ground-based midcourse defense in Europe

The budget request included \$2.5 billion in PE 63882C for midcourse ballistic missile defense, including \$85.0 million for construction of facilities in Europe for the proposed deployment of Ground-based Interceptors in Poland and a midcourse X-band

radar in the Czech Republic. As noted elsewhere in this report, the committee believes this proposed deployment request is premature. The committee recommends a reduction of \$85.0 million in PE 63882C, the entire amount for site activation and construction activities for the proposed European deployment.

Should the international agreements be reached before or during fiscal year 2008, the Department of Defense could then seek a re-programming request to fund site activation and construction activities.

Airborne Laser

The budget request included \$548.8 million in PE 63883C for the Airborne Laser boost-phase missile defense technology demonstration program. The committee recommends a reduction of \$200.0 million to PE 63883C for the Airborne Laser. The committee notes that the Airborne Laser (ABL) program has had a history of schedule delays and cost overruns since its inception in 1996. The Department of Defense previously told Congress that the system would be available for an emergency capability in 2003. The current schedule has delayed the first demonstration shoot-down flight test until 2009 and, if all the technology worked as hoped, the system would likely not be operational until 2018, or later.

The committee has concerns about the many technical challenges still facing the Airborne Laser program, as well as its operational constraints and very considerable cost. For example, the ABL demonstration program is expected to cost \$5.0 billion dollars to get through the first demonstration of the proof of principle in a shoot-down flight test in 2009. Even if that flight test were to work, it would not demonstrate that the system could be made operationally effective. And it is unclear that the system would be affordable. The Congressional Budget Office has provided an initial estimate that an operational ABL system of 7 aircraft could cost as much as \$36.0 billion.

Although the MDA says that the ABL program is a knowledge-based program, it did not meet all its knowledge points in 2006 before moving forward to the next knowledge point. This indicates too high a degree of technical risk, and an undue effort to meet a schedule for the flight test demonstration, rather than demonstrating all necessary knowledge point steps before proceeding to the next step.

The committee notes that near-term capabilities to defend against existing threats are a higher priority than far-term, high risk technology demonstrations. The committee urges the Department to consider restructuring the ABL program as a technology demonstrator.

Real-time non-specific viral agent detector

The budget request included \$57.2 million in PE 63884BP for chemical and biological defense advanced component development and prototypes, but included no funds for development of a mobile non-specific viral agent detector. The committee recommends an increase of \$4.0 million in PE 63884BP for development of a mobile real-time non-specific viral agent detector that would improve current capabilities. The committee notes that this effort would pro-

vide a significant upgrade to the current Joint Biological Agent Identification and Diagnostic system (JBAIDS). This technology, which would add the capability to detect infectious diseases, would be useful both for forward-deployed forces and for domestic consequence management missions.

Ballistic missile defense reductions

The budget request included \$482.0 million in PE 63890C for Ballistic Missile Defense (BMD) systems Core; and \$323.3 million in PE 63891C for Missile Defense Agency (MDA) Special Programs. The committee recommends a decrease of \$50.0 million in PE 63890C for BMD systems Core; and a decrease of \$150.0 million in PE 63891C for MDA Special Programs to partially offset the additional funding needed for the Patriot PAC-3, Aegis BMD, and THAAD programs, described elsewhere in this report. The committee notes that the proposed funding reductions are for projects that are of lower priority than the near-term capabilities provided by these three near-term programs, which meet the needs of combatant commanders to defend against existing short-range and medium-range missile threats to forward-deployed U.S. forces.

Aegis ballistic missile defense

The budget request included nearly \$1.1 billion in PE 63892C, Research, Development, Test, and Evaluation, Defense-wide, for the Aegis Ballistic Missile Defense (BMD) system, including the Standard Missile-3 (SM-3) interceptor. The committee recommends an increase of \$75.0 million in PE 63892C for the Aegis BMD system, of which \$20.0 million is for increasing the SM-3 interceptor production rate to four per month; \$45.0 million is for long lead production of an additional 15 SM-3 interceptors; and \$10.0 million is for accelerating the development of the Aegis BMD Signal Processor (BSP) and Open Architecture software for the Aegis weapon system.

The committee notes that the Aegis BMD system, and its SM-3 interceptor, is deployed today and provides an important missile defense capability against short- and medium-range missiles deployed widely in theaters where U.S. forces are forward deployed. The system is planned for significant capability improvements in the future.

The Missile Defense Agency (MDA) increased the planned funding for SM-3 missiles in fiscal year 2008 to fund missiles it had previously cut for budget reasons. Currently MDA plans to procure only some 147 SM-3 missiles of all Block I varieties. The Commander, Joint Forces Component Command for Integrated Missile Defense (JFCC-IMD) testified in April 2007 that recent analyses indicate a need to nearly double the number of planned SM-3 interceptors. The committee urges MDA to plan and budget for increased numbers of SM-3 interceptors to meet the needs of regional combatant commanders, as indicated by the Commander, JFCC-IMD.

Space tracking and surveillance system

The budget request included \$331.5 million in PE 63893C for the Space Tracking and Surveillance System (STSS). The committee

recommends a reduction of \$55.0 million in PE 63893C for STSS, the amount requested for product development of the follow-on satellites that will not be deployed until 2016. The committee notes that the STSS program is preparing to deploy two experimental STSS satellites to learn how the system works, and what changes or improvements are needed for the operational system. It is premature to plan to spend funds on developing the follow-on operational satellites before the Missile Defense Agency knows how the experimental satellites work, and what changes are needed in the follow-on satellites.

Space test-bed

The budget request included \$27.7 million in PE 63895C for Ballistic Missile Defense system space programs, including \$10.0 million for a new "space test-bed." The committee recommends a decrease of \$10.0 million in PE 63895C, the entire amount requested for the space test-bed.

The committee notes that the space test-bed is intended to be the initial step toward deploying space-based interceptors. There is no threat that justifies such a deployment, and therefore no justification to create such a test-bed. There are, however, numerous real missile threats for which near-term missile defense capabilities are needed, as Congress made clear in section 223 of the John Warner National Defense Authorization Act for Fiscal Year 2007 (Public Law 109-364). The committee believes it is more appropriate to support funding for those effective, near-term systems that meet current combatant commander needs against existing threats.

Surface-to-air missile threat simulators

The budget request included \$133.8 million in PE 64940D8Z for central test and evaluation investment development. The committee notes the need to develop simulators for the large variety of threats that may face warfighters in the future. The fiscal year 2006 annual report of the Director of the Test Resource Management Center identified digital modeling and simulation of targets and threats as a test and evaluation gap. Therefore, the committee recommends an additional \$4.0 million for the development of surface-to-air missile hardware simulators.

Prompt global strike

The budget request included a total of \$175.4 million for the Conventional Trident Modification (CTM), with \$126.4 million in hard and deeply buried target defeat systems, PE 64327N; \$36.0 million in Trident II modifications, Weapons Procurement, Navy (WPN) line 1; and \$13.0 million in strategic systems missile equipment, Other Procurement, Navy (OPN) line 108. The budget request also included \$32.8 million for the Common Aero Vehicle, PE 64856F.

The committee believes that a coordinated look at a variety of kinetic non-nuclear concepts is necessary to address the feasibility of a prompt global strike (PGS) capability and to review, in a coordinated fashion, technologies that would be common to such a capacity, including thermal protection, guidance navigation, and control issues. The committee recommends that the funds identified above be transferred to technical studies, support, and analysis, PE

65104D8Z, to be used to establish an integrated PGS research program. Requirements for the program should be provided by the United States Strategic Command as informed by the ongoing analysis of alternatives for PGS and the PGS technology roadmap.

In addition to the research areas mentioned above, research should include advanced propulsion, payload delivery and dispensing mechanisms, weapon system command and control, and advanced non-nuclear, kinetic, and other enabling capabilities.

The committee is aware of several potential options for non-nuclear prompt global strike, including the Army's advanced hypersonic weapon technology demonstrator program, which is included on the Chief of Staff of the Army's unfunded priority list in the amount of \$41.7 million. The committee recommends that of the funds provided for PGS, \$41.7 million be provided to begin sounding rocket and flight vehicle tests, and to support booster development for the Army's advanced hypersonic weapon.

Other service program elements, including PE 63216F, aerospace propulsion and power technology, also include research and development areas that could be applied to the PGS mission. Included in the propulsion research and development efforts is the versatile, affordable advanced turbine engine high speed turbine engine demonstrator (HiSTED). The budget request included \$2.5 million for this effort. The committee recommends an additional \$10.0 million to allow the PGS effort to coordinate research and development activities with the Air Force HiSTED project.

The committee continues to believe that it is essential to maintain a bright line between legacy nuclear capabilities and any future PGS capability, and therefore recommends no funds for the CTM or other similar capability that could raise any nuclear ambiguity issues. The committee believes that PGS should be clearly and unambiguously non-nuclear.

The committee directs the Secretary of Defense, in consultation with the Commander of the Strategic Command, to submit a research plan for PGS for fiscal year 2008, including a funding plan, prior to initiating any PGS research.

Information systems security program technology development

The budget request included \$394.3 million in PE 33140G for Research, Development, Test, and Evaluation (RDT&E) for the Information Systems Security program at the National Security Agency (NSA). The committee is concerned that the NSA information assurance program does not have a dedicated program for developing a technology base for future requirements for advanced products like high-speed encrypters for space and terrestrial applications.

Multiple Department of Defense and national intelligence major acquisition programs have been adversely affected by delays in the development of security features. These delays are in part the result of NSA security technology lagging behind the constant, rapid advance of communications technology.

The committee believes it is unwise for a critical mission area such as this to receive no tech base funding, especially in the current era when the communications technology that must be protected is growing relentlessly.

Accordingly, the committee directs the establishment of an anticipatory technology development program for advanced information assurance capabilities. The committee recommends an authorization of \$30.0 million for this purpose.

The committee directs the Assistant Secretary of Defense for Network and Information Integration to develop a technology development plan that describes key challenges, critical capabilities, and technical goals for information assurance over the future-years defense program. This plan must delineate how the Department intends to structure the anticipatory development program, and to utilize commercial expertise and investments. This plan, as well as a spending plan for fiscal year 2008, must be submitted to the congressional defense committees prior to obligation and expenditure of authorized funds.

Software assurance education and research

The budget request included \$394.3 million for Research, Development, Test, and Evaluation (RDT&E) in PE 33140G for the Information Systems Security program (ISSP), but no funds for the development and integration of secure software design practices in curricula of higher education institutions that teach computer science and software engineering.

The committee recommends an increase of \$1.0 million for this purpose at one of the institutions designated as a national Center of Academic Excellence in Information Assurance Education by the National Security Agency.

Defense Logistics Agency manufacturing research

The budget request included \$20.1 million in PE 78011S for industrial preparedness programs of the Defense Logistics Agency (DLA). The committee notes that efforts to adopt fuel cell technology by the military are inhibited by cost barriers. The reduction of fuel cell cost is a specific technical goal of the Department of Defense's Energy and Power Technology Initiative. Therefore, the committee recommends an additional \$3.0 million for the improvement of manufacturing processes to reduce the cost of fuel cells for use in military applications. The committee directs that these activities will be undertaken in coordination with the efforts of the Joint Defense Manufacturing Technology Panel. The DLA has indicated that a disproportionate share of equipment backorders are due to an unavailability of critical cast parts. Therefore, the committee recommends an increase of \$2.0 million to develop systems to accelerate the manufacturing and procurement of high priority castings. Further, the committee notes that the DLA has set an objective to improve supply chain performance through a number of improvements including supply chain integration. Therefore, the committee recommends an increase of \$3.0 million for continued improvements in supply chain integration and accelerating response times to equipment backorders. Finally, the committee notes that DLA and the Army have a need for shelf stable combat rations, especially items sensitive to heat, such as produce and eggs, and recommends an increase of \$4.0 million for development of equipment to improve processing of rations to enhance their produceability, quality, and shelf life.

Manufacturing processes to support surge requirements

The budget request included \$20.1 million in PE 78011S for Defense Logistics Agency manufacturing technology programs. The committee notes that this is part of the overall Department of Defense manufacturing technology program which has total funding of \$193.3 million in the budget request. The committee notes that the 2006 Defense Science Board (DSB) Task Force on the Manufacturing Technology Program called for increased funding levels for the program over a 5-year period to a level of "one percent of the RDT&E budget," to align the Department with the level of manufacturing technology investments in the early 1980s. The committee notes that 1 percent of the requested RDT&E budget in fiscal year 2008 would be approximately \$750.0 million.

The committee recommends that the Department seriously consider implementing the DSB recommendations for increased manufacturing research funding and has recommended a series of investments throughout this bill to support the ramp up in this important area.

As part of that effort the committee recommends an increase of \$30.0 million in PE 78011S for the establishment of an industrial base innovation fund. The committee directs that these funds be executed in coordination with the Joint Defense Manufacturing Technology Panel and the Deputy Under Secretary of Defense for Industrial Policy to ensure that investments are made to develop manufacturing processes and technologies to support both long-term and short-term needs of the Department. The committee has noted that the surge production requirements of current operations have stressed the industrial base and lead to intolerable wait times for the delivery of some much needed materiel to the battlefield. The committee believes that this recommended increased investment should be used to begin the development of advanced manufacturing technologies that can reduce the time required to produce high demand items during surges in military operations.

Items of Special Interest**Adaptive optics**

The committee notes that adaptive optics are an important enabling technology for a wide variety of military applications, including laser weapons and space surveillance systems. The committee is concerned that the domestic research and industrial base may not be able to meet the innovation and production demands of the Department of Defense in the future. Therefore, the committee directs the Secretary of Defense to develop a report not later than September 1, 2008, analyzing and recommending a multiyear funding requirement and a set of technical challenges for research to maintain a viable domestic manufacturing base for adaptive optics that can support the meeting of military requirements.

Advanced cruise missile threats

The committee is concerned about the limited effort that the Navy is undertaking in developing test resources that can adequately simulate emerging advanced cruise missile threats to Navy platforms. The committee is aware that the lack of this test capa-

bility has been raised specifically by the Director of Operational Test and Evaluation as potentially impacting the operational testing of a number of major Navy acquisition programs. The committee also notes that the Deputy Secretary of Defense is currently reviewing Navy plans to address this shortfall.

The committee directs the Secretary of the Navy, jointly with the Director of Operational Test and Evaluation and the Director of the Test Resource Management Center to report on plans to develop test resources to adequately test naval assets against advanced cruise missile threats. The report should include a classified analysis of the current and projected future threat, required funding and schedule for the development and acquisition of relevant test resources, and impacts on test schedules and adequacy of testing for specific relevant Navy systems. Further, the Secretary of the Navy shall provide the committee with a report containing an assessment of international advanced cruise missile capabilities relative to the United States' capabilities and the feasibility, cost, and schedule for developing similar capabilities for the Navy. The committee directs that these two reports shall be delivered to the congressional defense committees no later than April 15, 2008.

Analyses of the Air Force test and evaluation proposals

The committee notes that both the Department of Defense Appropriations Act for Fiscal Year 2007 (Public Law 109–289) and the statement of managers accompanying the John Warner National Defense Authorization Act for Fiscal Year 2007 (Public Law 109–364) expressed concern over proposed realignments and closures of Air Force test and evaluation facilities. In response to these concerns, the Air Force has delivered an analysis of one such proposal to Congress, and has undertaken a second overall assessment of Air Force test and evaluation activities.

The committee continues to monitor this situation and the iterations of Air Force proposals and strategies to appropriately resource critical test and evaluation functions within a constrained budget. The committee has been concerned in the past with the preservation of a robust test and evaluation capability, leading to establishment of the Test Resource Management Center in the Bob Stump National Defense Authorization Act for Fiscal Year 2003 (Public Law 107–314), to provide oversight over proposed budgets and expenditures for the Major Range and Test Facility Base and to be cognizant of other test and evaluation facilities and resources.

In order to ensure that any reductions in test and evaluation workforce or capabilities are only undertaken after comprehensive and careful analyses of the costs, benefits, and impacts of such decisions on the Department of Defense, the committee directs the Air Force to provide planned actions, criteria used to determine acceptable risk, and supporting data to the Under Secretary of Defense for Acquisition, Technology, and Logistics and the Director of the Test Resource Management Center. The committee directs the Director of the Test Resource Management Center to review and analyze existing and ongoing test and evaluation studies being conducted by the Air Force after their completion and to submit a report that provides the committee with any appropriate conclusions and recommendations on the studies, findings, or planned actions

that affect the capabilities and capacity of the Major Range and Test Facility Base. The committee directs that this report shall be delivered to the congressional defense committees as soon as practicable after the completion of the Air Force studies, and that no implementation of proposed plans be initiated before 60 days after receipt of the Director of the Test Resource Management Center's report by Congress.

Director of Operational Test and Evaluation workforce study

The committee notes that the Director of Operational Test and Evaluation plays a critical role in determining that weapons systems are operationally effective. The Director's efforts help ensure that acquisition programs deliver systems that provide deployed forces with battlefield superiority. The committee notes that the duties of the office of the Director of Operational Test and Evaluation have expanded into areas such as information assurance, force protection, and non-lethal weapons, while continuing the extensive oversight and reporting functions required by statute and regulation. The committee is concerned that the office may not have the workforce required to perform its assigned duties.

Therefore, the committee directs the Director of Operational Test and Evaluation to undertake a comprehensive review and analysis of his workforce requirements and report back to the congressional defense committees no later than April 1, 2008. The report shall include an assessment of projected future workforce requirements, resources required to meet those requirements, and recommendations on additional personnel hiring and retention authorities that would support the Director in the conduct of his required duties.

Ground/air task-oriented radar

The budget request included \$104.4 million in PE 26313M to develop a multi-function radar that would replace five existing single-purpose Marine Corps radar systems used for air defense surveillance and weapons engagement, counter-battery fire, and air traffic control.

The committee is aware that the Marine Corps requirements specified for this system resulted in selection of an S-band radar, and that the first of the four planned increments of the ground/air task-oriented radar (G/ATOR) program includes weapon cueing. S-band radar can do many tasks well, but it is not optimal for weapons engagement. Furthermore, the Marine Corps has terminated its planned weapons engagement system, the Complementary Low-Altitude Weapons System based on the Advanced Medium-Range Air-to-Air Missile.

The committee is concerned that the Department of the Navy has embarked on the development of a new radar system which may be poorly suited for the system's primary functions. Therefore, the committee directs the Secretary of the Navy to conduct an independent assessment and submit a report to the congressional defense committees, with the fiscal year 2009 budget request, on the Marine Corps acquisition of the G/ATOR system. The report shall address: (1) the Marine Corps requirement for weapons engagement, and verify that the planned S-band radar design will support

that requirement; (2) an assessment of the phasing for planned increments, recognizing that the Marine Corps does not yet have a defined weapons engagement requirement (other than cueing of terminal weapons such as Stinger); and (3) an examination of the technical and program management resources needed to effectively execute this complex state-of-the-art development program.

National Security Agency acquisition management

The National Security Agency (NSA) has experienced significant problems over the last decade in transforming itself from the Cold War era to operate effectively in today's global information environment. The Congress and the executive branch concluded that poor acquisition management was a major cause of the NSA's relative lack of success, and the National Defense Authorization Act for Fiscal Year 2004 (Public Law 108-136) prohibited the delegation of Milestone Decision Authority (MDA) to the NSA Director and designated the ongoing transformation program, TRAILBLAZER, as a major defense acquisition program (MDAP).

The Congress intended this action to cause the Senior Acquisition Executives (SAEs) in the Department of Defense (DOD) and the Office of the Director of National Intelligence (ODNI) to take vigorous action to improve the Agency's acquisition management capabilities, and to enforce acquisition discipline and accountability through process controls and milestone reviews.

Although some progress is evident, the TRAILBLAZER program was essentially abandoned, and its successor has significant problems. One of the most serious problems is that the NSA chose to structure the TURBULENCE architecture, a major element of its new Transformation 3.0 activity, as a series of loosely connected projects, not one of which met the threshold for designation as a major systems acquisition. This decision, while permitting the NSA to avoid external acquisition oversight, exacerbated the Agency's weaknesses in systems engineering and systems integration. The Department and the ODNI have tolerated this situation for almost 1.5 years.

The committee directs that TURBULENCE be designated as a major systems acquisition requiring milestone review and approval, and formal oversight, by the DOD and DNI MDAs. In addition, the committee directs that the Director of Operational Test and Evaluation exercise oversight over all major elements of the Agency's Transformation 3.0 architecture, including TURBULENCE and the remaining activities under TRAILBLAZER.

The committee supports the Agency's recent decision to create the position of Chief Technology Officer (CTO), whose responsibilities will include ensuring that all the major elements of the Transformation 3.0 effort are integrated at the enterprise level. The committee is concerned, however, that the Agency still lacks the skills necessary to manage a systems engineering and integration challenge of this size and complexity.

The committee directs that the TURBULENCE program may not proceed to Milestone B without a certification to the congressional defense and intelligence committees from the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)), and the Deputy Director of National Intelligence for Acquisition

(DDNI(A)), that: (1) the program managers for TURBULENCE and TRAILBLAZER are qualified and have the authority and resources necessary to carry out effective program management; and (2) the CTO has the authorities, personnel, funding, and plans necessary to effectively integrate the Agency's Transformation 3.0 activities.

Open Architecture

The Navy has made considerable investments over the past several years in an effort to transition development of surface ship systems to an open business model, commonly referred to as Open Architecture (OA). OA systems are characterized by modular design, public access to design specifications, software reuse, common interface standards, and seamless interoperability between system hardware and software applications. By rejecting proprietary and closed solutions, OA promises to bring to bear the critical elements of competition and innovation to achieve improved system performance and affordability.

Absent an open business model, the ability to modernize the surface force effectively, affordably, and routinely to keep pace against future threats becomes highly problematic. This is well exemplified by the challenges confronting the Navy with a protracted, 20-year plan to modernize the weapon system for Aegis cruisers and destroyers. However, the challenges with implementing OA for surface ship systems are highly problematic in their own right. Absent a comprehensive OA implementation plan that keeps faith with underlying OA principles, the Navy will expend critical financial, technical, and management resources without achieving measurable improvement to system performance or life cycle cost.

The Navy's success in building a future force of 313 ships, and with that, the Navy's ability to meet its long-range warfighting requirements, is directly linked to its success in implementing OA. However, despite having made significant OA investments to date, the Navy's overall progress in transitioning into OA business processes is disappointing. In view of the criticality of this overall effort, Congress needs a clear understanding of the full scope of the effort, the investment required, and the progress achieved towards the objectives outlined above.

Therefore, the committee directs the Secretary of the Navy to submit a report to the congressional defense committees, commencing with the fiscal year 2009 budget request, to be updated quarterly, that outlines the Navy's plan and progress with implementing OA. The report shall include: (i) an integrated schedule outlining OA development and the related surface ship fielding plan; (ii) an assessment of OA development, test, procurement, installation, and operating and support costs; (iii) the Navy's acquisition strategy for leveraging competition in software development; and (iv) the Navy's performance to the plan. Additionally, the report shall: (i) identify software that is intended to be available for reuse by third parties in support of the OA implementation plan; (ii) describe the Navy's progress in making that software and related documentation available through the Navy's Software, Hardware Asset Reuse Enterprise (SHARE) Library; (iii) describe how the Navy is assuring quality for software and related documentation deposited in the SHARE Library; (iv) describe how the Navy

is driving reuse of SHARE Library software; (v) outline contracts which have reused third party software from the SHARE Library; and (vi) identify the impediments to entering outstanding Navy system software into the SHARE Library and the plan for managing these impediments.