

## **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 2007 budget request for research, development, test and evaluation programs, and indicate those programs for which the committee either increased or decreased the requested amounts. As in the past, the administration may not exceed the authorized amounts (as set forth in the tables or, if unchanged from the administration request, as set forth in budget justification documents of the Department of Defense), without a reprogramming action in accordance with established procedures. Unless noted in this report, funding changes to the budget request are made without prejudice.

**NATIONAL DEFENSE AUTHORIZATION FOR FISCAL YEAR 2007**  
(Dollars in Thousands)

<u>Title II — RESEARCH, DEVELOPMENT, TEST &amp; EVALUATION</u>	<u>Authorization</u>	<u>Senate</u>	<u>Senate</u>
	<u>Request</u>	<u>Change</u>	<u>Authorized</u>
Research, Development, Test & Evaluation, Army	10,855,559	295,450	11,151,009
Research, Development, Test & Evaluation, Navy	16,912,223	539,600	17,451,823
Research, Development, Test & Evaluation, Air Force	24,396,767	4,090	24,400,857
Research, Development, Test & Evaluation, Defense-wide	20,809,939	169,000	20,978,939
Operational Test & Evaluation	181,520		181,520
<b>TOTAL RDT&amp;E</b>	<b>73,156,008</b>	<b>1,008,140</b>	<b>74,164,148</b>

**Subtitle A—Authorization of Appropriations****Subtitle B—Program Requirements, Restrictions, and Limitations****Independent estimate of costs of the Future Combat Systems (sec. 211)**

The committee recommends a provision that would withhold \$500.0 million from the amount of funds authorized to be appropriated for the development of the Future Combat Systems (FCS) until the Secretary of Defense submits a report of an independent cost estimate for FCS. The provision requires that the independent cost estimate be conducted by a federally funded research and development center and include the research, development, test and evaluation, and procurement costs for the system development and demonstration phase of the core FCS program; the FCS technologies to be incorporated into the equipment of the current force of the Army; the installation kits for the incorporation of the FCS technologies into the current force equipment; the systems treated as the complementary systems for the FCS program; science and technology programs that support the FCS program and any pass-through charges anticipated to be assessed by the lead systems integrator of the FCS and its major sub-contractors.

Section 211 of the Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005 (Public Law 108–375) required the Undersecretary of Defense for Acquisition, Technology, and Logistics (USD (AT&L)) to submit a program cost estimate to the Congress prior to the FCS Milestone B update required by the acquisition decision memorandum that approved the FCS program entry into Milestone B. This report requirement was in response to the restructure of the FCS program to include costs of transferring FCS technology to the current force programs of the Army, and to restore several FCS platforms into the program. However, the report was never delivered because the Milestone B update was postponed.

Section 213 of the National Defense Authorization Act for Fiscal Year 2006 (Public Law 109–163) required the USD (AT&L) to submit the results of an independent cost estimate, prepared by the cost analysis improvement group (CAIG) of the Office of the Secretary of Defense, with respect to the Future Combat Systems program. While the CAIG independent cost estimate may provide insights into the cost of the FCS program, the committee believes that the Army may be underestimating FCS costs.

The Government Accountability Office highlighted in testimony before the Subcommittee on AirLand of the Committee on Armed Services,

The total cost for the FCS program, now estimated at \$160.7 billion (then year dollars), has climbed 76 percent from the Army's first estimate. Because uncertainties remain regarding FCS's requirements and the Army faces significant challenges in technology and design maturity, we believe the Army's latest cost estimate still lacks a firm knowledge base. Furthermore, this latest estimate does not include complementary programs that are essential for

FCS to perform as intended, or all of the necessary funding for FCS spin-outs.

The committee believes that an independent cost estimate will provide the committee additional assurance as to the fidelity of the Army's own cost estimate and a better understanding of the factors that have driven up the costs of the FCS program.

**Funding of defense science and technology program (sec. 212)**

The committee recommends a provision that would extend the funding objective for science and technology (S&T) programs, as required by section 212 of the National Defense Authorization Act for Fiscal Year 2000 (Public Law 106-65), to fiscal year 2012, and require the submission of two reports if the Department of Defense fails to meet the outlined funding objective in any single fiscal year budget request. The first required report would be submitted with the budget request in the following year and would provide a detailed, prioritized list of high-quality, military relevant, unfunded opportunities in defense science and technology. The second report would be submitted within 6 months of the current budget request and would contain a classified and unclassified analysis and evaluation of international research and technology capabilities that threaten U.S. global leadership in key areas described by the Joint Warfighting Science and Technology Plan, the Defense Technology Area Plan, and the Basic Research Plan.

The committee continues to support stable funding for Department S&T programs, which have a demonstrated history of supporting the warfighter and exploring innovative solutions to current challenges and to emerging and projected threats. Section 212 provided a modest funding objective for S&T of 2 percent growth over inflation from budget request to budget request. The committee commends the Department for supporting long-term research efforts, which have grown in rough parallel to the defense budget, but believes strict adherence to simple investment targets is necessary to ensure consistent and stable funding over time. The reports required by this section, if funding objectives are not reached, would inform the Department and Congress on the potential consequences of such decisions and would provide valuable information to Congress on priority areas that would benefit from additional resources.

**Hypersonics development (sec. 213)**

The committee recommends a provision that would direct the Secretary of Defense to establish a joint technology office (JTO) to coordinate, integrate, and manage hypersonics research, development, and demonstration programs and budgets. Under the provision, the JTO would: provide for integration of all department hypersonics programs; coordinate Department of Defense hypersonics programs with the National Aeronautics and Space Administration (NASA); and maintain approval and certification authority for hypersonics system demonstration programs. The provision would further require the JTO to work with the joint staff and NASA to develop a roadmap for a joint hypersonics research program to meet short-, mid-, and long-term goals consistent with De-

partment missions and requirements and with clear acquisition transition plans. The roadmap would be submitted to Congress with the fiscal year 2008 budget request.

The committee has followed with great interest the development of hypersonic technologies over the past several years and believes that successful development of the capability holds tremendous potential for high-speed strike, global reach and space access missions. However, significant challenges remain.

The committee is concerned that Department hypersonics research programs are not integrated or even coordinated, either internally or with NASA efforts, especially since the cancellation of the X-43A project. The committee notes that some Navy hypersonics research programs, conducted with the Defense Advanced Research Projects Agency (DARPA), will be completed in fiscal year 2007, yet a transition path has not been identified. Further, it is not clear how the Navy RATTLS program complements parallel approaches to high-speed strike missions. DARPA planned to initiate a new hypersonics effort in fiscal year 2007 for a "transatmospheric" vehicle to "further mature, integrate and flight-demonstrate propulsion technologies developed by the high speed reusable demonstration and Falcon programs." DARPA programs also lack a clear transition path or tangible service transition support. Finally, the Air Force plans to conduct a first-flight demonstration of the X-51A Scramjet in fiscal year 2009, yet the Office of the Air Force Director of Test and Evaluation (T&E), which conducts annual surveys on future T&E requirements, indicates that no program office has reported a need for hypersonics testing facilities. The Army has indicated similar concern with insufficient links between hypersonics research efforts and service requirements. The committee also recognizes that the operational community views maturity of the technology and prospects for near-term transition with some skepticism.

The activities required by the recommended provision are designed to ensure the Department pursues a joint, integrated hypersonics program to achieve the long-term vision of a reconfigurable, combined-cycle aircraft that would provide the nation with meaningful operational capabilities, including strategic reconnaissance, global strike, and rapid access to space.

#### **Trident sea-launched ballistic missiles (sec. 214)**

The committee recommends a provision that would prohibit \$95.0 million of the funds authorized to be appropriated for the Conventional Trident Modification (CTM) program from being obligated or expended in support of the program until the Secretary of Defense, in consultation with the Secretary of State, submits a report to the congressional defense committees.

The report would address a wide range of issues associated with the Navy proposal to modify twenty-four Trident D-5 ballistic missiles, which currently carry nuclear warheads, to each carry four conventional kinetic warheads. Under the proposal, two modified D-5 missiles with conventional kinetic warheads would be deployed on each of the Ohio Class Trident ballistic missile submarines.

The provision would also require the Secretary of Defense and the Secretary of State to include in the report a joint statement on

how to ensure that the use of a conventional D-5 missile will not result in an intentional, inadvertent, mistaken or accidental reciprocal or responsive launch of a nuclear strike by another country.

The provision would permit the Navy to use up to \$32.0 million of the funds authorized in PE 0604327N, for Advanced Conventional Strike Capability. The committee further directs the Navy to use the \$32.0 million only for research and development on technologies in support of the conventional D-5 modification, but not to support procurement or deployment activities in support of the conventional Trident modification program. In addition, up to \$20.0 million of the funds authorized for the CTM program may be used to conduct the required study.

### **Subtitle C—Missile Defense Programs**

#### **Availability of research, development, test, and evaluation funds for fielding ballistic missile defense capabilities (sec. 231)**

The committee recommends a provision that would authorize the use of funds, authorized to be appropriated for fiscal year 2008, for research, development, test, and evaluation for the Missile Defense Agency, for the development and fielding of ballistic missile defense capabilities.

#### **Policy of the United States on priorities in the development, testing, and fielding of missile defense capabilities (sec. 232)**

The committee recommends a provision that would make it the policy of the United States to accord a priority within the missile defense program to the development, testing, fielding, and improvement of effective near-term missile defense capabilities, including ground-based interceptors, sea-based interceptors, additional Patriot PAC-3 units, the Terminal High Altitude Area Defense system, and sensors based on land, sea, and in space that support these interceptor systems.

Over the last two years, Congress has advised the Missile Defense Agency (MDA) to focus its efforts on those missile defense systems in which heavy investments already have been made and which are now just starting to provide a measure of protection for the United States and its deployed forces. Accordingly, the committee believes that rigorous and successful development, testing, and fielding of operational systems in sufficient numbers to counter the threat must take priority over the development of the next generation of missile defense systems.

The committee notes that in its fiscal year 2007 Budget Estimate Overview, the MDA states that it “worked within its fiscal controls across the future years defense program to weigh alternatives and balance the approaches to a layered defense.” The committee believes the MDA, in pursuing a balanced investment approach, has funded longer-term efforts to the detriment of the successful development, testing, and fielding of the current generation of missile defense systems. For example, the MDA is requesting funds for only a single intercept test of the ground-based midcourse defense (GMD) system in 2007. This would appear to be a high-risk ap-

proach given the importance of this program for the defense of the United States against long-range ballistic missile attack. The MDA also reduced the number of ground- and sea-based interceptor missile deliveries over the future-years defense program in order to invest more in development upgrades to these and other systems. While evolutionary improvements to the current systems are prudent and should continue, the committee believes additional funding is necessary to restore missile inventory to levels previously thought necessary by the Department of Defense to counter the threat.

While reducing the funding necessary both for critical near-term testing and for increasing the inventory of interceptor missiles, the Missile Defense Agency plans to spend approximately \$9.0 billion between fiscal years 2006 and 2015 to develop the Kinetic Energy Interceptor (KEI). In a prepared statement to the Subcommittee on Strategic Forces of the Committee on Armed Services, the Director of the MDA stated that the KEI is a boost-phase effort that “could be used as part of an affordable, competitive next-generation upgrade for our mid-course or even terminal interceptors.”

The committee does not believe the Department of Defense should make such a large investment in “a next generation upgrade” until the current generation of missile defense systems has been successfully tested and fielded in numbers sufficient to address the near-term threat. Continued research and development of the critical technologies related to KEI is warranted, but at a much lower level, and as a hedge against the failure of the lead boost-phase missile defense candidate, the Airborne Laser.

Accordingly, the committee recommends the following adjustments to the budget request for missile defense programs.

#### **Ground-based Midcourse Ballistic Missile Defense**

The budget request included \$2.4 billion in PE 63882C for the Ballistic Missile Defense (BMD) Midcourse Defense Segment to cover continued development, ground and flight testing, fielding, and support for the Ground-based Midcourse Defense (GMD) system. The committee recommends an increase of \$200.0 million in PE 63882C, specifically to enhance the GMD testing program and to enable the GMD system to perform concurrent test and operations (i.e., permit testing, maintenance, and training activities to continue, while simultaneously allowing the combatant commander to maintain readiness to execute missile defense operations in an emergency). The committee directs that \$115.0 million be used for an additional integrated intercept test of the GMD system in 2007; \$60.0 million be used to accelerate capabilities that would enable concurrent test and operations of the GMD system; and \$25.0 million be allocated for long-lead purchases for six ground-based interceptor test missiles in fiscal years 2008 and 2009. The committee expects the MDA to adjust its spending over fiscal years 2008–2011 to complete the tasks directed above.

The committee directs the Director of the MDA to submit a report to the congressional defense committees no later than March 1, 2007. The report should detail the efforts that would need to be taken and funding required to maintain continued production of the Boost Vehicle Plus (BV+) interceptor, and make an assessment

of the risk of inadequate GBI availability using the Orbital Boost Vehicle (OBV).

#### **Aegis Ballistic Missile Defense**

The budget request included \$1.0 billion in PE 63892C, for the sea-based Aegis Ballistic Missile Defense (BMD) system. The Aegis BMD is intended to provide protection against short- and medium-range ballistic missiles. The committee recommends an increase of \$100.0 million in PE 63892C to restore the delivery of SM-3 interceptors to 120 by the end of fiscal year 2011, and to increase the overall effectiveness of the Aegis BMD system capability against longer-range threats. Of the increased amount, the committee directs \$70.0 million be applied toward procuring 24 additional SM-3 block 1B missiles over fiscal years 2008 to 2011, and \$30.0 million be used to accelerate SM-3 and Aegis weapon system integration to take full advantage of missile and weapons systems capabilities, including the BMD signal processor and two-color seeker. MDA is expected to budget for the completion of these tasks over fiscal years 2008 to 2011.

#### **Patriot missile defense system**

The budget request included \$489.1 million in Missile Procurement, Army (MPA), for 108 Patriot PAC-3 missiles; and \$70.0 million for Patriot modifications. The Patriot ballistic missile defense system demonstrated its worth during Operation Iraqi Freedom by intercepting all nine Iraqi short-range ballistic missiles that were engaged by Patriot. The committee notes that the predominant foreign ballistic missile threat to United States forces is from short-range ballistic missiles, and that the Patriot is designed to defend against such ballistic missile threats. The committee recommends an increase of \$75.0 million in MPA to support the upgrade of Patriot battalions to the configuration-3 capability. This upgrade would significantly extend the defensive range and capability of over 2,000 Patriot PAC-2 missiles now in the inventory. Additional funding for these Patriot PAC-3 upgrades has been included on the Chief of Staff of the Army's unfunded priorities list. The committee also recommends an increase of \$25.0 million in MPA for purchases of 8 additional PAC-3 missiles in fiscal year 2007, in response to calls from combatant commanders for more Patriot missiles to counter the threat.

#### **Kinetic Energy Interceptor**

The budget request included \$405.5 million in PE 63886C, for Ballistic Missile Defense System Interceptors, for continued development of the Kinetic Energy Interceptor (KEI). The request is almost double the amount appropriated for KEI in fiscal year 2006, and begins a sharp rise in projected KEI spending that amounts to \$4.6 billion between fiscal years 2007 and 2011. As noted above, the committee believes this level of effort is too high for a boost phase risk-reduction effort and next generation missile defense system. The committee recommends a decrease of \$200.0 million in PE 63886C for the KEI program. The committee believes these funds are more urgently required for an additional flight intercept test of the GMD system in fiscal year 2007 and to help increase the num-

ber of SM-3 missile deliveries starting in fiscal year 2008. The committee directs that remaining funds be used to mature those critical technologies necessary to demonstrate the viability of the KEI design.

#### **Ballistic missile defense reductions**

The budget request included \$506.8 million in PE 63889C, for Ballistic Missile Defense Products; 473.0 million in PE 63890C, for Ballistic Missile Defense System Core; and \$374.5 million in PE 63891C, for MDA Special Programs. The committee recommends a decrease of \$40.0 million in PE 63889C, for Ballistic Missile Defense Products; a decrease of \$40.0 million in PE 63890C, for Ballistic Missile Defense System Core; and a decrease of \$20.0 million in PE 63891C, for MDA Special Programs, to offset the additional funding necessary for the GMD and Aegis BMD programs. The Director of the MDA may take these reductions in funding from among the program elements mentioned above, at his discretion.

#### **One-year extension of Comptroller General assessments of ballistic missile defense programs (sec. 233)**

The committee recommends a provision that would extend until fiscal year 2008 the requirement for the Comptroller General to provide an assessment of the extent to which the Missile Defense Agency achieved the goals established for that fiscal year for each ballistic missile defense program of the Department of Defense.

#### **Submittal of plans for test and evaluation of the operational capability of the ballistic missile defense system (sec. 234)**

The committee recommends a provision that would require each plan approved by the Director of Operational Test and Evaluation to test and evaluate the operational capability of the ballistic missile defense system, as required by section 234(a) of the National Defense Authorization Act for Fiscal Year 2006 (Public Law 109-163; 10 U.S.C. 2431 note), to be submitted to the congressional defense committees within 30 days of such approval.

#### **Annual reports on transition of ballistic missile defense programs to the military departments (sec. 235)**

The committee recommends a provision that would require the Under Secretary of Defense for Acquisition, Technology, and Logistics to submit a report to the congressional defense committees, not later than March 1 of 2007, and annually thereafter through 2013, on the plans of the Department of Defense for the transition of missile defense programs from the Missile Defense Agency to the military departments. Each report required would cover the period of the future-years defense program for the year in which the report is submitted. Each report would include: which missile defense programs are, or are not, planned for transition; the schedule for each transition; a description of the status of the transition plans and agreements; an identification of the entity responsible for funding each program to be transitioned; a description of the funds that will be used for each such program; and an explanation of the num-

ber of systems planned to be procured for each program to be transitioned, and a procurement schedule.

#### **Subtitle D—Other Matters**

##### **Extension of requirement for Global Research Watch Program (sec. 251)**

The committee recommends a provision that would extend the requirement for the development of a Global Research Watch database until September 30, 2011. The committee commends the Director of Defense Research and Engineering (DDRE) for development of the Global Technology Knowledge Base program as a response to the Global Research Watch mandate under section 241 of the National Defense Authorization Act for Fiscal Year 2004 (Public Law 108–136). The pilot database informs Department of Defense decision makers on the capabilities of the international community in areas of defense science and technology. The committee directs the DDRE to aggressively work to include international capabilities analyses from the military departments and defense agencies in the program as directed in the original statute, section 2365 of title 10, United States Code.

The committee also notes that coordinating the efforts of the Global Research Watch program with the Militarily Critical Technologies Program would provide the Department with an additional source of data on international research capabilities and their relationships to critical defense technologies and systems. Elsewhere in this report, the committee recommends a transfer of \$2.0 million from Operation and Maintenance, Defense-Wide to PE 65110D8Z for critical technology support to provide for more timely updates to the Militarily Critical Technologies List and the Defense Science and Technology List. The committee urges the DDRE to consider establishing a domestic version of the technology knowledge base to inform industrial base policy decisions. The committee notes that this knowledge base should be developed through a collaboration of the Department technology development and industrial policy communities and should utilize input from defense industry.

Finally, the committee notes that the international community may have capabilities, research, and technologies that could be useful in the Department's efforts to combat improvised explosive devices (IEDs). The committee directs the Director of the Joint IED Defeat Office (JIEDDO) to work with the DDRE to undertake an international survey of research and technology that would be supportive of the combating IED mission. The committee directs the Director of JIEDDO and the DDRE to report to Congress on the results of the survey to include a description of any current or planned international cooperative technology development programs in this area and an accounting of funding available for such activities. This report should be transmitted to Congress not later than January 31, 2007.

##### **Expansion and extension of authority to award prizes for advanced technology achievements (sec. 252)**

The committee recommends a provision that would extend the authority to award prizes for advanced technology achievements to

September 30, 2011. The provision would also elevate the authority to the Director of Defense Research and Engineering (DDRE), which would allow for its use by the Defense Advanced Research Projects Agency or other components under the DDRE. The provision would further expand the authority to include the military departments, and would update reporting requirements under section 257 of the National Defense Authorization Act of Fiscal Year 2006 (Public Law 109–163) on the use of the authority to include information relevant to the military departments and to ensure proper oversight of the program. The committee directs the Secretary of Defense to budget for anticipated costs to execute the prize competitions and to clearly identify those funds in annual budget justification materials.

**Policies and practices on test and evaluation to address emerging acquisition approaches (sec. 253)**

The committee recommends a provision that would require the Under Secretary of Defense for Acquisition, Technology, and Logistics, in coordination with the Director, Operational Test and Evaluation (OTE) and the Director of the Defense Test Resource Management Center, to review and revise policies and practices on test and evaluation in light of emerging approaches to acquisition. The provision would require consideration of rapid, time-certain and traditional acquisition timeframes in review of current test and evaluation regulations to ensure adequate and timely testing is conducted.

The committee notes that robust analysis of technology maturity levels combined with early planning for developmental and operational testing contribute to successful acquisition programs. The committee further notes that rapid fielding initiatives, which have proven successful in providing critically needed equipment and capabilities to the warfighter, may contain lessons learned for the test and evaluation process. The committee believes it is necessary to update policies to ensure adequate test and evaluation in the development of acquisition programs, in planning for testing facility requirements, and in defining test and evaluation processes for the growing variety of acquisition and deployment strategies.

Finally, the committee strongly encourages the Secretary of Defense to nominate a permanent Director of Operational Test and Evaluation as soon as possible. The committee notes that this position has been vacant since February 15, 2005. This congressionally-mandated, presidentially-nominated, and Senate-confirmed position plays a key role in ensuring the operational effectiveness of our weapons systems in combat. The Director supports efforts to reform acquisition processes and effectively and efficiently develop and deploy major, complex systems like the Future Combat Systems, Advanced Seal Delivery System, and Joint Strike Fighter, in a manner that is operationally effective, on budget, and within planned schedules.

**Development of the propulsion system for the Joint Strike Fighter (sec. 254)**

The committee recommends a provision that would direct the Secretary of Defense to continue the development and sustainment

of the Joint Strike Fighter (JSF) program with two competitive propulsion systems throughout the life cycle of the aircraft, or enter into a one-time firm-fixed-price contract for a selected propulsion system for the life cycle of the aircraft following the initial service release of the JSF F135 propulsion system in fiscal year 2008.

During the 1970's and early 1980's, Pratt & Whitney was the sole source provider of engines for the F-14, F-15, and F-16 aircraft. Because of persistent engine problems that resulted in the loss of aircraft and degraded readiness, Congress directed the Department of Defense to develop and produce an engine to compete with Pratt & Whitney engines on these aircraft. The benefits that resulted from this competition included improved performance, reduced risk, increased readiness, lower cost of ownership, improved contractor responsiveness to customer needs, and over \$4.0 billion of cost savings. Congress once again directed the Department to provide for an engine competition for the JSF in 1996 out of concerns for a lack of competition expressed in the National Defense Authorization Act for Fiscal Year 1996 (P.L. 104-106). Congress has consistently supported a competitive engine program for the Joint Strike Fighter for the past 10 years.

The JSF program is the largest acquisition program, in terms of funding, in Department of Defense history. Total JSF deliveries may well exceed 4,000 aircraft worldwide, with a resultant level of propulsion business in the tens of billions of dollars. The committee is concerned that relying on a sole engine supplier for a single-engine aircraft to do multiple missions for multiple services and multiple nations presents an unnecessary operational and financial risk to our nation.

The committee is also concerned that the Department's analysis provided to the committee, as justification for the termination of the F136 interchangeable engine, accounted for only 30 percent of the engine costs over the life cycle of the aircraft and failed to comply with the Department's policy on economic analysis that would have required the inclusion of the total life cycle cost. If the Department had conducted a full life cycle analysis, the committee believes that the results of the analysis would show significant cost savings that could be achieved through a competitive engine strategy. The committee believes that through the enduring value of competition, sufficient savings will be generated from a series of competitive engine procurements over the life cycle of the aircraft that will more than offset the cost of completing the F136 engine development. In order to ensure that the Congress has the complete picture of the full life cycle costs, the committee has recommended another provision described elsewhere in this report that would require the Secretary of Defense and the Comptroller General to conduct independent life cycle cost analyses addressing this issue.

#### **Independent cost analyses for Joint Strike Fighter engine program (sec. 255)**

The committee recommends a provision that would direct the Secretary of Defense, a federally-funded research and development center (FFRDC) chosen by the Secretary, and the Comptroller General to conduct independent life cycle cost analyses of the develop-

ment and sustainment of the Joint Strike Fighter (JSF) program with two competitive propulsion systems throughout the life cycle of the aircraft, versus terminating the alternate engine development and proceeding with only one engine.

The provision would also require that the Comptroller and the FFRDC certify that they had access to sufficient information upon which to make informed judgments on the life cycle costs of the two alternatives.

As noted elsewhere in this report, the committee is concerned that the Department of Defense analysis provided as justification for the termination of the F136 interchangeable engine did not account for all of the costs over the life cycle of the aircraft.

#### **Sense of the Senate on technology sharing of Joint Strike Fighter technology (sec. 256)**

The committee recommends a provision that would express the sense of the Senate that the Secretary of Defense should share technology with respect to the Joint Strike Fighter (JSF) between the United States Government and the Government of the United Kingdom.

The committee recognizes the importance of the strong political and military alliance between the United States and the United Kingdom. The committee places a high premium on ensuring that U.S. and U.K. armed forces can operate together seamlessly in ongoing and future combined operations.

The committee is concerned that existing U.S. regulations and procedures governing U.S.-U.K. technology sharing may unnecessarily impede information-sharing and military interoperability to the detriment of achieving our common security interests in ongoing and future operations. With the increasing complexity of technology and its growing importance to combat power, the ability to share information and technology in general between the United States and the United Kingdom is increasingly important. Anecdotal evidence suggests that existing impediments are unnecessarily complicating the planning, coordination, and execution of combined military operations in Iraq and Afghanistan.

The committee notes that technology sharing is a two-way street. The United Kingdom has made important contributions to a variety of U.S. military capabilities ranging from improvised explosive device (IED) detection technology to aircraft propulsion system technology. The committee believes such contributions from allies could become increasingly important given the many demands on the U.S. defense budget and the technological challenges we can expect to face on the battlefield of the future.

The committee is concerned that, until the issue of technology sharing between the United States and the United Kingdom is resolved, the potential for full cooperation could be undermined, to the detriment of both countries. It is reasonable for the United States and the United Kingdom to seek a degree of operational sovereignty to ensure successful operation of the JSF by its military services, including the ability to maintain, repair, and upgrade the fleet to meet the future needs of U.S. and U.K. armed forces. It is also reasonable for both nations to protect the most sensitive tech-

nologies. Resolving the tensions between these two reasonable tenets is the dilemma.

With these considerations in mind, the committee strongly recommends that the President enter into a bilateral agreement with the United Kingdom to provide for the sharing of defense technology between our two governments in order to facilitate closer defense cooperation between the United States and the United Kingdom. Such an agreement should: (1) promote greater interoperability in the conduct of current and future military operations; (2) establish a vehicle and set policy for greater and easier sharing between the Governments of the United States and the United Kingdom of both classified and unclassified goods, technologies, and services; (3) drive greater bilateral, interagency, and industry coordination at the strategic, planning, resource, and execution levels; and (4) be consistent with the national security interests of both nations.

#### **Budget Items—Army**

**Title II-RDT and E**

(Dollars in Thousands)

<u>Acct</u>	<u>Account</u>	<u>Line</u>	<u>Program Title</u>	<u>EY2007</u>	<u>Senate</u>	<u>Senate</u>
				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
			<b>RESEARCH, DEVELOPMENT, TEST &amp; EVALUATION, ARMY</b>			
2040	0601101A	1	IN-HOUSE LABORATORY INDEPENDENT RESEARCH	19,402		19,402
2040	0601102A	2	DEFENSE RESEARCH SCIENCES	137,568	14,100	151,668
			Advanced ground reliability research		[1,000]	
			Document exploitation		[4,000]	
			Integrated nanosensor technologies for NBC detection applications		[1,000]	
			Dynamic landscape support program		[2,000]	
			Nanomaterials for ISR		[3,000]	
			Organic semiconductor modeling and simulation research		[2,100]	
			Early career awards		[1,000]	
2040	0601103A	3	UNIVERSITY RESEARCH INITIATIVES	68,545	2,000	70,545
			Low temperature vehicle performance research		[2,000]	
2040	0601104A	4	UNIVERSITY AND INDUSTRY RESEARCH CENTERS	86,416	7,250	93,666
			Information assurance		[1,000]	
			Integrated systems in sensing, imaging and communications research		[1,000]	
			Nanotubes composite materials research		[2,000]	
			Development of slow rotor concepts		[2,000]	
			SOUTHCOM regional analyses		[1,000]	
			Transparent nanocomposite armor		[250]	
2040	0601105A	5	FORCE HEALTH PROTECTION			

**Title II-RDT and E**  
(Dollars in Thousands)

<u>Acct</u>	<u>Account</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2007</u> <u>Request</u>	<u>Senate</u> <u>Change</u>	<u>Senate</u> <u>Authorized</u>
2040	0602105A	6	MATERIALS TECHNOLOGY Thermoplastic composite body armor Future affordable multi-utility materials Simulations of improvised explosive devices Control system for the laser powder deposition manufacturing process	18,822	5,400 [1,000] [1,600] [500] [300]	24,222
2040	0602120A	7	SENSORS AND ELECTRONIC SURVIVABILITY Munition shape charge control research Advanced microelectronics manufacturing Lighter-than-air unmanned vehicle with scalable payload capabilities	38,428	4,500 [3,000] [1,500]	42,928
2040	0602122A	8	TRACTOR HIP	8,466		8,466
2040	0602211A	9	AVIATION TECHNOLOGY	32,804		32,804
2040	0602270A	10	ELECTRONIC WARFARE TECHNOLOGY	19,218		19,218
2040	0602303A	11	MISSILE TECHNOLOGY Hypervelocity ground testing Unmanned air systems technology	59,439	6,000 [3,500] [2,500]	65,439
2040	0602307A	12	ADVANCED WEAPONS TECHNOLOGY	19,430		19,430
2040	0602308A	13	ADVANCED CONCEPTS AND SIMULATION Surveillance and targeting robot platform	16,181	3,000 [3,000]	19,181
2040	0602601A	14	COMBAT VEHICLE AND AUTOMOTIVE TECHNOLOGY Advanced electrical drive	59,304	2,500 [2,500]	61,804
2040	0602618A	15	BALLISTICS TECHNOLOGY	52,221		52,221
2040	0602622A	16	CHEMICAL SMOKE AND EQUIPMENT DEFEATING TECHNOLOGY	2,212		2,212
2040	0602623A	17	JOINT SERVICE SMALL ARMS PROGRAM	6,247		6,247

## Title II-RDT and E

(Dollars in Thousands)

<u>Acct</u>	<u>Account</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2007 Request</u>	<u>Senate Change</u>	<u>Senate Authorized</u>
2040	0602624A	18	WEAPONS AND MUNITIONS TECHNOLOGY	35,344	10,000	45,344
			Transition of active coatings technology		[2,000]	
			Parts-on-demand		[3,000]	
			UGV weaponization		[2,500]	
			Rarefaction wave gun		[2,500]	
2040	0602705A	19	ELECTRONICS AND ELECTRONIC DEVICES	42,175		42,175
2040	0602709A	20	NIGHT VISION TECHNOLOGY	23,907		23,907
2040	0602712A	21	COUNTERMINE SYSTEMS	22,088		22,088
2040	0602716A	22	HUMAN FACTORS ENGINEERING TECHNOLOGY	18,858	2,500	21,358
			Team performance and optimization research		[2,500]	
2040	0602720A	23	ENVIRONMENTAL QUALITY TECHNOLOGY	17,923	5,000	22,923
			Mapping and detection of UXO		[5,000]	
2040	0602782A	24	COMMAND, CONTROL, COMMUNICATIONS TECHNOLOGY	21,193		21,193
2040	0602783A	25	COMPUTER AND SOFTWARE TECHNOLOGY	3,844		3,844
2040	0602784A	26	MILITARY ENGINEERING TECHNOLOGY	50,098		50,098
2040	0602785A	27	MANPOWER/PERSONNEL/TRAINING TECHNOLOGY	16,200		16,200
2040	0602786A	28	WARFIGHTER TECHNOLOGY	25,436	3,500	28,936
			Ballistic tent inserts		[2,000]	
			Biosecurity research for soldier food safety		[1,500]	
2040	0602787A	29	MEDICAL TECHNOLOGY	75,407	5,500	80,907
			Advanced bioengineering for enhancement of soldier survivability		[2,000]	
			Blast protection research		[1,000]	
			Protein hydrogel treatment		[2,500]	
2040	0603001A	30	WARFIGHTER ADVANCED TECHNOLOGY	45,666		45,666

**Title II-RDT and E**  
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				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
2040	0603002A	31	MEDICAL ADVANCED TECHNOLOGY	50,757	23,500	74,257
			Advanced lower limb prosthesis		[2,000]	
			Applied emergency hypothermia		[3,000]	
			Fibrinogen bandage improvements		[3,000]	
			Integrated clinical information systems		[2,000]	
			Medical imaging		[1,000]	
			Tissue engineering research		[2,000]	
			Diagnosis and treatment of post traumatic stress disorder		[2,000]	
			Soldier treatment and regeneration research		[3,500]	
			Surgical Safety System		[2,000]	
			Robotic tele-surgery research		[3,000]	
2040	0603003A	32	AVIATION ADVANCED TECHNOLOGY	64,654	16,500	81,154
			Excalibur		{14,000}	
			Quick Materiel Express Delivery System		[2,500]	
2040	0603004A	33	WEAPONS AND MUNITIONS ADVANCED TECHNOLOGY	74,717	2,000	76,717
			Nanotechnology manufacturing		[2,000]	

### Title II-RDT and E

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				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
2040	0603005A	34	COMBAT VEHICLE AND AUTOMOTIVE ADVANCED TECHNOLOG	109,952	35,000	144,952
			Advanced thermal management controls		[2,000]	
			Anti-ballistic windshield armor		[3,000]	
			Armored composite cab program		[3,000]	
			Compressible Magneto-Rheological (CMR) fluids		[1,000]	
			Logistical fuel processors		[1,500]	
			Fuel cell ground support equipment demonstration		[3,000]	
			Next generation nontactical vehicle propulsion		[3,000]	
			Segmented band track		[1,500]	
			Solid oxide fuel cell materials and manufacturing		[2,000]	
			Tactical vehicle design tools		[2,000]	
			Power electronics systems research		[3,000]	
			Unmanned ground vehicle initiative		[10,000]	
2040	0603006A	35	COMMAND, CONTROL, COMMUNICATIONS ADVANCED TECHN	10,851		10,851
2040	0603007A	36	MANPOWER, PERSONNEL AND TRAINING ADVANCED TECHNOL	6,794	2,000	8,794
			Adaptive command and control team training		[2,000]	
2040	0603008A	37	ELECTRONIC WARFARE ADVANCED TECHNOLOGY	44,022		44,022
2040	0603009A	38	TRACTOR HIKE	9,324		9,324
2040	0603015A	39	NEXT GENERATION TRAINING & SIMULATION SYSTEMS	18,296	6,000	24,296
			Joint Fires and Effects Training System		[6,000]	
2040	0603020A	40	TRACTOR ROSE	5,183		5,183
2040	0603100A	41	IED DEFEAT TECHNOLOGY DEVELOPMENT		2,000	12,376
2040	0603103A	42	EXPLOSIVES DEMILITARIZATION TECHNOLOGY	10,376		
			Missile recycling capability		[2,000]	
2040	0603105A	43	MILITARY HIV RESEARCH	7,042		7,042

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(Dollars in Thousands)

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				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
2040	0603125A	44	COMBATING TERRORISM, TECHNOLOGY DEVELOPMENT	7,497		7,497
2040	0603238A	45	GLOBAL SURVEILLANCE/AIR DEFENSE/PRECISION STRIKE TECH	12,995		12,995
2040	0603270A	46	ELECTRONIC WARFARE TECHNOLOGY	18,612		18,612
2040	0603313A	47	MISSILE AND ROCKET ADVANCED TECHNOLOGY	42,127		42,127
2040	0603322A	48	TRACTOR CAGE	19,192		19,192
2040	0603606A	49	LANDMINE WARFARE AND BARRIER ADVANCED TECHNOLOGY	25,554		25,554
2040	0603607A	50	JOINT SERVICE SMALL ARMS PROGRAM	7,202		7,202
2040	0603710A	51	NIGHT VISION ADVANCED TECHNOLOGY	44,307		44,307
2040	0603728A	52	ENVIRONMENTAL QUALITY TECHNOLOGY DEMONSTRATIONS	14,089		14,089
2040	0603734A	53	MILITARY ENGINEERING ADVANCED TECHNOLOGY	7,848		7,848
2040	0603772A	54	ADVANCED TACTICAL COMPUTER SCIENCE AND SENSOR TECH	64,604	3,000	67,604
			Hand-held phraselator translation technology		[3,000]	
2040	0603024A	55	UNIQUE ITEM IDENTIFICATION (UID)	1,520		1,520
2040	0603305A	56	ARMY MISSILE DEFENSE SYSTEMS INTEGRATION(NON SPACE)	11,233	51,000	62,233
			Advanced hypersonic weapon mod & sim		[11,000]	
			Distributed ops control center		[5,000]	
			Missile & space model and simulation technology		[4,000]	
			Future TOC hardware		[5,000]	
			Protected test link		[2,000]	
			Thermal protection systems for hypersonics		[3,000]	
			Low cost avionics		[2,000]	
			Advanced fuel cell research		[2,000]	
			High Sentinel airship		[2,000]	
			Advanced electronics integration		[5,000]	
			Standoff sensor for radionuclide identification		[10,000]	

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				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
2040	0603308A	57	ARMY MISSILE DEFENSE SYSTEMS INTEGRATION (SPACE) Advanced hypersonic weapon	11,771	20,000 [20,000]	31,771
2040	0603327A	58	AIR AND MISSILE DEFENSE SYSTEMS ENGINEERING	143,417	3,000 [3,000]	146,417
2040	0603619A	59	ASMD architecture analysis program	8,439		8,439
2040	0603627A	60	LANDMINE WARFARE AND BARRIER - ADV DEV	10,714		10,714
2040	0603639A	61	TANK AND MEDIUM CALIBER AMMUNITION	5,415		5,415
2040	0603653A	62	ADVANCED TANK ARMAMENT SYSTEM (ATAS)	2,778		2,778
2040	0603747A	63	SOLDIER SUPPORT AND SURVIVABILITY	20,077		20,077
2040	0603766A	64	TACTICAL ELECTRONIC SURVEILLANCE SYSTEM - ADV DEV	5,337		5,337
2040	0603774A	65	NIGHT VISION SYSTEMS ADVANCED DEVELOPMENT	5,166	5,000 [5,000]	10,166
2040	0603779A	66	ENVIRONMENTAL QUALITY TECHNOLOGY Demonstration and validation	158,157		158,157
2040	0603782A	67	WARFIGHTER INFORMATION NETWORK-TACTICAL	4,946		4,946
2040	0603790A	68	NATO RESEARCH AND DEVELOPMENT	6,542		6,542
2040	0603801A	69	AVIATION - ADV DEV			
2040	0603802A	70	WEAPONS AND MUNITIONS - ADV DEV			
2040	0603804A	71	LOGISTICS AND ENGINEER EQUIPMENT - ADV DEV	13,216		13,216
2040	0603805A	72	COMBAT SERVICE SUPPORT CONTROL SYSTEM EVALUATION A	8,645		8,645
2040	0603807A	73	MEDICAL SYSTEMS - ADV DEV	11,973		11,973
2040	0603827A	74	SOLDIER SYSTEMS - ADVANCED DEVELOPMENT	10,605		10,605
2040	0603850A	75	INTEGRATED BROADCAST SERVICE	1,135		1,135
2040	0603856A	76	SCAMP BLOCK II			
2040	0603869A	77	MEDIUM EXTENDED AIR DEFENSE SYSTEM (MEADS) CONCEPTS			
2040	0604201A	78	AIRCRAFT AVIONICS	61,946		61,946

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				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
2040	0604220A	79	ARMED, DEPLOYABLE OH-58D	132,781		132,781
2040	0604270A	80	ELECTRONIC WARFARE DEVELOPMENT	41,655		41,655
2040	0604280A	81	JOINT TACTICAL RADIO	832,259		832,259
2040	0604321A	82	ALL SOURCE ANALYSIS SYSTEM	7,074		7,074
2040	0604328A	83	TRACTOR CAGE	16,057		16,057
2040	0604329A	84	COMMON MISSILE			
2040	0604601A	85	INFANTRY SUPPORT WEAPONS	31,748		31,748
2040	0604604A	86	MEDIUM TACTICAL VEHICLES	1,925		1,925
2040	0604609A	87	SMOKE, OBSCURANT AND TARGET DEFEATING SYS-SDD	5,297		5,297
2040	0604611A	88	JAVELIN			
2040	0604622A	89	FAMILY OF HEAVY TACTICAL VEHICLES	3,960		3,960
2040	0604633A	90	AIR TRAFFIC CONTROL	4,527		4,527
2040	0604642A	91	LIGHT TACTICAL WHEELED VEHICLES			
2040	0604645A	92	ARMORED SYSTEMS MODERNIZATION (ASM)-SDD	3,310,477		3,310,477
2040	0604646A	93	NON-LINE OF SIGHT LAUNCH SYSTEM	322,880		322,880
2041	0604647A	94	NON-LINE OF SIGHT CANNON	112,237		112,237
2040	0604710A	95	NIGHT VISION SYSTEMS - SDD	38,821		38,821
2040	0604713A	96	COMBAT FEEDING, CLOTHING, AND EQUIPMENT	3,017		3,017
2040	0604715A	97	NON-SYSTEM TRAINING DEVICES - SDD	121,553		121,553
2040	0604716A	98	TERRAIN INFORMATION - SDD			
2040	0604726A	99	INTEGRATED METEOROLOGICAL SUPPORT SYSTEM			
2040	0604741A	100	AIR DEFENSE COMMAND, CONTROL AND INTELLIGENCE - SDD Counter Rocket, Artillery and Mortar (C-RAM) System	21,757	25,500	47,257
2040	0604742A	101	CONSTRUCTIVE SIMULATION SYSTEMS DEVELOPMENT	40,006	[25,500]	40,006
2040	0604746A	102	AUTOMATIC TEST EQUIPMENT DEVELOPMENT	8,136		8,136

**TABLE II-KUJ 1 2000 P**  
(Dollars in Thousands)

<u>Acct</u>	<u>Account</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2007</u>	<u>Senate</u>	<u>Senate</u>
				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
2040	0604760A	103	DISTRIBUTIVE INTERACTIVE SIMULATIONS (DIS) - SDD	19,596		19,596
2040	0604766A	104	TACTICAL SURVEILLANCE SYSTEMS - SDD			
2040	0604768A	105	ARMY TACTICAL MISSILE SYSTEM (ATACMS)			
2040	0604778A	106	POSITIONING SYSTEMS DEVELOPMENT (SPACE)			
2040	0604780A	107	COMBINED ARMS TACTICAL TRAINER (CATT) CORE	39,901		39,901
2040	0604783A	108	JOINT NETWORK MANAGEMENT SYSTEM	5,187		5,187
2040	0604801A	109	AVIATION - SDD			
2040	0604802A	110	WEAPONS AND MUNITIONS - SDD	130,581		130,581
2040	0604804A	111	LOGISTICS AND ENGINEER EQUIPMENT - SDD	40,301		40,301
2040	0604805A	112	COMMAND, CONTROL, COMMUNICATIONS SYSTEMS - SDD	10,783		10,783
2040	0604807A	113	MEDICAL MATERIEL/MEDICAL BIOLOGICAL DEFENSE EQUIPME	14,509		14,509
2040	0604808A	114	LANDMINE WARFARE/BARRIER - SDD	118,078		118,078
2040	0604814A	115	ARTILLERY MUNITIONS	102,554		102,554
2040	0604817A	116	COMBAT IDENTIFICATION	39		39
2040	0604818A	117	ARMY TACTICAL COMMAND & CONTROL HARDWARE & SOFTW	69,172		69,172
2040	0604819A	118	LOSAT			
2040	0604820A	119	RADAR DEVELOPMENT	2,527		2,527
2040	0604822A	120	GENERAL FUND ENTERPRISE BUSINESS SYSTEM (GFEBS)	61,194		61,194
2040	0604823A	121	FIREFINDER	70,151		70,151
2040	0604827A	122	SOLDIER SYSTEMS - WARRIOR DEM/VAL	27,498		27,498
2040	0604854A	123	ARTILLERY SYSTEMS	1,650		1,650
2040	0604865A	124	PATRIOT PAC-3 THEATER MISSILE DEFENSE ACQUISITION			
2040	0604869A	125	PATRIOT/MEADS COMBINED AGGREGATE PROGRAM (CAP)	329,583		329,583
2040	0604870A	126	NUCLEAR ARMS CONTROL MONITORING SENSOR NETWORK	7,428		7,428
2040	0605013A	127	INFORMATION TECHNOLOGY DEVELOPMENT	70,185		70,185
2040	0604256A	128	THREAT SIMULATOR DEVELOPMENT	21,180		21,180

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2040	0604258A	129	TARGET SYSTEMS DEVELOPMENT Prototype Electro-Explosive Ice Protection System	10,928	2,000 [2,000]	12,928
2040	0604759A	130	MAJOR T&E INVESTMENT	64,953		64,953
2040	0605103A	131	RAND ARROYO CENTER Analytical and technical support	20,171	2,500 [2,500]	22,671
2040	0605301A	132	ARMY KWAJALEIN ATOLL	178,891		178,891
2040	0605326A	133	CONCEPTS EXPERIMENTATION PROGRAM Biometric ID device Automated communications support	21,626	7,200 [4,000] [3,200]	28,826
2040	0605502A	134	SMALL BUSINESS INNOVATIVE RESEARCH	389,840		389,840
2040	0605601A	135	ARMY TEST RANGES AND FACILITIES	74,066		74,066
2040	0605602A	136	ARMY TECHNICAL TEST INSTRUMENTATION AND TARGETS	40,780		40,780
2040	0605604A	137	SURVIVABILITY/LETHALITY ANALYSIS	16,622		16,622
2040	0605605A	138	DOD HIGH ENERGY LASER TEST FACILITY	4,580		4,580
2040	0605606A	139	AIRCRAFT CERTIFICATION	8,571		8,571
2040	0605702A	140	METEOROLOGICAL SUPPORT TO RDT&E ACTIVITIES	16,526		16,526
2040	0605706A	141	MATERIEL SYSTEMS ANALYSIS	4,993		4,993
2040	0605709A	142	EXPLOITATION OF FOREIGN ITEMS	80,057		80,057
2040	0605712A	143	SUPPORT OF OPERATIONAL TESTING	60,129		60,129
2040	0605716A	144	ARMY EVALUATION CENTER	5,441		5,441
2040	0605718A	145	SIMULATION & MODELING FOR ACQ, RQTS, & TNG (SMART)			
2040	0605737A	146	DEFENSE FOREIGN LANGUAGE TRAINING RESEARCH	72,214		72,214
2040	0605801A	147	PROGRAMWIDE ACTIVITIES	34,834		34,834
2040	0605803A	148	TECHNICAL INFORMATION ACTIVITIES	18,726		18,726
2040	0605805A	149	MUNITIONS STANDARDIZATION, EFFECTIVENESS AND SAFETY			

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2040	0605857A	150	ENVIRONMENTAL QUALITY TECHNOLOGY MGMT SUPPORT	4,418		4,418
2040	0605898A	151	MANAGEMENT HQ - R&D	14,092		14,092
2040	0909999A	152	FINANCING FOR CANCELLED ACCOUNT ADJUSTMENTS			
2040	0603778A	153	MLRS PRODUCT IMPROVEMENT PROGRAM	74,506		74,506
2040	0603820A	154	WEAPONS CAPABILITY MODIFICATIONS UAV	16,532		16,532
2040	0102419A	155	AEROSTAT JOINT PROJECT OFFICE	264,491		264,491
2040	0203726A	156	ADV FIELD ARTILLERY TACTICAL DATA SYSTEM	17,394		17,394
2040	0203735A	157	COMBAT VEHICLE IMPROVEMENT PROGRAMS	12,741		12,741
2040	0203740A	158	MANEUVER CONTROL SYSTEM	37,976		37,976
2040	0203744A	159	AIRCRAFT MODIFICATIONS/PRODUCT IMPROVEMENT PROGRAM	301,739		301,739
2040	0203752A	160	AIRCRAFT ENGINE COMPONENT IMPROVEMENT PROGRAM	860		860
2040	0203758A	161	DIGITIZATION	13,373		13,373
2040	0203759A	162	FORCE XXI BATTLE COMMAND, BRIGADE AND BELOW (FBCB2)	26,375		26,375
2040	0203801A	163	MISSILE/AIR DEFENSE PRODUCT IMPROVEMENT PROGRAM	10,770		10,770
2040	0203802A	164	OTHER MISSILE PRODUCT IMPROVEMENT PROGRAMS	19,706		19,706
2040	0203806A	165	TRACTOR RUT			
2040	0203808A	166	TRACTOR CARD	7,242		7,242
2040	0208010A	167	JOINT TACTICAL COMMUNICATIONS PROGRAM (TRI-TAC)	5,804		5,804
2040	0208053A	168	JOINT TACTICAL GROUND SYSTEM	15,044		15,044
2040	0208058A	169	JOINT HIGH SPEED VESSEL (JHSV)	20,397		20,397
2040	0301359A	170	SPECIAL ARMY PROGRAM	[ ]		[ ]
2040	0301555A	171	CLASSIFIED PROGRAMS	[ ]		[ ]
2040	0301556A	172	SPECIAL PROGRAM	[ ]		[ ]
2040	0303028A	173	SECURITY AND INTELLIGENCE ACTIVITIES	3,170		3,500
			Portable iris enrollment and recognition device			[3,500]

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				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
2040	0303140A	174	INFORMATION SYSTEMS SECURITY PROGRAM	23,828	3,000	26,828
			Retinal/iris multimodal biometrics technology		[3,000]	
2040	0303141A	175	GLOBAL COMBAT SUPPORT SYSTEM	55,272		55,272
2040	0303142A	176	SATCOM GROUND ENVIRONMENT (SPACE)	41,336		41,336
2040	0303150A	177	WWMCCS/GLOBAL COMMAND AND CONTROL SYSTEM	12,200		12,200
2040	0303158A	178	JOINT COMMAND AND CONTROL PROGRAM (JC2)	4,057		4,057
2040	0305204A	179	TACTICAL UNMANNED AERIAL VEHICLES	114,087		114,087
2040	0305206A	180	AIRBORNE RECONNAISSANCE SYSTEMS	12		12
2040	0305208A	181	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	120,562		120,562
2040	0702239A	182	AVIONICS COMPONENT IMPROVEMENT PROGRAM	1,031		1,031
2040	0708045A	183	END ITEM INDUSTRIAL PREPAREDNESS ACTIVITIES	68,075	11,500	79,575
			Adv modeling technology for large structure titanium machining		[2,000]	
			Manufacturing systems demonstration		[3,000]	
			Super Pulse Laser System development		[3,500]	
			Packaging and interconnect technologies		[3,000]	
2040	1001018A	184	NATO JOINT STARS	688		688
2040	XXXXXXXX	999	CLASSIFIED PROGRAMS	3,700		3,700
			<b>Total, RDT&amp;E Army</b>	<b>10,855,559</b>	<b>295,450</b>	<b>11,151,009</b>

**Army basic research**

The budget request included \$137.6 million in PE 61102A, for defense research sciences; \$68.5 million in PE 61103A, for university research initiatives; and \$86.4 million in PE 61104A, for university and industry research centers. Through these basic research accounts, the Army supports fundamental military science at universities and innovative partnerships between academia and industry through Collaborative Technology Alliances.

Ongoing work in the areas of modeling and simulation, materials and composites, nanotechnology, biotechnology, energy and power, and dynamic terrain analysis complement a new focus on network and information sciences. The committee recommends an increase of \$9.1 million in PE 61102A for expansion of work in key areas, including \$1.0 million for advanced ground reliability research; \$2.1 for organic semiconductor modeling and simulation research; \$2.0 million for a dynamic landscape support program; \$1.0 million for integrated nanosensor technologies for nuclear, chemical, and biological detection applications; and \$3.0 million for the development of nanotechnologies to enhance intelligence, surveillance, and reconnaissance capabilities to tag, track, and locate enemy forces or weapons. The committee recommends an increase of \$2.0 million in PE 61103A for low temperature vehicle performance research.

The committee recommends an increase of \$7.25 million in PE 61104A for acceleration of defense university research, including \$1.0 million for information assurance research; \$1.0 million for integrated systems sensing, imaging, and communications research; \$2.0 million for nanotubes composite materials research; \$2.0 million for development of slow rotor concepts; \$1.0 million for analyses of regional, political, social and economic issues affecting U.S. Southern Command's area of responsibility; and \$250,000 for transparent nanocomposite armor.

The committee is aware of the Department of Defense's requirement to triage large quantities of documents in foreign languages to provide prompt support to analytical and targeting efforts in support of the global war on terrorism. This capability is required at all echelons from tactical to strategic. The quantity and quality of document exploitation (DOCEX) can be enhanced by continued technological development in the Harmony DOCEX Suite, which is currently fielded. Technologies to improve the exploitation of paper documents as well as electronic media, to include live web sites, have been identified. The committee recommends an increase of \$4.0 million in PE 61102A for the continued development, integration, and fielding of enhanced document exploitation systems.

**PACE early career awards**

The budget request included \$137.6 million in PE 61102A, \$366.6 million in PE 61153N, and \$250.2 million in PE 61102F for Army, Navy, and Air Force defense research sciences activities. The committee recommends an increase of \$1.0 million in each of the three program elements: PE 61102A, PE 61153N, and PE 61102F for the establishment of additional early career awards under the Protecting America's Competitive Edge (PACE) program to support service research efforts.

The committee notes that the recent National Research Council (NRC) report, entitled "Assessment of Department of Defense Basic Research," recommended that "the Department of Defense should, through its funding and policies for university research, encourage increased participation by younger researchers as principal investigators." The NRC endorsed this idea in their report, entitled "Rising Above the Gathering Storm," which recommended that "the Federal Government should establish a program to provide 200 new research grants each year at \$500,000 each, payable over 5 years, to support the work of outstanding early-career researchers." The committee notes that it is essential to replenish the research community with young, innovative scientists and engineers working in defense research areas in order to support the development of future military capabilities. The committee further notes that the Department established a number of activities to support early career researchers, including the Navy's Young Investigator Program and the Presidential Early Career Awards for Science and Engineering. The Department estimates it will support 130 early career awards with funding available in the current budget request.

Although the details of the execution shall be established by the Secretary of Defense, the committee recommends that these awards be available for researchers not more than 5 years removed from their doctorate or other terminal degree or professional qualification, and that they should be structured to provide for stable funding support for individuals for a period of 5 years. The committee directs the Secretary to report to the congressional defense committees on the execution of these funds, including their coordination with other Department activities in supporting early career scientists and engineers, no later than May 1, 2007.

#### **Army materials technology**

The budget request included \$18.8 million in PE 62105A, for materials technology. Army programs under this account aim to provide lightweight and affordable materials and structures to enable revolutionary survivability and lethality technologies along with improved performance and durability for Army systems and cost-effective manufacturing processes. To accelerate work in selected areas of particular relevance to current threats, the committee recommends an increase of \$5.4 million in PE 62105A, including \$1.0 million for flexible, lightweight thermoplastic composite body armor; \$1.6 million for future affordable multi-utility materials; \$500,000 for simulations of improvised explosive devices; \$300,000 for a control system for the laser powder deposition manufacturing process; and \$2.0 million for munition shape charge control research.

#### **Advanced microelectronics manufacturing**

The budget request included \$38.4 million in PE 62120A, for sensors and electronic survivability. The committee recommends an increase of \$3.0 million in PE 62120A for the development of advanced capabilities for low-volume manufacturing of flexible electronics, whose defense applications could include flexible displays, lightweight, miniaturized sensors, and portable power systems. The

committee notes that this type of effort is consistent with the Defense Science Board's recommendation in its recent report, entitled "High Performance Microchip Supply," to develop technology and equipment for production of low-volume microelectronics to meet unique Department of Defense needs.

#### **Unmanned payload concepts**

The budget request included \$38.4 million in PE 62120A, for sensors and electronic survivability. Asymmetric threats and unpredictable battlefields increase the importance of flexible response and logistics options. The committee recommends an increase of \$1.5 million in PE 62120A for acceleration of concept demonstration on a remote-operated, lighter-than-air unmanned vehicle with scalable payload capabilities.

#### **Army missile technology**

The budget request included \$59.4 million in PE 62303A, for applied research on missile technology. The committee endorses the Army's efforts to develop unmanned air systems as an integral part of Future Combat Systems (FCS). The committee recommends an increase of \$2.5 million in PE 62303A for the development and demonstration of unmanned air systems technologies as part of FCS. The committee notes that such programs should be consistent with the Department's unmanned systems policy as required elsewhere in this report.

#### **Hypervelocity ground testing**

The budget request included \$59.4 million in PE 62303A, for missile technology. As the Department of Defense develops hypersonic systems for global and rapid strike missions, availability of domestic, full-scale ground test facilities would mitigate costs and risks associated with these complex systems. The committee recommends an increase of \$3.5 million in PE 62303A for hypervelocity ground testing.

#### **Multifunctional robot platform**

The budget request included \$16.2 million in PE 62308A, for advanced concepts and simulations. Robotic platforms continue to excel in the performance of dangerous missions. The committee recommends an increase of \$3.0 million in PE 62308A for rapid integration of optical technology and advanced acoustic detection and direction finding hardware into the Robot Enhanced Detection Outpost With Lasers platform.

#### **Combat vehicle and automotive technology**

The budget request included \$59.3 million in PE 62601A, for combat vehicle and automotive technology. Component technologies explored under this account support the Army's current and future combat and tactical vehicle fleets. To promote more fuel efficient engines, the committee recommends an increase of \$2.5 million in PE 62601A for development of advanced electric drives designed to result in easily replaceable, quiet, robust engines with greater power density and torque.

**Weapons and munitions technology**

The budget request included \$35.3 million in PE 62624A, for weapons and munitions technology. Army applied research efforts under this account improve the lethality, survivability, and affordability of current and future force equipment and weapons. The committee recommends an increase of \$10.0 million in PE 62624A, including \$2.0 million to transition the active coatings technology program for use on Army helicopters; \$2.5 million for continued rarefaction wave gun research; \$3.0 million for expansion of the domestic capability to produce a wider variety of parts-on-demand for unmanned systems; and \$2.5 million for integration of Army remote weapons systems armaments on the dual track, Ripsaw, unmanned ground vehicle.

**Human factors engineering**

The budget request included \$18.9 million in PE 62716A, for applied research on human factors engineering technology. As noted elsewhere in this report, the committee supports development of integrated and interoperable unmanned systems that can work seamlessly with manned systems. Army applied research on autonomous robots that work together to solve problems holds promise for missions that do not require a man in the loop as well as for improved manned-unmanned collaborations. The committee recommends an increase of \$2.5 million in PE 62716A for team performance and optimization research and expanded complex research, modeling, and simulation of cognition and team dynamics.

**Mapping and detection of unexploded ordnance**

The budget request included \$17.9 million in PE 62720A, for environmental quality technology, but included no funding for mapping and detection of unexploded ordnance. The committee notes that the problem of detecting and removing unexploded ordnance from Department of Defense facilities closed or realigned under rounds of base closure and realignment (BRAC), former used defense sites, and at active installations, including operational ranges, is an enormous and technically complex task. The current estimate of the cost to complete the clean up of unexploded ordnance at all of the Department's installations, formerly used defense sites, and BRAC sites is \$20.1 billion.

Development of the technology to more rapidly and efficiently detect and discriminate unexploded ordnance from other waste is ongoing and has the potential to significantly reduce the overall cost of unexploded ordnance detection and clean up. This project would continue work begun in fiscal year 2005 to improve the ability of ground penetrating radar to detect unexploded ordnance at greater depths in highly magnetic soil, while reducing the number of false alarms. While the focus of the effort would be on ground penetrating radar systems, all detection technologies, which may have an application, would be investigated. Due to the geological characteristics of highly magnetic soil, the committee believes that application of multiple technologies and fusion of their outputs may be needed to improve detection and reduce the number of false alarms. The committee recommends an increase of \$5.0 million in PE 62720A for mapping and detection of unexploded ordnance.

**Warfighter technology**

The budget request included \$25.4 million in PE 62786A, for warfighter technology. Army applied research under this account concentrates on soldier survivability and performance, including improved deployable, temporary housing, and food safety. The committee recommends an increase of \$3.5 million in PE 62786A for advances in both of these soldier safety areas, including \$2.0 million for advanced materials research on ballistic tent inserts and \$1.5 million for biosecurity research for soldier food safety.

**Army medical technology**

The budget request included \$75.4 million in PE 62787A, for medical technology and \$50.8 million in PE 63002A, for medical advanced technology. Research under these two accounts has yielded numerous advances in combat casualty care and battlefield trauma medicine. The committee continues to place a priority on advances in military-specific medical treatments, wound characterization, and understanding of weapons impacts. The committee recommends an increase of \$5.5 million, in PE 62787A, including \$2.0 million for advanced bioengineering for enhancement of soldier survivability; \$1.0 million for blast protection research; and \$2.5 million for acceleration of pilot clinical studies on protein hydrogel treatments. The committee further recommends an increase of \$23.5 million in PE 63002A, including \$2.0 million for rapid development of advanced, neurally-controlled lower limb prostheses; \$3.0 million for applied emergency hypothermia; \$3.0 million for fibrinogen bandage improvements; \$2.0 million for integrated clinical information systems in support of the Armed-forces Health Longitudinal Technology Application; \$1.0 million to promote interoperability standards for medical imaging; \$3.0 million for robotic tele-surgery research; \$2.0 million for tissue engineering research; \$2.0 million for early diagnosis and treatment of post-traumatic stress disorder; \$3.5 million for soldier treatment and regeneration research; and \$2.0 million for surgical safety systems designed to improve remote patient care in hostile environments.

**Advanced aviation technology**

The budget request included \$64.7 million in PE 63003A, for aviation advanced technology. Army aviation technology programs focus on maturing and demonstrating manned and unmanned rotary wing vehicle technologies in support of the current and future force. To explore expanded capabilities in the areas of unmanned systems, specifically designed for logistics and supply support, the committee recommends an increase of \$2.5 million in PE 63003A for a quick materiel express delivery system.

**Unmanned tactical combat vehicles**

The budget request included \$64.7 million in PE 63003A, for aviation advanced technology, but included no funding for a tactical unmanned combat aerial vehicle (UCAV) designed specifically for flexible launch and rapid response. The committee believes that the development of a survivable turbine-electric hybrid, vertical take-off and landing tactical class UCAV could introduce a self-contained, rapid response, precision strike capability for use by the

tactical commander. The committee recommends an increase of \$14.0 million in PE 63003A for design and fabrication of the first Excalibur tactical UCAV system.

#### **Nanotechnology manufacturing**

The budget request included \$74.7 million in PE 63004A, for weapons and munitions advanced technology. Research efforts on manufacturing processes for composite structures and new materials developed at the nano-scale for weapons, munitions, and fire control applications will ensure these multifunctional materials are also produced efficiently. The committee recommends an increase of \$2.0 million in PE 63004A for nanotechnology manufacturing.

#### **Combat vehicle research**

The budget request included \$110.0 million in PE 63005A, for combat vehicle and automotive advanced technology. Under this account, the Army pursues survivability and mobility, communications, energy and power, and autonomous technology improvements for manned and unmanned ground systems. The committee recommends an increase of \$35.0 million in PE 63005A for acceleration of research in all of these areas, including \$2.0 million for advanced thermal management controls; \$3.0 million for further testing and refinement of anti-ballistic windshield armor; \$3.0 million for the composite armored cab program; \$1.0 million for application of compressible magneto-rheological fluids for shock absorbers and suspension systems to increase tactical vehicle off-road mobility; \$1.5 million for development of logistical fuel processors; \$3.0 million for a phase III pilot demonstration of fuel cell powered ground support equipment; \$3.0 million for next generation non-tactical vehicle propulsion; \$1.5 million for maturation of a domestic production source for the segmented band track; \$2.0 million for solid oxide fuel cell materials and manufacturing; \$2.0 million for tactical vehicle design tools; \$3.0 million for power electronics systems research; and \$10.0 million for unmanned ground vehicle prototype research to promote near-term transition of robotic ground vehicle technologies.

#### **Command and control team training**

The budget request included \$6.8 million in PE 63007A, for manpower, personnel, and training advanced technology. Realistic training repeatedly receives credit for saving the lives of warfighters who face current and evolving threats. The committee recommends an increase of \$2.0 million in PE 63007A for expansion of the successful advanced command and control team training program to division staffs.

#### **Advanced simulated training**

The budget request included \$18.3 million in PE 63015A, for next generation training and simulation systems. The committee commends the Army for its innovative approach to providing up-to-date and realistic training environments. The committee recommends an increase of \$6.0 million in PE 63015A for completion of the initial joint fires and effects training module.

**Missile recycling capability**

The budget request included \$10.4 million in PE 63103A, for explosives demilitarization technology. The Army estimates that 600,000 outdated missiles at ammunition storage sites and plants across the country and overseas need to be recycled over the next 10 to 15 years. The committee recommends an increase of \$2.0 million in PE 63103A for the continued development of technologies to disassemble missiles, and process and recover energetic materials for potential reuse.

**Advanced electronic integration**

The budget request included \$11.2 million in PE 63305A, for Army missile defense systems integration, but included no funding for advanced electronic integration.

The committee believes it is necessary to advance the state-of-the-art in space and missile defense system electronics by reducing the size, weight, and cost of electronic circuit cards and components, wire harnesses, and electronic cabling. The committee recommends an increase of \$5.0 million in PE 63305A to be used to procure the special test-bed equipment and pay research personnel to conduct advanced electronic integration.

**Advanced fuel cell research**

The budget request included \$11.2 million in PE 63305A, for Army missile defense systems integration, but included no funding for advanced fuel cell research.

The committee notes that alternative sources of power for space and missile defense propulsion is an ongoing high priority requirement for the Department of Defense. Fuel cells and the associated hydrogen production capability may provide more efficient and long endurance propulsion and energy systems for space and air breathing platforms. The committee recommends an increase of \$2.0 million in PE 63305A for continued research, design, and testing for advanced fuel cells.

**Advanced Hypersonic Weapon modeling and simulation**

The budget request included \$11.2 million in PE 63305A, for Army missile defense systems integration, but included no funding for modeling and simulation efforts in support of the Advanced Hypersonic weapon (AHW).

The committee is aware that the AHW is a candidate for the Department of Defense requirement for high-volume prompt global strike. Flight testing is necessary to validate the design and development of AHW. The committee believes a risk reduction effort to provide pre-flight verification through hardware-in-the-loop simulations would benefit this and other hypersonic development programs.

The committee recommends an increase of \$11.0 million in PE 63305A for AHW modeling and simulation.

**Army missile and space modeling and simulation technology**

The budget request included \$11.2 million in PE 63305A, for Army system integration (non space), but included no funding for interactive modeling and simulation management capabilities.

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

The committee recommends an increase of \$4.0 million in PE 63305A to support continued development of interactive modeling and simulation management capabilities of the Army Space and Missile Defense Command.

#### **Distributed operational control center**

The budget request included \$11.2 million in PE 63305A, for Army missile defense systems integration, but included no funding for the distributed operational control center (DOCC).

The DOCC is envisioned to be a large network operations center for sensor research and development. The DOCC will provide fiber-optic connectivity with the Reagan Test Site, permitting remote operations for sensor and flight tests as well as other research and development efforts currently centered at the Army's Space and Missile Defense Command.

The committee recommends an increase of \$5.0 million in PE 63305A for DOCC hardware procurement, network integration, and operations control software development to support the consolidation of range and space surveillance functions.

#### **HighSentinel airship**

The budget request included \$11.2 million in PE 63305A, for Army missile defense systems integration, but included no funding for the HighSentinel airship.

The committee understands that there is an operational requirement and mission need statement for multi-theater target tracking capabilities. The HighSentinel airship is intended to meet this requirement by carrying a communications or surveillance payload for up to 2 weeks of operations in support of the warfighter throughout the theater of operations. The airship would have a limited logistics support infrastructure and could be launched in-theater without the use of a hangar. The committee recommends an increase of \$2.0 million in PE 63305A to be used to design a high altitude airship to carry tactical communications or surveillance payloads for the warfighter.

#### **Low cost avionics**

The budget request included \$11.2 million in PE 63305A, for Army missile defense systems integration, but included no funding for the development of low cost avionics. The committee recommends an increase of \$2.0 million in PE 63305A to support the research, design, and testing of avionics subsystems interfaces that incorporate standards utilizing a commercial, open architecture, as is done in the commercial marketplace. This would permit more timely upgrade of existing systems and lower operating costs caused by obsolete systems and subcomponents.

**Protected test link**

The budget request included \$11.2 million in PE 63305A, for Army missile defense systems integration, but included no funding for the protected test link.

The Army Space and Missile Defense Center and Missile Defense Agency Modeling and Simulation Center of Excellence requires the capability for hardware-in-the-loop testing for ballistic missile defense system-level ground tests. A protected test link would enable each of the numerous missile defense system elements to participate in a systems-level test by providing physical as well as electronic protection measures for all test linkages. The committee recommends an increase of \$2.0 million in PE 63305A for the development of a protected test link.

**Standoff sensor for radionuclides and explosives**

The budget request included \$11.2 million in PE 63305A, for Army missile defense systems integration, but included no funding for standoff sensors to detect radionuclides or other explosive devices.

The committee is aware that the defeat of improvised explosive devices is the number one priority of the entire Department of Defense. Likewise, detecting explosive devices containing nuclear materials remains a top priority. The committee supports a robust multidisciplinary research effort to solve the problems posed by the remote detection of radiological and explosive agents. The committee recommends an increase of \$5.0 million in PE 63305A to continue and broaden the research effort to develop standoff, real-time sensors for radiological and explosive devices.

**Tactical operations center hardware and software integration**

The budget request included \$11.2 million in PE 63305A, for Army missile defense systems integration, but included no funding for future tactical operations center (TOC) hardware and software integration.

The committee recognizes that the Department of Defense must continue to build upon ongoing activities to fully integrate space capabilities into airborne, land, and maritime assets to form a full force integrated battle management, communications, and surveillance architecture to synchronize planning and control of assets within the joint battlefield and provide situational awareness of the battlefield for the warfighters. The committee recommends an increase of \$5.0 million in PE 63305A for TOC hardware and software activities to integrate space, air, ground, and maritime situational awareness for the warfighter.

**Thermal protection system technology risk reduction**

The budget request included \$11.2 million in PE 63305A for Army missile defense systems integration, but included no funding for thermal protection system (TPS) risk reduction efforts.

Thermal protection is a key enabling technology to permit hypersonic vehicles to travel great distances within the earth's atmosphere without overheating due to friction. Solving the TPS

problem is essential for the development of hypersonic flight in support of many mission areas, including prompt global strike.

The committee recommends an increase of \$3.0 million in PE 63305A for developmental, test, and manufacturing design risk reduction efforts in the area of thermal protection.

### **Translation devices**

The budget request included \$64.6 million in PE 63772A, for advanced tactical computer science and sensor technology and \$90.0 million in PE 62236N, for warfighter sustainment applied research. The committee notes that the Army and Marine Corps are currently considering a variety of approaches to the development of handheld translation technologies. This technology has been successfully used in Iraq and Afghanistan by assisting soldiers, marines, and special operators in their daily interactions with native populations. The committee recommends an increase of \$3.0 million in PE 63772A for the continued development of more capable, handheld translation technology and \$2.0 million in PE 62236N for the development of translation devices that can support bi-directional translations of speech, text, and other information in multiple languages.

### **Advanced Hypersonic Weapon development**

The budget request included \$11.8 million in PE 63308A, for Army Missile Defense Systems Integration, but included no funding for Advanced Hypersonic Weapon (AHW) risk reduction efforts.

The committee notes that the Department of Defense Quadrennial Defense Review Report of 2006 highlights the need for “prompt and high-volume global strike” capability to deter aggression and provide a broader range of conventional options to the President, if deterrence fails. In March 2006, the Commander, U.S. Strategic Command (USSTRATCOM), testified before the Subcommittee on Strategic Forces of the Committee on Armed Services that in situations where U.S. general purpose forces are not in a position to respond rapidly to dangerous threats to the United States, the President may require USSTRATCOM to interdict such fleeting targets at global range. The Department of Defense is conducting an analysis of alternatives for prompt global strike capabilities in the near, mid, and long term. One alternative option for prompt, conventional long-range strike is to employ advanced technologies such as hypersonic vehicles that can travel thousands of miles in the upper atmosphere in under 60 minutes.

The committee recommends an increase of \$20.0 million in PE 63308A to support a flight test demonstration program for the AHW. The committee is aware that hypersonic research is being conducted throughout the Department for efforts that go beyond prompt global strike. Elsewhere in this report, the committee recommends that the Secretary of Defense establish a joint technology office to coordinate, integrate, and manage hypersonic research. Activities related to the development of the AHW should be consistent with the approach adopted by this new joint technology office for hypersonic development so that the AHW could be considered by the Department as a candidate for a joint technology capability demonstration.

**Architecture Analysis Program**

The budget request included \$143.4 million in PE 63327A, for Air and missile defense system engineering, but included no funding for the Air, Space, and Missile Defense Architecture Analysis Program (A3P).

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

The committee recommends an increase of \$3.0 million in PE 63327A for A3P to support air, space, and missile defense modeling and simulation.

**Environmental quality technology demonstration and validation at the Defense Ammunition Center**

The budget request included \$5.2 million in PE 63779A for environmental quality technology demonstration and validation, but included no funding for the Defense Ammunition Center to provide dedicated oversight for critical environmental, explosives safety, and munitions surveillance research and development for the Department of Defense's conventional ammunition stocks, tactical missiles, and explosives. The committee notes that the Department has a stockpile of over 3.5 million tons of conventional ammunition, over one million tactical missiles, and strategic missiles with over 100 million pounds of energetic materials. The committee believes a focused program to identify challenges in managing this rapidly aging stockpile and respond to emerging explosives is needed.

The committee recommends an increase of \$5.0 million in PE 63779A to establish a separate project for the Defense Ammunition Center to provide the Department with dedicated oversight and response for the stockpile of conventional ammunition, tactical missiles, and explosives to support readiness.

**Counter rocket, artillery, and mortar**

The budget request included \$21.8 million in PE 64741A, for the Air Defense Command, Control and Intelligence—engineering development, but no funding for the Counter Rocket, Artillery, and Mortar (C-RAM) system. The committee understands that the Commander, Multinational Forces-Iraq, submitted an operational needs statement for the C-RAM system in June 2005. Congress approved \$13.1 million in the Defense Appropriations Act for Fiscal Year 2006 for C-RAM development. The committee believes the C-RAM development should be accelerated to support MNF-I requirements. Additional funding for C-RAM development has been included on the Chief of Staff of the Army's fiscal year 2007 unfunded priority list. The committee recommends an increase of \$25.5 million in PE 64741A for C-RAM development, for a total authorization of \$47.3 million.

**Unmanned aerial vehicle anti-icing technology**

The budget request included \$10.9 million in PE 64258A, for target systems development. The Department of Defense consistently lists all weather capability as a priority for operation of unmanned systems. The committee recommends an increase of \$2.0 million in PE 64258A for icing and wind tunnel testing of the prototype electro-explosive ice protection system.

**RAND Arroyo Center**

The budget request included \$20.2 million in PE 65103A, for the RAND Arroyo Center. The committee notes that RAND studies and analyses have supported Army missions by conducting analytic research on major policy concerns, attempting to assist the Army in improving effectiveness and efficiency, and providing short-term assistance on urgent problems. The committee recommends an increase of \$2.5 million in PE 65103A to sustain RAND analytical support to the Army.

**Automated communications support**

The budget request included \$21.6 million in PE 65326A, for Concept Experimentation Program, but included no funding for further development of an automated communications recognition and translation capability.

Intelligence support to time-sensitive targeting is a critical component in the global war on terrorism. The Department of Defense requires the capability to quickly and efficiently process volumes of foreign language communications audio traffic and then exploit the intelligence content. The ability to separate and prioritize audio messages is crucial. Currently, it is neither economically feasible nor possible to recruit, train, and field sufficient linguists to meet this demand. The development of an automated system to assist in the exploitation of the intelligence value of foreign language audio messages could mitigate this shortfall in the war against terrorism, as well as more conventional threats, and threats to uniformed personnel. This capability could also have applicability to the Department of Homeland Defense and law enforcement agencies.

The committee recommends an increase of \$3.2 million in PE 65326A for the development of the capability to search, translate, and mine foreign language audio messages.

**Biometric identification device**

The budget included \$21.6 million in PE 65326A, for Concept Experimentation Program, but included no funding for further development of a rugged, portable, and easy-to-operate 10-print fingerprint scanner device.

The requirement for biometric tools at the tactical level to support the war on terrorism is increasing.

Such a device would have applicability across the Department of Defense. The committee recommends an increase of \$4.0 million in PE 65326A for the development of a biometric identification device for use with tactical forces.

**Portable iris enrollment and recognition device**

The budget request included \$3.2 million in PE 33028A, for security and intelligence activities, but included no funding for the continued research of the portable iris enrollment and recognition (PIER) technology development.

The committee notes the need for the continued enhancement of biometric capabilities and the development of items such as the PIER device. The committee recommends an increase of \$3.5 million in PE 33028A for the continued development of a multi-modal portable biometric platform consistent with the development and integration goals of the Department of Defense for biometric identification systems.

**Biometrics technology**

The budget request included \$23.8 million in PE 33140A, for the Information Systems Security Program, including \$14.5 million for Army biometrics research and development. The committee believes that deployment of biometrics technologies is critical for successful operations in Iraq and Afghanistan, as well as in support of homeland defense missions. The committee recommends an increase of \$3.0 million in PE 33140A for the continued development of retinal/iris multimodal biometrics technology which is consistent with the development, deployment, and integration goals of the Department of Defense for biometric identification systems.

**Army manufacturing technology**

The budget request included \$68.1 million in PE 78045A, for Army end-item industrial preparedness. The committee notes that the recent Defense Science Board study on the manufacturing technology program recommended that the Department of Defense increase investment in the program to a level equal to 1 percent of the total Research, Development, Test, and Evaluation budget. Consistent with this recommendation, the committee is authorizing a number of funding increases to manufacturing technology programs of the services and the Defense Logistics Agency. The committee recommends an increase of \$8.5 million in PE 78045A, including \$3.0 million for manufacturing systems demonstrations to develop efficient, agile manufacturing cells to better support warfighter needs for critical machined parts; \$2.0 million for large structure titanium machining processes; and \$3.5 million for super pulse laser system development.

The committee also notes that the recent report by the National Research Council, entitled "Linkages: Manufacturing Trends in Electronic Interconnection Technology," found that the Department of Defense will have increasing difficulty in acquiring the printed circuit boards it requires to produce future weapons systems and to sustain legacy systems. The Council recommended that the Department expand its role in fostering new printed circuit board design and manufacturing technology. The committee recommends an increase of \$3.0 million in PE 78045A for the development of novel packaging and interconnect technologies to advance printed circuit board technology.

**Budget Items—Navy**

## Title II-RDT and E

(Dollars in Thousands)

Acct	Account	Line	Program Title	FY2007 Request	Senate Change	Senate Authorized
1319	0601103N	1	RESEARCH, DEVELOPMENT, TEST & EVALUATION, NAVY UNIVERSITY RESEARCH INITIATIVES Multifunctional materials for Navy structures Neurotechnology research	73,322	5,500 [1,500] [2,000] [2,000]	78,822
1319	0601152N	2	Smart, remote sensing systems using nanotechnology	15,916		15,916
1319	0601153N	3	IN-HOUSE LABORATORY INDEPENDENT RESEARCH DEFENSE RESEARCH SCIENCES Early career awards Software reliability	366,649	3,000 [1,000] [2,000]	369,649
1319	0602114N	4	POWER PROJECTION APPLIED RESEARCH Thermal management systems	84,914	2,000 [2,000]	86,914
1319	0602123N	5	FORCE PROTECTION APPLIED RESEARCH Advanced simulation tools for aircraft structures Real-time wide band acoustic processor for fiber sensors Mark V technology demonstrator	123,443	18,000 [2,000] [2,500] [5,000]	141,443
1319	0602131M	6	Nano-magnetic materials for propulsion and energy systems Undersea perimeter security integrated defense environment (UFSIDE) Small watercraft propulsion demonstrator MARINE CORPS LANDING FORCE TECHNOLOGY High power zinc-air battery	37,741	[2,000] [4,000] 1,900 [1,900]	39,641
1319	0602233N	7	HUMAN SYSTEMS TECHNOLOGY			
1319	0602234N	8	MATERIALS, ELECTRONICS AND COMPUTER TECHNOLOGY			
1319	0602235N	9	COMMON PICTURE APPLIED RESEARCH Human factors and organizational design	68,352	-2,000 [-2,000]	66,352

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1319	0602236N	10	WARFIGHTER SUSTAINMENT APPLIED RESEARCH Bi-directional translator Sea basing technologies	89,964	-5,000 [2,000] [-7,000]	84,964
1319	0602271N	11	RF SYSTEMS APPLIED RESEARCH	42,619		42,619
1319	0602435N	12	OCEAN WARFIGHTING ENVIRONMENT APPLIED RESEARCH	48,718		48,718
1319	0602651M	13	JOINT NON-LETHAL WEAPONS APPLIED RESEARCH	6,036		6,036
1319	0602747N	14	UNDERSEA WARFARE APPLIED RESEARCH	83,435		83,435
1319	0602782N	15	MINE AND EXPEDITIONARY WARFARE APPLIED RESEARCH	53,435		53,435
1319	0603114N	16	POWER PROJECTION ADVANCED TECHNOLOGY Information processing technologies for mobile targeting Reduce growth due to lack of transition path	76,806	-8,000 [2,000] [-10,000]	68,806
1319	0603123N	17	FORCE PROTECTION ADVANCED TECHNOLOGY Navy manufacturing and repair cell Completion of advanced ship service fuel cell power plant Wide-band gap semiconductor materials research	61,504	17,000 [5,000] [4,000] [8,000]	78,504
1319	0603235N	18	COMMON PICTURE ADVANCED TECHNOLOGY Improved shipboard combat information center Rail sensor testbed	61,725	5,000 [3,000] [2,000]	66,725
1319	0603236N	19	WARFIGHTER SUSTAINMENT ADVANCED TECHNOLOGY Advanced composite materials research Vertical lift center of excellence Defense systems modernization and sustainment initiative	82,035	17,000 [5,000] [4,000] [8,000]	99,035
1319	0603271N	20	RF SYSTEMS ADVANCED TECHNOLOGY APY-6 real-time precision targeting radar	45,317	2,000 [2,000]	47,317

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1319	0603640M	21	USMC ADVANCED TECHNOLOGY DEMONSTRATION (ATD) Expeditionary water purification Advanced technology demonstrations Advanced tactical vehicle	59,170	21,000 [3,000] [12,000] [6,000]	80,170
1319	0603651M	22	JOINT NON-LETHAL WEAPONS TECHNOLOGY DEVELOPMENT	1,405		1,405
1319	0603727N	23	NAVY TECHNICAL INFORMATION PRESENTATION SYSTEM			
1319	0603729N	24	WARFIGHTER PROTECTION ADVANCED TECHNOLOGY	17,982		17,982
1319	0603747N	25	UNDERSEA WARFARE ADVANCED TECHNOLOGY	35,055		35,055
1319	0603757N	26	JOINT WARFARE EXPERIMENTS			
1319	0603758N	27	NAVY WARFIGHTING EXPERIMENTS AND DEMONSTRATIONS	41,308		41,308
1319	0603782N	28	MINE AND EXPEDITIONARY WARFARE ADVANCED TECHNOLOG Augmented reality visualization of the common operational picture	21,326	2,000 [2,000]	23,326
1319	0603158N	29	JOINT COMMAND AND CONTROL PROGRAM (JC2)	1,001		1,001
1319	0603207N	30	AIR/OCEAN TACTICAL APPLICATIONS	31,778		31,778
1319	0603216N	31	AVIATION SURVIVABILITY	6,177		6,177
1319	0603237N	32	DEPLOYABLE JOINT COMMAND AND CONTROL	16,383		16,383
1319	0603254N	33	ASW SYSTEMS DEVELOPMENT Electro-optic Passive ASW System	16,782	6,700 [6,700]	23,482
1319	0603261N	34	TACTICAL AIRBORNE RECONNAISSANCE	3,959		3,959
1319	0603382N	35	ADVANCED COMBAT SYSTEMS TECHNOLOGY	12,398		12,398
1319	0603502N	36	SURFACE AND SHALLOW WATER MINE COUNTERMEASURES Surface Navy integrated undersea tactical technology	130,265	2,000 [2,000]	132,265
1319	0603506N	37	SURFACE SHIP TORPEDO DEFENSE	40,627		40,627
1319	0603512N	38	CARRIER SYSTEMS DEVELOPMENT	153,894		153,894

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1319	0603513N	39	SHIPBOARD SYSTEM COMPONENT DEVELOPMENT Smart valve	14,135	14,000 [2,500]	28,135
			Gas Turbine Electric Start System technology upgrade		[5,500]	
			High temp superconductor AC synchronous propulsion motor		[6,000]	
1319	0603525N	40	PILOT FISH	134,550		134,550
1319	0603527N	41	RETRACT LARCH	87,180		87,180
1319	0603536N	42	RETRACT JUNIPER	38,462		38,462
1319	0603542N	43	RADIOLOGICAL CONTROL	1,901		1,901
1319	0603553N	44	SURFACE ASW	38,696		38,696
1319	0603559N	45	SSGN CONVERSION	25,953		25,953
1319	0603561N	46	ADVANCED SUBMARINE SYSTEM DEVELOPMENT Next strategic missile submarine	140,432	10,000 [10,000]	150,432
1319	0603562N	47	SUBMARINE TACTICAL WARFARE SYSTEMS	10,357		10,357
1319	0603563N	48	SHIP CONCEPT ADVANCED DESIGN	21,549		21,549
1319	0603564N	49	SHIP PRELIMINARY DESIGN & FEASIBILITY STUDIES	21,314		21,314
1319	0603570N	50	ADVANCED NUCLEAR POWER SYSTEMS	174,648		174,648
1319	0603573N	51	ADVANCED SURFACE MACHINERY SYSTEMS			
1319	0603576N	52	CHALK EAGLE	139,017		139,017
1319	0603581N	53	LITTORAL COMBAT SHIP (LCS)	319,671		319,671
1319	0603582N	54	COMBAT SYSTEM INTEGRATION	62,095		62,095
1319	0603609N	55	CONVENTIONAL MUNITIONS	22,385		22,385
1319	0603611M	56	MARINE CORPS ASSAULT VEHICLES	188,306		188,306
1319	0603612M	57	USMC MINE COUNTERMEASURES SYSTEMS - ADV DEV	3,777		3,777

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1319	0603635M	58	MARINE CORPS GROUND COMBAT/SUPPORT SYSTEM Moldable fabric armor	503	4,000	4,503
			Urban operations laboratory		[2,000]	
1319	0603654N	59	JOINT SERVICE EXPLOSIVE ORDNANCE DEVELOPMENT Joint service and EOD IED countermeasures R&D	24,467	9,100	33,567
			COOPERATIVE ENGAGEMENT	53,406		53,406
1319	0603713N	61	OCEAN ENGINEERING TECHNOLOGY DEVELOPMENT	16,324		16,324
1319	0603721N	62	ENVIRONMENTAL PROTECTION	20,271		20,271
1319	0603724N	63	NAVY ENERGY PROGRAM	1,600		1,600
1319	0603725N	64	FACILITIES IMPROVEMENT	4,194		4,194
1319	0603734N	65	CHALK CORAL	28,578		28,578
1319	0603739N	66	NAVY LOGISTIC PRODUCTIVITY	6,306		6,306
1319	0603746N	67	RETRACT MAPLE	344,912		344,912
1319	0603748N	68	LINK PLUMERIA	80,662		80,662
1319	0603751N	69	RETRACT ELM	64,133		64,133
1319	0603755N	70	SHIP SELF DEFENSE	8,897		8,897
1319	0603764N	71	LINK EVERGREEN	55,051		55,051
1319	0603787N	72	SPECIAL PROCESSES	47,180		47,180
1319	0603790N	73	NATO RESEARCH AND DEVELOPMENT	9,784		9,784
1319	0603795N	74	LAND ATTACK TECHNOLOGY	18,571		18,571
1319	0603851M	75	NONLETHAL WEAPONS	44,815		44,815
1319	0603857N	76	ALL SERVICE COMBAT IDENTIFICATION EVALUATION TEAM (A)			
1319	0603860N	77	JOINT PRECISION APPROACH AND LANDING SYSTEMS	41,242		41,242
1319	0603879N	78	SINGLE INTEGRATED AIR PICTURE (SIAP) SYSTEM ENGINEER (S	50,282		50,282

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1319	0603889N	79	COUNTERDRUG RDT&E PROJECTS Project Athena		6,500	6,500
NEW	0603925N	79a	Directed Energy Research		[6,500]	
1320	0604272N	80	TACTICAL AIR DIRECTIONAL INFRARED COUNTERMEASURES (	20,527	50,000	50,000
1319	0604327N	81	HARD AND DEEPLY BURIED TARGET DEFEAT SYSTEM (HDBTDS	77,000		20,527
1319	0604707N	82	SPACE AND ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENG	43,909		77,000
1319	0604787N	83	JOINT WARFARE TRANSFORMATION PROGRAMS			43,909
1319	0604212N	84	OTHER HELO DEVELOPMENT	86,197		86,197
1319	0604214N	85	AV-8B AIRCRAFT - ENG DEV	13,878		13,878
1319	0604215N	86	STANDARDS DEVELOPMENT	112,257		112,257
1319	0604216N	87	MULTI-MISSION HELICOPTER UPGRADE DEVELOPMENT	19,259		19,259
1319	0604218N	88	AIR/OCEAN EQUIPMENT ENGINEERING	5,578		5,578
1319	0604221N	89	P-3 MODERNIZATION PROGRAM	16,139		16,139
1319	0604230N	90	WARFARE SUPPORT SYSTEM	2,203		2,203
1319	0604231N	91	TACTICAL COMMAND SYSTEM	74,225		74,225
1319	0604234N	92	ADVANCED HAWKEYE	497,842		497,842
1319	0604245N	93	H-1 UPGRADES	7,844		7,844
1319	0604261N	94	ACOUSTIC SEARCH SENSORS	36,764		36,764
1319	0604262N	95	V-22A	268,461		268,461
1319	0604264N	96	AIR CREW SYSTEMS DEVELOPMENT	12,434		12,434
1319	0604269N	97	EA-18	372,363		372,363
1319	0604270N	98	ELECTRONIC WARFARE DEVELOPMENT	39,842		39,842
1319	0604273N	99	VHXX EXECUTIVE HELO DEVELOPMENT	682,597		682,597
1319	0604280N	100	JOINT TACTICAL RADIO SYSTEM - NAVY (JTRS-NAVY)	1,153		1,153
1319	0604300N	101	SC-21 TOTAL SHIP SYSTEM ENGINEERING	817,528		817,528

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1319	0604307N	102	SURFACE COMBATANT COMBAT SYSTEM ENGINEERING	190,059		190,059
1319	0604311N	103	LPD-17 CLASS SYSTEMS INTEGRATION	5,960		5,960
1319	0604312N	104	TRI-SERVICE STANDOFF ATTACK MISSILE			
1319	0604329N	105	SMALL DIAMETER BOMB (SDB)	10,021		10,021
1319	0604366N	106	STANDARD MISSILE IMPROVEMENTS	186,144		186,144
1319	0604373N	107	AIRBORNE MCM	56,145		56,145
1319	0604378N	108	NAVAL INTEGRATED FIRE CONTROL - COUNTER AIR SYSTEMS I	14,792		14,792
1319	0604503N	109	SSN-688 AND TRIDENT MODERNIZATION	94,839	10,000	104,839
			Twin line thimble towed array		[10,000]	
1319	0604504N	110	AIR CONTROL	4,603		4,603
1319	0604507N	111	ENHANCED MODULAR SIGNAL PROCESSOR			
1319	0604512N	112	SHIPBOARD AVIATION SYSTEMS	33,392		33,392
1319	0604518N	113	COMBAT INFORMATION CENTER CONVERSION	6,708		6,708
1319	0604558N	114	NEW DESIGN SSN	169,580	65,000	234,580
			Virginia class affordable design		[65,000]	
1319	0604561N	115	SSN-21 DEVELOPMENTS	3,260		3,260
1319	0604562N	116	SUBMARINE TACTICAL WARFARE SYSTEM	51,656		51,656
1319	0604567N	117	SHIP CONTRACT DESIGN/LIVE FIRE T&E	72,055		72,055
1319	0604574N	118	NAVY TACTICAL COMPUTER RESOURCES			
1319	0604601N	119	MINE DEVELOPMENT	5,631		5,631
1319	0604603N	120	UNGUIDED CONVENTIONAL AIR-LAUNCHED WEAPONS			
1319	0604610N	121	LIGHTWEIGHT TORPEDO DEVELOPMENT	40,540		40,540
1319	0604654N	122	JOINT SERVICE EXPLOSIVE ORDNANCE DEVELOPMENT	10,026		10,026
1319	0604703N	123	PERSONNEL, TRAINING, SIMULATION, AND HUMAN FACTORS	8,754		8,754
1319	0604721N	124	BATTLE GROUP PASSIVE HORIZON EXTENSION SYSTEM			

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1319	0604727N	125	JOINT STANDOFF WEAPON SYSTEMS	27,524		27,524
1319	0604755N	126	SHIP SELF DEFENSE (DETECT & CONTROL)	10,050	4,000	14,050
			Autonomous unmanned surface vessel		[4,000]	
1319	0604756N	127	SHIP SELF DEFENSE (ENGAGE: HARD KILL)	46,390		46,390
1319	0604757N	128	SHIP SELF DEFENSE (ENGAGE: SOFT KILL/EW)	11,513	6,000	17,513
			MK 53 (NULKA) Decoy System		[6,000]	
1319	0604761N	129	INTELLIGENCE ENGINEERING	4,865		4,865
1319	0604771N	130	MEDICAL DEVELOPMENT	7,663	2,500	10,163
			Non-invasive vectored vaccine research		[2,000]	
			Chiropractic treatment study		[500]	
1319	0604777N	131	NAVIGATION/ID SYSTEM	47,070		47,070
1319	0604784N	132	DISTRIBUTED SURVEILLANCE SYSTEM	58,273		58,273
1319	0604800N	133	JOINT STRIKE FIGHTER (JSF)	2,030,979	200,400	2,231,379
			Joint Strike Fighter alternate engine development		[200,400]	
1319	0604910N	134	SMART CARD			
1319	0605013M	135	INFORMATION TECHNOLOGY DEVELOPMENT	13,326		13,326
1319	0605013N	136	INFORMATION TECHNOLOGY DEVELOPMENT	88,323		88,323
1319	0605172N	137	MULTINATIONAL INFORMATION SHARING (MNIS)	20,856		20,856
1319	0605212N	138	CH-53X RDTE	362,672		362,672
1319	0605500N	139	MULTI-MISSION MARITIME AIRCRAFT (MMA)	1,131,655		1,131,655
1319	0304785N	140	TACTICAL CRYPTOLOGIC SYSTEMS	23,526		23,526
1319	0604256N	141	THREAT SIMULATOR DEVELOPMENT	23,668		23,668
1319	0604258N	142	TARGET SYSTEMS DEVELOPMENT	45,666		45,666
1319	0604759N	143	MAJOR T&E INVESTMENT	39,750		39,750
1319	0605152N	144	STUDIES AND ANALYSIS SUPPORT - NAVY	7,093		7,093

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1319	0605154N	145	CENTER FOR NAVAL ANALYSES	48,900		48,900
1319	0605155N	146	FLEET TACTICAL DEVELOPMENT	2,595		2,595
1319	0605502N	147	SMALL BUSINESS INNOVATIVE RESEARCH			
1319	0605804N	148	TECHNICAL INFORMATION SERVICES	670		670
1319	0605853N	149	MANAGEMENT, TECHNICAL & INTERNATIONAL SUPPORT	47,213		47,213
1319	0605856N	150	STRATEGIC TECHNICAL SUPPORT	3,347		3,347
1319	0605861N	151	RD&E SCIENCE AND TECHNOLOGY MANAGEMENT	67,328		67,328
1319	0605862N	152	RD&E INSTRUMENTATION MODERNIZATION	1,243		1,243
1319	0605863N	153	RD&E SHIP AND AIRCRAFT SUPPORT	83,140		83,140
1319	0605864N	154	TEST AND EVALUATION SUPPORT	328,276		328,276
1319	0605865N	155	OPERATIONAL TEST AND EVALUATION CAPABILITY	11,532		11,532
1319	0605866N	156	NAVY SPACE AND ELECTRONIC WARFARE (SEW) SUPPORT	2,904		2,904
1319	0605867N	157	SEW SURVEILLANCE/RECONNAISSANCE SUPPORT	20,073		20,073
1319	0605873M	158	MARINE CORPS PROGRAM WIDE SUPPORT Detection and recovery of UXO	25,343	5,000 [5,000]	30,343
1319	0305885N	159	TACTICAL CRYPTOLOGIC ACTIVITIES	1,004		1,004
1319	0804758N	160	SERVICE SUPPORT TO JFCOM, JNTC	5,202		5,202
1319	0909999N	161	FINANCING FOR CANCELLED ACCOUNT ADJUSTMENTS	[ ]		[ ]
1319	0603660N	162	ADVANCED DEVELOPMENT PROJECTS	[ ]		[ ]
1319	0604227N	163	HARPOON MODIFICATIONS	36,284		36,284
1319	0604402N	164	UNMANNED COMBAT AIR VEHICLE (UCAV) ADVANCED COMPO	239,163		239,163
1319	0101221N	165	STRATEGIC SUB & WEAPONS SYSTEM SUPPORT	124,522		124,522
1319	0101224N	166	SSBN SECURITY TECHNOLOGY PROGRAM	42,869		42,869
1319	0101226N	167	SUBMARINE ACOUSTIC WARFARE DEVELOPMENT	2,131		2,131
1319	0101402N	168	NAVY STRATEGIC COMMUNICATIONS	37,464		37,464

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1319	0203761N	169	RAPID TECHNOLOGY TRANSITION (RTT)	39,285		39,285
1319	0204136N	170	F/A-18 SQUADRONS	31,098		31,098
1319	0204152N	171	E-2 SQUADRONS	1,540		1,540
1319	0204163N	172	FLEET TELECOMMUNICATIONS (TACTICAL)	27,189		27,189
1319	0204229N	173	TOMAHAWK AND TOMAHAWK MISSION PLANNING CENTER (TM)	18,635		18,635
1319	0204311N	174	INTEGRATED SURVEILLANCE SYSTEM	30,740		30,740
1319	0204413N	175	AMPHIBIOUS TACTICAL SUPPORT UNITS (DISPLACEMENT CRAF	1,812		1,812
1319	0204571N	176	CONSOLIDATED TRAINING SYSTEMS DEVELOPMENT	17,857		17,857
1319	0204574N	177	CRYPTOLOGIC DIRECT SUPPORT	1,425		1,425
1319	0204575N	178	ELECTRONIC WARFARE (EW) READINESS SUPPORT	20,673		20,673
1319	0205601N	179	HARM IMPROVEMENT	99,208		99,208
1319	0205604N	180	TACTICAL DATA LINKS	41,967		41,967
1319	0205620N	181	SURFACE ASW COMBAT SYSTEM INTEGRATION	9,417		9,417
1319	0205632N	182	MK-48 ADCAP	24,988		24,988
1319	0205633N	183	AVIATION IMPROVEMENTS	71,612		71,612
1319	0205658N	184	NAVY SCIENCE ASSISTANCE PROGRAM	3,376		3,376
1319	0205675N	185	OPERATIONAL NUCLEAR POWER SYSTEMS	69,350		69,350
1319	0206313M	186	MARINE CORPS COMMUNICATIONS SYSTEMS AN/TPS-59 low earth orbit (LEOS) acceleration Battlefield Management System software development	218,460	32,000 [5,000]	250,460
1319	0206623M	187	MARINE CORPS GROUND COMBAT/SUPPORTING ARMS SYSTEM Counter-radio controlled IED development Ultrasonic consolidation technology Polymer-based IED detection tools	47,592	[2,000] [25,000] 8,500 [4,500] [4,000]	56,092

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1319	0206624M	188	MARINE CORPS COMBAT SERVICES SUPPORT Expeditionary assault bridge development	17,524	9,000 [9,000]	26,524
1319	0207161N	189	TACTICAL AIM MISSILES	7,946		7,946
1319	0207163N	190	ADVANCED MEDIUM RANGE AIR-TO-AIR MISSILE (AMRAAM)	6,705		6,705
1319	0208058N	191	JOINT HIGH SPEED VESSEL (JHSV)	14,163		14,163
1319	0301303N	192	MARITIME INTELLIGENCE Vessel Integrity System	[ ]	5,500 [1,000]	5,500
			Surf Eagle environmental intelligence	[ ]	[4,500]	[ ]
1319	0301323N	193	COLLECTION MANAGEMENT	[ ]		[ ]
1319	0303217N	194	TECHNICAL RECONNAISSANCE AND SURVEILLANCE	[ ]		[ ]
1319	0303109N	195	SATELLITE COMMUNICATIONS (SPACE)	748,662		748,662
1319	0303140N	196	INFORMATION SYSTEMS SECURITY PROGRAM	23,037		23,037
1319	0303158N	197	JOINT COMMAND AND CONTROL PROGRAM (JC2)	5,073		5,073
1319	0305149N	198	COBRA JUDY	135,372		135,372
1319	0305160N	199	NAVY METEOROLOGICAL AND OCEAN SENSORS-SPACE (METOX)	7,307		7,307
1319	0305188N	200	JOINT C4ISR BATTLE CENTER (JBC)			
1319	0305192N	201	MILITARY INTELLIGENCE PROGRAM (MIP) ACTIVITIES	6,793		6,793
1319	0305204N	202	TACTICAL UNMANNED AERIAL VEHICLES	115,950		115,950
1319	0305205N	203	ENDURANCE UNMANNED AERIAL VEHICLES	26,357		26,357
1319	0305206N	204	AIRBORNE RECONNAISSANCE SYSTEMS	35,038		35,038
1319	0305207N	205	MANNED RECONNAISSANCE SYSTEMS	22,815		22,815
1319	0305208N	206	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	16,587		16,587
1319	0307207N	207	AERIAL COMMON SENSOR (ACS)	17,182		17,182
1319	0308601N	208	MODELING AND SIMULATION SUPPORT	7,503		7,503
1319	0702207N	209	DEPOT MAINTENANCE (NON-IF)	2,960		2,960

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(Dollars in Thousands)

<u>Acct</u>	<u>Account</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2007</u> <u>Request</u>	<u>Senate</u> <u>Change</u>	<u>Senate</u> <u>Authorized</u>
1319	0702239N	210	AVIONICS COMPONENT IMPROVEMENT PROGRAM	1,375		1,375
1319	0708011N	211	INDUSTRIAL PREPAREDNESS	55,048		55,048
1319	0708730N	212	MARITIME TECHNOLOGY (MARITECH)		10,000	10,000
			National shipbuilding research program-adv shipbuilding enterprise		[10,000]	
1319	XXXXXXXX	999	CLASSIFIED PROGRAMS	1,181,325		1,181,325
			<b>Total, RDT&amp;E Navy</b>	<b>16,912,223</b>	<b>539,600</b>	<b>17,451,823</b>

**Navy university research**

The budget request included \$73.3 million in PE 61103N, for university research initiatives and \$366.6 million in PE 61153N, for defense research sciences. Navy basic research programs explore innovation and discovery in areas that pose challenges in the maritime battlefield such as corrosion; fire-retardant, impact resistant materials and structures; neuroscience and biorobotics; electronic sensors and energy sciences; and information assurance. The committee recommends an increase of \$5.5 million in PE 61103N for university basic defense research, including \$1.5 million for multifunctional materials for Navy structures; \$2.0 million for neurotechnology research; and \$2.0 million for smart, remote sensing systems using nanotechnology. The committee also recommends an increase of \$2.0 million in PE 61153N, for software reliability.

**Thermal management systems**

The budget request included \$84.9 million in PE 62114N, for applied research on power projection technologies. The committee recommends an increase of \$2.0 million in PE 62114N for the development of new thermal management systems with the capability to cool high power density electronics. Electronics in future military systems with highly complex microelectronics, high processing speeds, and higher power operation require advanced thermal management systems to optimize their performance. The development of thermal management technologies are highlighted in a number of Defense Technology Objectives, including those related to the development of advanced radio frequency electronics technologies to support naval missions such as surveillance, weapons control, electronic warfare, communications, and identification of “friend or foe.”

**Force protection applied research**

The budget request included \$123.4 million in PE 62123N, for force protection applied research. Naval warfighting capabilities supported by this program include maintaining platform and force mobility through stealth, area and self-defense, structural toughness, and reconfigurability. The committee recommends an increase of \$18.0 million in PE 62123N for targeted development and transition activities, including \$2.0 million for advanced simulation tools for aircraft structures; \$2.5 million for development of a real-time wideband acoustic processor for fiber sensors; \$5.0 million for final outfitting and completion of the Mark V technology demonstrator; \$2.5 million for nano-magnetic materials for propulsion and energy systems; \$4.0 million for thermal design, system qualification, and power integration on the small watercraft propulsion demonstrator; and \$2.0 million for the undersea perimeter security integrated defense environment.

**High power, lightweight battery research**

The budget request included \$37.7 million in PE 62131M, for Marine Corps landing force technology. Growing energy and power needs of the dismounted warrior must be met with advanced, reliable, high-power, batteries that are significantly lighter and smaller. The committee notes that the Department of Defense’s research

enterprise explores various approaches to solving energy and power challenges for the dismounted soldier, including solid oxide fuel cell systems pursued by Special Operations Command.

The committee recommends an increase of \$1.9 million in PE 62131M for prototype research on a high power, small, lightweight zinc-air battery specifically to scale down larger batteries for operation of smaller devices without losing power density.

#### **Human factors and organizational design**

The budget request included \$68.4 million in PE 62235N, for common picture applied research. The committee recommends a decrease of \$2.0 million in PE 62235N for programs in social science based-computational models and human performance research that are duplicative of efforts in other services and agencies.

#### **Sea basing technologies**

The budget request included \$90.0 million in PE 62236N, for applied research on warfighter sustainment technologies. The committee recommends a decrease of \$7.0 million in PE 62236N to limit the number of demonstrators developed under the sea basing concept until it is better defined and has established transition paths to acquisition programs.

#### **Information sharing technologies**

The budget request included \$76.8 million in PE 63114N, for power projection advanced technology. Recent operations in Iraq and Afghanistan have highlighted the importance of time critical strikes on high-value mobile targets in complex environments. The committee recommends an increase of \$2.0 million in PE 63114N for the development of communications and information processing technologies that assist in the surveillance, targeting, and engagement of mobile targets.

#### **Power projection advanced technology**

The budget request included \$76.8 million in PE 63114N, for power projection advanced technology research programs. The committee recommends a decrease of \$10.0 million in PE 63114N to limit growth of programs with no defined transition pathway to Navy acquisition programs. The committee recommends limiting funding of hypersonics programs until completion and implementation of a Department-wide strategy for hypersonics technology development and demonstration.

#### **Force protection advanced technology**

The budget request included \$61.5 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 com-

mittee recommends an increase of \$5.0 million in PE 63123N for the development of a transportable manufacturing and repair cell.

The budget request included no funding for completion of advanced ship service fuel cell (SSFC) power plant design. The Navy has invested over \$30.0 million in design and development of advanced prototype fuel cell demonstration systems for shipboard application. Additional funding will enable performance characterization, including endurance and latent defect testing at the DD(X) land-based engineering site to demonstrate compatibility with DD(X) integrated power system architecture. The committee recommends an increase of \$4.0 million in PE 63123N for the continued development of a SSFC.

The budget included no funding for the continued 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 \$8.0 million in PE 63123N for the continued development of wide band gap semiconductor substrate material.

The committee recommends a total authorization of \$78.5 million in PE 63123N for force protection advanced technology.

#### **Common picture advanced technology**

The budget request included \$61.7 million in PE 63235N, for common picture advanced technology. Processing large quantities of information from a variety of sensors and assets into actionable information requires assistance and some degree of automation. The committee recommends an increase of \$5.0 million in PE 63235N to promote transition of research in processing of sensor data, including \$3.0 million for near-term development of an improved shipboard command information center; and \$2.0 million for the rail sensor testbed.

#### **Warfighter sustainment technology**

The budget request included \$82.0 million in PE 63236N for the development of warfighter sustainment advanced technology, but included no funding for advanced composites material research, the Defense Systems Modernization and Sustainment Initiative, or the Vertical Lift Center of Excellence.

The Marine Corps has a need for a new generation of armored, light-weight, long-life ground vehicles for use in a variety of adverse conditions. The Advanced Composite Materials Research project would apply the structural benefits of composites, including bio-mimetics, to develop increased survivability, improved safety design, and self-diagnostic structural features for military ground vehicles. The committee recommends an increase of \$5.0 million in PE 63236N for advanced composite materials research.

The Defense Systems Modernization and Sustainment Initiative is a research program focused on improving the modernization, readiness, and sustainment of defense systems by developing processes and tools to track the status and future health of defense systems; to detect, diagnose and repair material aging failures; and to provide decision systems for use in determining when and how to upgrade these systems. The committee recommends an increase of

\$8.0 million for the Defense Systems Modernization and Sustainment Initiative.

The Vertical Lift Center of Excellence at Naval Aviation Depot, Cherry Point, provides for science and technology insertion into a dedicated activity to identify, demonstrate, validate, and assist in implementing improved maintenance products, procedures, and processes into depot operations. The result of these efforts is increased readiness by improving maintenance operations and decreasing maintenance cycle times for rotary wing aircraft. The committee recommends an increase of \$4.0 million for the Vertical Lift Center of Excellence.

The committee recommends a total authorization of \$99.0 million in PE 63236N.

#### **APY-6 real-time precision targeting radar**

The budget request included \$45.3 million in PE 63271N, for radio frequency systems advanced technology. The committee recommends an increase of \$2.0 million in PE 63271N for continued demonstrations and development of the APY, real-time precision targeting radar to support unmanned air vehicle mission requirements.

#### **Marine Corps advanced technology**

The budget request included \$59.2 million in PE 63640M, for Marine Corps advanced technology demonstrations. The committee recognizes the work and dedication of the Office of Naval Research and the Marine Corps Warfighting Lab in meeting the short and long term needs of expeditionary force, particularly in the areas of body armor; information, surveillance, and reconnaissance; and chemical, biological, and radiological detection and warning. The committee recommends an increase of \$15.0 million in PE 63640M for Marine Corps technology demonstrations, including \$12.0 million for the core advanced technology program to focus on the areas noted above; and \$3.0 million for expeditionary water purification.

The committee further recommends an increase of \$6.0 million in PE 63640M for design and development of advanced combat tactical vehicle prototypes that optimize system mobility, survivability, and lethality.

#### **Visual integrated bridge system**

The budget request included \$21.3 million in PE 63782N, for mine and expeditionary warfare advanced development. Navy evaluations of the Augmented Reality Visualization of the Common Operational Picture (ARVCOP) on numerous platforms demonstrated utility of the system for improved safety, navigation, and battlespace awareness. The committee recommends an increase of \$2.0 million in PE 63782N to promote transition of the system to the fleet.

#### **Electro-optic Passive ASW System**

The budget request included \$9.9 million in PE 63254N for the Electro-optic Passive ASW System (EPAS). EPAS is a 15-inch turret-based suite of electro-optic and magnetic anomaly detection sensors with the potential to provide a 24-hour air ASW capability for

fixed wing, helicopter, and unmanned aircraft system ASW platforms. Additional EPAS turret systems and real-time detection, classification, and false alarm mitigation capabilities are required for realistic system operational assessment in a multi-platform fleet environment before transitioning to a follow-on acquisition program. The committee recommends an increase of \$6.7 million in PE 63254N for development of the Electro-optic Passive ASW System.

#### **Surface Navy Integrated Undersea Tactical Technology**

The budget request included \$130.3 million in PE 63502N for surface and shallow water mine countermeasures, but included no funding for the Surface Navy Integrated Undersea Tactical Technology (SNIUTT) program. SNIUTT would provide surface ship mine countermeasures sonar operators with the simulated training necessary to recognize mine-like contacts. SNIUTT would expand the mine recognition training technologies and scenario generation capabilities successfully demonstrated in airborne mine countermeasure to all Navy mine-hunting sonars. The committee recommends an increase of \$2.0 million in PE 63502N for SNIUTT.

#### **Shipboard system component development**

The budget request included \$14.1 million in PE 63513N for shipboard system component development, including \$7.1 million for the development of integrated power systems, but included no funding for the high temperature superconductor alternating current (HTS-AC) synchronous marine propulsion motor development, Smart Valve development, or for gas turbine electric start system technology upgrade.

A 36.5 megawatt prototype HTS-AC synchronous propulsion motor will be delivered to the Navy in fiscal year 2006. Design of a fully militarized motor, specifically for DD(X), will commence in 2006. Additional funding is required in fiscal year 2007 to support full power testing of the prototype motor, and to complete the preliminary design for militarization of the HTS-AC motor for potential application to a future surface combatant. The committee recommends an increase of \$6.0 million in PE 63513N for the continued development of the HTS-AC synchronous marine propulsion motor.

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, quick response; and includes self-diagnostic capability for preventive, condition-based maintenance. Increased service life and improved functional design with Smart Valves result in reduced maintenance and reduced life cycle cost. The committee recommends an increase of \$2.5 million in PE 63513N to complete development of a prototype Smart Valve.

The gas turbine electric start system technology upgrade would expand the application of electric starters to naval gas turbine engines for potential use on the Navy's CG-47 class, DDG-51 class,

and future naval ships. Electric start technology would greatly simplify gas turbine start system design, resulting in increased reliability and reduced procurement and support costs. The committee recommends an increase of \$5.5 million in PE 63513N to develop and qualify an electric start system for naval gas turbine engines.

The committee recommends a total authorization of \$28.1 million in PE 63513N for shipboard system component development.

### **Marine Corps ground combat and supporting arms systems**

The budget request included \$503,000 in PE 63635M, for the development of Marine Corps ground combat and supporting arms systems, but no funding for moldable fabric armor or the Unit Operations Laboratory.

Moldable fabric armor is made from a highly engineered polypropylene tape yarn which exhibits high impact resistance at a very light weight. The committee believes that moldable fabric armor has the potential to provide an alternative to the current integrated body armor worn by Marines and soldiers, who often carry almost 100 pounds of equipment when deployed in combat situations.

Nonlethal weapon development initiatives aim to minimize collateral damage to infrastructure and personnel, while neutralizing facilities and the threats that might be posed to these facilities and the personnel that occupy them. An urban operations laboratory will provide assessment and analysis of the affects of non-lethal technologies to ensure minimum environmental and collateral damage when used in urban activities. The committee believes that the Marine Corps must have a broad range of responses to contain and manage emerging threats before, during, and after conflict, and with minimum collateral damage.

The committee recommends an increase of \$2.0 million for moldable fabric armor development and \$2.0 million for an urban operations laboratory in PE 62635M, for a total authorization of \$4.5 million.

### **Project Athena**

The budget request included \$2.5 million in PE 63889N, for Project Athena. Project Athena is a situational awareness system that provides a common operational picture (COP) to national, regional, and local users. It fuses real-time downlinks from surveillance sensors, multiple data bases, and other sources of intelligence reporting into a COP that can be tailored to multiple security levels, including unclassified. Project Athena is capable of providing a COP to the Department of Defense, the Department of Homeland Security, the U.S. Coast Guard, first responders, and allied nations in a more timely and simultaneous manner. The Department of Defense Counternarcotics Technology Program Office is responsible for the project and has successfully tested Project Athena in maritime tracking in the United States. In fiscal year 2006, Project Athena is being used at the Joint Interagency Task Force South in Florida and jointly with the Colombian Navy.

The committee recommends an increase of \$6.5 million to PE 63889N for the further integration of databases and sensors, and

additional operational tests with interagency, first responders, and allied nations.

### **Directed energy and electric weapon systems**

The budget request included \$41.7 million funding in PE 61153N, PE 62114N, and PE 63114N, for directed energy technology and continued development of an electromagnetic rail gun (EMRG). Progress with these developments, in conjunction with the Navy's programmed introduction of ship integrated power systems, has established a foundation for fielding shipboard directed energy and electric weapon systems.

The Chief of Naval Operations has noted that the EMRG would provide an extremely long range and persistent volume of fire, significantly improving naval gunfire support for forces ashore. In view of research by other, non-allied nations involving similar technology, it is vital that the Navy maintains its edge in this critical area. The committee is aware that the Navy has moved forward with the establishment of the Directed Energy Technology Office and the Directed Energy Weapons Program Office to manage directed energy weapons research, development, integration, and acquisition for the Navy. The committee agrees with the Navy's increased emphasis on this critical future capability, including the construction of the Electromagnetic Research and Engineering Facility and the new 64 megajoule railgun facility at the Naval Surface Warfare Center (NSWC), Dahlgren. The committee recommends an increase of \$50.0 million in PE 63925N to accelerate development of directed energy and electric weapon systems, including:

- (1) an increase of \$13.4 million to outfit the Electromagnetic Research and Engineering Facility to conduct high lethality laser and high power Radio Frequency (RF)/microwave research;
- (2) an increase of \$8.6 million for electromagnetic railgun research in advanced material development for bore life engineering, projectile design, and power system requirements;
- (3) an increase of \$15.0 million for RF energy application to counter Improvised Explosive Devices, including Terahertz system development, solid state heat capacity laser analysis and test, and high power microwave technology application; and
- (4) an increase of \$13.0 million for high energy laser development in conjunction with ship self-protection and laser guided energy development and application to lethal and non-lethal ship weapon systems.

### **Towed array improvements**

The budget request included \$94.8 million in PE 64503N for Submarine Systems Equipment Development, including \$5.7 million for affordable towed array technology development. Twin line, thinline towed array capability is a key technology for long-range passive detection against quiet diesel submarines in the littorals. Leveraging current TB-33 array baseline technology development by adding twin line, thinline capability would enhance performance and affordability. Advance processor technologies are required to solve the need for greater processing capability, while decreasing

internal heat load on the submarine. Array/array handling system design improvements are necessary to increase component reliability. Additional funding to accelerate investment in twin line, thinline towed array capability has been included on the Chief of Naval Operations' unfunded priorities list. The committee recommends an increase of \$10.0 million in PE 64503N for the development of affordable towed array construction, improved towed array/array handler reliability, and for the development and testing of advance processing technologies, including the field programmable gate arrays for application to the twin line, thinline towed array system.

### **Submarine design**

The budget request included \$169.6 million in PE 64558N for the continuing development of the Virginia-class submarine, and \$140.4 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 the Virginia-class and future submarine concepts.

The budget request included \$20.0 million for affordability design, but included no funding for concept formulation for the next generation strategic submarine platform. Similarly, the budget request included no funding to continue development of a family of systems and capabilities, the focus of which is to spirally incorporate capabilities needed to enhance undersea superiority of the Virginia-class. The committee believes that continued investment in these capabilities is needed to meet the future threat. However, the most important measure to increase operational capability of the Virginia-class is to increase the program's building rate as soon as practical. The committee is concerned that the Navy's proposed shipbuilding program is insufficient to meet the submarine force structure requirements outlined in the Secretary of the Navy's report on the long-range plan for the construction of naval vessels. The committee urges the Navy to mitigate this shortfall by moving toward a production goal of two submarines per year beginning in 2010. The committee is aware that the Chief of Naval Operations has established an affordability threshold as a criterion for increasing the submarine procurement rate, and recognizes that initiatives to add critical capabilities to the Virginia-class need to be accomplished in a manner that supports the established affordability objectives.

The committee recommends an increase of \$65.0 million in PE 64558N to support cost reduction initiatives for the Virginia-class design and construction. This additional funding is to include the design and development, leading to affordable integration of the following capabilities into the Virginia-class:

- (1) Multi-Mission Module;
- (2) Large Aperture Bow Array;
- (3) spiral Alpha for the Virginia-class Warfare Management System;
- (4) Common Open Architecture Weapon System Components;
- (5) Submarine Network-centric Capability Technology Insertion; and

(6) Submarine Command & Control Systems Advanced Technology Insertion.

The committee is further concerned that, for the first time in more than 50 years, the United States is not actively engaged in the design of a new class of nuclear submarine. The current Navy schedule to initiate the next generation submarine platform design causes a significant gap in the design and engineering industrial workload such that the industrial base will not likely be able to preserve the critical skills and capabilities needed for this effort. Testimony by industry and Navy experts before the Subcommittee on Seapower of the Committee on Armed Services emphasized the criticality of maintaining a viable submarine design industrial base to avoid the severe delays and cost overruns experienced by other navies, whose design base atrophied during lengthy periods between new design efforts. The committee recommends an increase of \$10.0 million in PE 63561N to initiate concept formulation on the next generation submarine platform, including alternate design approaches, integration of future weapons systems, and mission capabilities.

**Ship self-defense**

The budget request included \$10.1 million in PE 64755N for ship self-defense, but included no funding for continued development of the autonomous unmanned surface vehicle (AUSV). The AUSV is being developed as a concept demonstrator for hydrographic survey, and for potential antiterrorism force protection missions in defense of harbors and coastal facilities. The committee recommends an increase of \$4.0 million in PE 64755N for the continued development of the AUSV.

**NULKA anti-ship missile decoy development**

The budget request included \$11.5 million in PE 64757N for development of soft kill technologies for ship self-defense, and \$1.0 million for the continuing development of the NULKA decoy. NULKA is an offboard, active decoy designed to counter a wide variety of present and future radar-guided anti-ship missiles. Continued development of NULKA is necessary to counter anti-ship missiles, which may migrate to other frequency bands or use dual mode seekers. The committee recommends an increase of \$6.0 million in PE 64757N for the continued development of the NULKA decoy.

**Chiropractic treatment outcomes study**

The budget request included \$7.7 million in PE 64771N, for medical development. Section 702 of the Floyd D. Spence National Defense Authorization Act for Fiscal Year 2001 (Public Law 106-398) directed the Department of Defense to develop a plan to provide chiropractic health care services and benefits to active-duty personnel as a permanent part of the Defense Health Program. The committee directs the Secretary of the Navy to commission a study by a federally-funded research and development center to assess progress of the program and the efficacy and application of chiropractic health care services in reducing musculoskeletal disabilities among active-duty personnel. The study should include: an evalua-

tion of the effectiveness of the care provided to military personnel including pilots and infantrymen; development of metrics for measurement of appropriate chiropractic treatment outcomes; and identification of any additional requirements for research. The committee recommends an increase of \$500,000 in PE 64771N to conduct the required study. The results of the study should be reviewed by the Assistant Secretary of Defense for Health Affairs, and submitted to the congressional defense committees with any comments not later than 1 year after the date of enactment of this Act.

#### **Navy medical research**

The budget request included \$7.7 million in PE 64771N, for medical development. Navy medical research programs focus on vaccines and treatments specific to the needs of the sailor and support efforts to address the threat posed by biological weapons and naturally occurring illnesses in areas of military operation. Enhanced vaccine distribution techniques and more efficient delivery of treatments would further reduce logistical and personnel requirements, while increasing protection. The committee recommends an increase of \$2.0 million in PE 64771N for non-invasive vectored vaccine research to produce a consistent, highly immunogenic, and easily manufactured and administered vaccine.

#### **F136 Interchangeable Engine**

The budget request included \$1,999.0 million in PE 64800F and \$2,031.0 million in PE 64800N for the continued development of the Joint Strike Fighter, but included no funding for the development of the F136 interchangeable engine. The committee believes supporting competitive propulsion systems would help reduce operational risk and lead to higher confidence of achieving more affordable life cycle costs. The committee expects that the Secretary of Defense, along with the Department of the Navy and the Department of the Air Force, will remain committed to the development and sustainment of competitive propulsion systems for the Joint Strike Fighter.

The committee recommends an increase of \$200.4 million in PE 64800F and an increase of \$200.4 million in PE 64800N for the continued development of the F136 interchangeable engine.

#### **Marine Corps communications systems**

The budget request included \$218.5 million in PE 26313M, for the development of Marine Corps communications systems, including \$8.6 million for AN/TPS-59(V)3 Radar System sustainment but no funding for the battlefield management system (BMS) or counter remote controlled improvised explosives device (RCIED) electronic warfare countermeasure systems.

The AN/TPS-59(V)3 Radar System provides the only long-range, three dimensional surveillance radar in the Marine Corps inventory. Since September 2001, TPS-59 radars have been deployed in support of Operation Iraqi Freedom and Operation Enduring Freedom. The committee believes that capability improvement efforts need to be undertaken to accelerate the development of the Low Earth Orbit Satellite (LEOS) capability. Additional funding for

LEOS development has been included on the Commandant of the Marine Corps' fiscal year 2007 unfunded priority list.

The committee understands that the Marine Corps' tank and track vehicles do not have an on-board situational awareness capability. The BMS is an off-the-shelf situational awareness capability that can be integrated into the Joint Battle Command Platform. Additional funding for the development of software interfaces for the BMS has been included on the Commandant of the Marine Corps' fiscal year 2007 unfunded priority list.

The committee supports initiatives that address the development of remote controlled improvised explosives device (RCIED) electronic warfare countermeasures. The committee understands that additional funding is required to develop and test the next generation of High Powered Vehicle Mounted Countermeasure Systems, single antenna development and testing, as well as, platform integration and testing. Additional funding for the development RCIED countermeasures has been included on the Commandant of the Marine Corps's fiscal year 2007 unfunded priority list.

The committee recommends an increase of \$5.0 for LEOS development, \$2.0 million for BMS interface software development, and \$25.0 million for counter-RCIED development in PE 26313M, for a total authorization of \$250.5 million.

#### **Polymer-based improvised explosive device detection tools**

The budget request included \$47.6 million in PE 26623M, for the development of Marine Corps ground combat and supporting arms systems, but no funding for amplifying fluorescent polymer-based improvised explosive device detection tools (FIDO XT) or the Sense and Respond Support System.

The committee understands that the FIDO XT has been under development over the last three years and has made significant progress in the development of a system which mimics the action of dogs trained to detect explosive materials. This technology has proven to be successful in laboratory and field environments but requires additional work for integration into robotic vehicles.

The committee understands that the Marine Corps is entering the third year of a four-year 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 \$4.0 million for FIDO XT development and integration and \$4.5 million for the LAV Sense and Respond System, for a total authorization of \$56.1 million in PE 26623M.

#### **Expeditionary assault bridge**

The budget request included \$16.3 million in PE 26624M, for the development of Marine Corps service support equipment, including \$750,000 for the development of the Expeditionary Assault Bridge. Lessons learned from Operation Iraqi Freedom (OIF) proved the current Armored Vehicle Launched Bridge (AVLB) system, based on a M-60 tank chassis, cannot keep pace with maneuver forces and is difficult to maintain, with further degradation anticipated due to a shortage of M-60 spare parts. The committee believes that

development of the EAB, based on a modern M-1 chassis, should be accelerated to provide Marine forces with a dependable assault gap-crossing capability that is able to keep pace with current forces. Additional funding for EAB development has been included on the Commandant of the Marine Corps' fiscal year 2007 unfunded priority list. The committee recommends an increase of \$9.0 million in PE 26624M for EAB development, for a total authorization of \$25.3 million.

#### **Environmental intelligence for riverine operations**

The budget request included funding in PE 31303N, for Maritime Intelligence to support continued analysis, tool kit development, and the environmental intelligence necessary to support naval riverine capabilities.

The 2006 Quadrennial Defense Review Report identified a requirement to provide a Navy riverine capability for river patrol, interdiction, and tactical troop movement on inland waterways. The demand for intelligence on inland waterways in the "long war" against terrorists worldwide is increasing. The committee is aware that Naval Oceanographic Office and Naval Research Lab at Stennis Space Center, Mississippi have a proven capability in the field of environmental intelligence.

The committee recommends an increase of \$4.5 million in PE 31303N, Maritime Intelligence, to improve and broaden the capability to fuse, store, and share meteorological, oceanographic, and environmental intelligence in support of special operations, counterproliferation, counterterrorism, force protection, drug interdiction, and expeditionary operations in coastal and riverine areas.

#### **Vessel integrity system**

The committee recommends an increase of \$1.0 million in PE 31303N, Maritime Intelligence, for the acquisition of a vessel integrity system (VIS) to complement and enhance current capabilities to monitor and track ocean going vessels worldwide, provide cargo information, provide data on cargo and port history, and estimate future tracks and possible port calls. The committee believes that VIS could enhance security of U.S. maritime borders and increase the capability of other U.S. maritime intelligence programs.

#### **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 new processes and techniques that reduce the cost of building and repairing ships. Annual Navy funding, which is matched and exceeded by industry investment, has achieved savings and cost avoidance for the Navy, a positive return on investment, and a high research-to-implementation transition rate. The committee believes that continuation of the NSRP-ASE provides a vital contribution towards achieving the overarching objective of improving the affordability of naval warship construction and maintaining a healthy, innovative shipbuilding industrial base. The committee recommends an in-

crease of \$10.0 million in PE 78730N to support NSRP-ASE efforts, including:

- (1) establishing a comprehensive national program for development and training of a skilled shipbuilding production and engineering workforce;
- (2) establishing a concept for a national supply chain that will enable leveraging buying power across product lines in an effort to reduce the high cost of material in ship construction;
- (3) exploring secondary and commercial markets for private shipbuilders to broaden the business base and share the overhead applied to naval shipbuilding; and
- (4) developing and deploying an industry-wide architecture for computer interoperability.

**Detection and recovery of unexploded ordnance, Browns Island, Camp Lejeune, North Carolina**

The budget request included \$25.3 million in PE 65873M for Marine Corps Program-wide Support, but included no funding for the detection and recovery of unexploded ordnance at Browns Island, Camp Lejeune, North Carolina. The committee notes that developing and testing technologies that focus on wide area detection and discrimination of unexploded ordnance followed by precise removal efforts from environmentally-sensitive areas would provide benefits to long-term unexploded ordnance removal efforts throughout the Department of Defense. The committee believes that effective detection and discrimination of unexploded ordnance over a wide area would help identify where recovery efforts should be focused and would significantly reduce the cost of unexploded ordnance removal and environmental remediation.

The committee recommends an increase of \$5.0 million in PE 65873M to complete the recovery of unexploded ordnance begun in fiscal year 2006 in the vicinity of Browns Island, a former bombing range at Camp Lejeune.

**Budget Items—Air Force**

## Title II-RDT and E

(Dollars in Thousands)

<u>Acct</u>	<u>Account</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2007</u>	<u>Senate</u>	<u>Senate</u>
				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
3600	0601102F	1	RESEARCH, DEVELOPMENT, TEST & EVALUATION, AIR FORCE DEFENSE RESEARCH SCIENCES Basic hypersonics air flow research	250,232	3,000	253,232
			Early career awards		[2,000]	
					[1,000]	
3600	0601103F	2	UNIVERSITY RESEARCH INITIATIVES High assurance software engineering	107,571	5,500	113,071
			Secure grids for network centric operations		[2,000]	
			Enterprise service secure grid research		[2,000]	
					[1,500]	
3600	0601108F	3	HIGH ENERGY LASER RESEARCH INITIATIVES	12,403		12,403
3600	0602015F	4	MEDICAL DEVELOPMENT			
3600	0602102F	5	MATERIALS Advanced materials development	111,073	9,000	120,073
			Blast resistant barrier research		[2,000]	
			Domestic source of high modulus carbon fibers		[3,000]	
			Complex composite structures research		[1,500]	
					[2,500]	
3600	0602201F	6	AEROSPACE VEHICLE TECHNOLOGIES	112,751		112,751
3600	0602202F	7	HUMAN EFFECTIVENESS APPLIED RESEARCH	92,991		92,991
3600	0602203F	8	AEROSPACE PROPULSION High energy laser research	170,885	5,000	175,885
			Scramjet technology		[2,000]	
					[3,000]	
3600	0602204F	9	AEROSPACE SENSORS	117,553		117,553
3600	0602500F	10	MULTI-DISCIPLINARY SPACE TECHNOLOGY			
3600	0602601F	11	SPACE TECHNOLOGY Shield rocket payloads	85,594	290	85,884
					[290]	
3600	0602602F	12	CONVENTIONAL MUNITIONS	62,105		62,105

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				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
3600	0602605F	13	DIRECTED ENERGY TECHNOLOGY	48,422		48,422
3600	0602702F	14	COMMAND CONTROL AND COMMUNICATIONS MASINT visualization tools	119,267	1,500 [1,500]	120,767
3600	0602805F	15	DUAL USE SCIENCE AND TECHNOLOGY PROGRAM	50,166		50,166
3600	0602890F	16	HIGH ENERGY LASER RESEARCH	2,287		2,287
3600	0207170F	17	JOINT HELMET MOUNTED CUEING SYSTEM (JHMCS)	48,901	6,000	54,901
3600	0603112F	18	ADVANCED MATERIALS FOR WEAPON SYSTEMS Inspection techniques to detect fatigue related damage on aircraft components Metals Affordability Initiative		[3,000] [3,000]	
3600	0603203F	19	ADVANCED AEROSPACE SENSORS	55,150		55,150
3600	0603211F	20	AEROSPACE TECHNOLOGY DEV/DEMO	27,424		27,424
3600	0603216F	21	AEROSPACE PROPULSION AND POWER TECHNOLOGY Certification of flexible JP8 military fuel Turbine engine supersonic cruise missile engine Bi-polar wafer-cell, nickel-metal hydride battery research Versatile affordable advanced turbine engine	115,546	12,500 [2,000] [6,000] [2,000] [2,500]	128,046
3600	0603231F	22	CREW SYSTEMS AND PERSONNEL PROTECTION TECHNOLOGY	32,156		32,156
3600	0603270F	23	ELECTRONIC COMBAT TECHNOLOGY	24,436		24,436
3600	0603311F	24	BALLISTIC MISSILE TECHNOLOGY			
3600	0603400F	25	JOINT UNMANNED COMBAT AIR SYSTEMS (J-UCAS) ADVANCED			
3600	0603401F	26	ADVANCED SPACECRAFT TECHNOLOGY Radically segmented launch vehicle Thin film amorphous solar arrays	68,026	20,000 [4,000] [16,000]	88,026
3600	0603444F	27	MAUI SPACE SURVEILLANCE SYSTEM (MSSS)	6,074		6,074
3600	0603500F	28	MULTI-DISCIPLINARY ADVANCED DEVELOPMENT SPACE TECH			

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3600	0603601F	29	CONVENTIONAL WEAPONS TECHNOLOGY	19,658		19,658
3600	0603605F	30	ADVANCED WEAPONS TECHNOLOGY	51,336		51,336
3600	0603723F	31	ENVIRONMENTAL ENGINEERING TECHNOLOGY			
3600	0603789F	32	C3I ADVANCED DEVELOPMENT	35,785	4,800	40,585
			Massively parallel optical interconnects for battlespace information		[4,800]	
3600	0603801F	33	SPECIAL PROGRAMS	316,605		316,605
3600	0603850F	34	INTEGRATED BROADCAST SERVICE			
3600	0603924F	35	HIGH ENERGY LASER ADVANCED TECHNOLOGY PROGRAM	3,713		3,713
3600	0207418F	36	TACTICAL AIRBORNE CONTROL SYSTEMS	26		26
3600	0207423F	37	ADVANCED COMMUNICATIONS SYSTEMS			
3600	0401840F	38	AMC COMMAND AND CONTROL SYSTEM			
3600	0804757F	39	JOINT NATIONAL TRAINING CENTER			
3600	0603260F	40	INTELLIGENCE ADVANCED DEVELOPMENT	4,776		4,776
3600	0603287F	41	PHYSICAL SECURITY EQUIPMENT	298		298
3600	0603421F	42	NAVSTAR GLOBAL POSITIONING SYSTEM III	315,314		315,314
3600	0603430F	43	ADVANCED EHF MILSATCOM (SPACE)	633,258		633,258
3600	0603432F	44	POLAR MILSATCOM (SPACE)	35,685		35,685
3600	0603438F	45	SPACE CONTROL TECHNOLOGY	27,076		27,076
3600	0603742F	46	COMBAT IDENTIFICATION TECHNOLOGY	26,517		26,517
3600	0603790F	47	NATO RESEARCH AND DEVELOPMENT	4,095		4,095
3600	0603791F	48	INTERNATIONAL SPACE COOPERATIVE R&D	593		593
3600	0603845F	49	TRANSFORMATIONAL SATCOM (TSAT)	867,102	-70,000	797,102
			Transformational satellite communications		[-70,000]	
3600	0603850F	50	INTEGRATED BROADCAST SERVICE	20,592		20,592
3600	0603851F	51	INTERCONTINENTAL BALLISTIC MISSILE	45,538		45,538

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3600	0603854F	52	WIDEBAND GAFILLER SYSTEM RDT&E (SPACE) Satellite command and control consolidation	37,672	8,500 [8,500]	46,172
3600	0603858F	53	SPACE RADAR Space radar	266,401	-66,400 [-66,400]	200,001
3600	0603859F	54	POLLUTION PREVENTION O2 diesel particulate emission reduction research	2,853	1,500 [1,500]	4,353
3600	0603860F	55	JOINT PRECISION APPROACH AND LANDING SYSTEMS	10,011		10,011
3600	0604015F	56	NEXT GENERATION BOMBER	25,598		25,598
3600	0604327F	57	HARD AND DEEPLY BURIED TARGET DEFEAT SYSTEM (HDBTDS)			
3600	0604400F	58	JOINT UNMANNED COMBAT AIR SYSTEMS (J-UCAS) ADVANCED			
3600	0604855F	59	OPERATIONALLY RESPONSIVE LAUNCH			
3600	0604856F	60	COMMON AERO VEHICLE (CAV)	33,386		33,386
3600	0604857F	61	OPERATIONALLY RESPONSIVE SPACE	35,625		35,625
3600	0207423F	62	ADVANCED COMMUNICATIONS SYSTEMS			
3601	0305178F	63	NATIONAL POLAR-ORBITING OPERATIONAL ENVIRONMENTAL	349,311		349,311
3600	0603840F	64	GLOBAL BROADCAST SERVICE (GBS)	23,599		23,599
3600	0604012F	65	JOINT HELMET MOUNTED CUEING SYSTEM (JHMCS)	2,792		2,792
3600	0604222F	66	NUCLEAR WEAPONS SUPPORT	14,895		14,895
3600	0604226F	67	B-1B	130,546		130,546
3600	0604233F	68	SPECIALIZED UNDERGRADUATE FLIGHT TRAINING	3,703		3,703
3600	0604239F	69	F-22			
3600	0604240F	70	B-2 ADVANCED TECHNOLOGY BOMBER	224,177		224,177
3600	0604261F	71	PERSONNEL RECOVERY SYSTEMS	254,310		254,310
3600	0604270F	72	ELECTRONIC WARFARE DEVELOPMENT	87,784		87,784
3600	0604280F	73	JOINT TACTICAL RADIO			

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3600	0604287F	74	PHYSICAL SECURITY EQUIPMENT	93		93
3600	0604329F	75	SMALL DIAMETER BOMB (SDB)	104,080		104,080
3600	0604421F	76	COUNTERSPACE SYSTEMS	47,292	8,000	55,292
			Space control test capabilities		[8,000]	
3600	0604425F	77	SPACE SITUATION AWARENESS SYSTEMS	121,157	4,000	125,157
			Joint space intelligent decision support		[4,000]	
3600	0604429F	78	AIRBORNE ELECTRONIC ATTACK	12,421		12,421
3600	0604441F	79	SPACE BASED INFRARED SYSTEM (SBIRS) HIGH EMD	668,902		668,902
3600	0604443F	80	ALTERNATIVE INFRARED SPACE SYSTEM (AIRSS)	102,962		102,962
3600	0604479F	81	MILSTAR LDR/MDR SATELLITE COMMUNICATIONS (SPACE) (H)			
3600	0604600F	82	MUNITIONS DISPENSER DEVELOPMENT			
3600	0604602F	83	ARMAMENT/ORDNANCE DEVELOPMENT	5,039		5,039
3600	0604604F	84	SUBMUNITIONS	5,759		5,759
3600	0604617F	85	AGILE COMBAT SUPPORT	10,095		10,095
3600	0604618F	86	JOINT DIRECT ATTACK MUNITION	15,450		15,450
3600	0604706F	87	LIFE SUPPORT SYSTEMS	12,370		12,370
3600	0604735F	88	COMBAT TRAINING RANGES	14,363		14,363
3600	0604740F	89	INTEGRATED COMMAND & CONTROL APPLICATIONS (IC2A)	167	4,000	4,167
			Global Awareness Presentation System		[4,000]	
3600	0604750F	90	INTELLIGENCE EQUIPMENT	1,426		1,426
3600	0604762F	91	COMMON LOW OBSERVABLES VERIFICATION SYSTEM (CLOVER)			
3600	0604800F	92	JOINT STRIKE FIGHTER (JSF)	1,999,068	200,400	2,199,468
			Joint Strike Fighter alternate engine development		[200,400]	
3600	0604851F	93	INTERCONTINENTAL BALLISTIC MISSILE			
3600	0604853F	94	EVOLVED EXPENDABLE LAUNCH VEHICLE PROGRAM (SPACE)	18,513		18,513
3600	0605011F	95	RDT&E FOR AGING AIRCRAFT	25,490		25,490

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3600	0605807F	96	TEST AND EVALUATION SUPPORT	2,388		2,388
3600	0207434F	97	LINK-16 SUPPORT AND SUSTAINMENT	172,625		172,625
3600	0207443F	98	FAMILY OF INTEROPERABLE OPERATIONAL PICTURES (FIOP)			
3600	0207450F	99	E-10 SQUADRONS	390,896		390,896
3600	0207451F	100	SINGLE INTEGRATED AIR PICTURE (SIAP)	40,124		40,124
3600	0207701F	101	FULL COMBAT MISSION TRAINING	32,243		32,243
3600	0305176F	102	COMBAT SURVIVOR EVADER LOCATOR			
3600	0401318F	103	CV-22	26,601		26,601
3600	0604256F	104	THREAT SIMULATOR DEVELOPMENT	38,131		38,131
3600	0604759F	105	MAJOR T&E INVESTMENT	58,506		58,506
3600	0605101F	106	RAND PROJECT AIR FORCE	25,211	4,500	29,711
			Analytical and technical support		[4,500]	
3600	0605306F	107	RANCH HAND II EPIDEMIOLOGY STUDY			
3600	0605502F	108	SMALL BUSINESS INNOVATION RESEARCH	34,802		34,802
3600	0605712F	109	INITIAL OPERATIONAL TEST & EVALUATION	740,134		740,134
3600	0605807F	110	TEST AND EVALUATION SUPPORT	14,704		27,704
3600	0605860F	111	ROCKET SYSTEMS LAUNCH PROGRAM (SPACE)		13,000	
			Ballistic missile range safety tech		[13,000]	
3600	0605864F	112	SPACE TEST PROGRAM (STP)	46,310		46,310
3600	0605976F	113	FACILITIES RESTORATION AND MODERNIZATION - TEST AND E	54,683		54,683
3600	0605978F	114	FACILITIES SUSTAINMENT - TEST AND EVALUATION SUPPORT	25,579		25,579
3600	0804731F	115	GENERAL SKILL TRAINING	305		305
3600	0909900F	116	FINANCING FOR EXPIRED ACCOUNT ADJUSTMENTS			
3600	0909980F	117	JUDGMENT FUND REIMBURSEMENT			
3600	1001004F	118	INTERNATIONAL ACTIVITIES	3,911		3,911

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3600	0605024F	119	ANTI-TAMPER TECHNOLOGY EXECUTIVE AGENCY	8,014		8,014
3600	0605798F	120	ANALYSIS SUPPORT GROUP	[ ]		[ ]
3600	0101113F	121	B-52 SQUADRONS	71,379		71,379
3600	0101120F	122	ADVANCED CRUISE MISSILE	6,983		6,983
3600	0101122F	123	AIR-LAUNCHED CRUISE MISSILE (ALCM)	3,736		3,736
3600	0101313F	124	STRAT WAR PLANNING SYSTEM - USSTRATCOM	27,285	5,000	32,285
			Global command & control devel center		[5,000]	
3600	0101314F	125	NIGHT FIST - USSTRATCOM	5,162		5,162
3600	0101815F	126	ADVANCED STRATEGIC PROGRAMS	22,423		22,423
3600	0102326F	127	REGION/SECTOR OPERATION CONTROL CENTER MODERNIZATI	14,853		14,853
3600	0203761F	128	WARFIGHTER RAPID ACQUISITION PROCESS (WRAP) RAPID TRA	30,584		30,584
3600	0207131F	129	A-10 SQUADRONS	80,771		80,771
3600	0207133F	130	F-16 SQUADRONS	148,373		148,373
3600	0207134F	131	F-15E SQUADRONS	125,062		125,062
3600	0207136F	132	MANNED DESTRUCTIVE SUPPRESSION	515		515
3600	0207138F	133	F/A-22 SQUADRONS	584,290		584,290
3600	0207141F	134	F-117A SQUADRONS	14,093		14,093
3600	0207161F	135	TACTICAL AIM MISSILES	8,850		8,850
3600	0207163F	136	ADVANCED MEDIUM RANGE AIR-TO-AIR MISSILE (AMRAAM)	43,417		43,417
3600	0207224F	137	COMBAT RESCUE AND RECOVERY			
3600	0207247F	138	AF TENCAP	11,202		11,202
3600	0207248F	139	SPECIAL EVALUATION PROGRAM	530,038		530,038
3600	0207253F	140	COMPASS CALL	4,469		4,469
3600	0207268F	141	AIRCRAFT ENGINE COMPONENT IMPROVEMENT PROGRAM	154,319		154,319
3600	0207277F	142	CSAF INNOVATION PROGRAM	1,612		1,612

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3600	0207325F	143	JOINT AIR-TO-SURFACE STANDOFF MISSILE (JASSM)	40,881		40,881
3600	0207410F	144	AIR & SPACE OPERATIONS CENTER (AOC)	87,483		87,483
3600	0207412F	145	CONTROL AND REPORTING CENTER (CRC)	8,798		8,798
3600	0207417F	146	AIRBORNE WARNING AND CONTROL SYSTEM (AWACS)	165,820		165,820
3600	0207418F	147	TACTICAL AIRBORNE CONTROL SYSTEMS	2,286		2,286
3600	0207423F	148	ADVANCED COMMUNICATIONS SYSTEMS	53,093		53,093
3600	0207424F	149	EVALUATION AND ANALYSIS PROGRAM			
3600	0207433F	150	ADVANCED PROGRAM TECHNOLOGY	313,251		313,251
3600	0207438F	151	THEATER BATTLE MANAGEMENT (TBM) C4I	31,835		31,835
3600	0207445F	152	FIGHTER TACTICAL DATA LINK	113,388		113,388
3600	0207446F	153	BOMBER TACTICAL DATA LINK	168,168		168,168
3600	0207448F	154	CJISR TACTICAL DATA LINK	4,338		4,338
3600	0207449F	155	COMMAND AND CONTROL (C2) CONSTELLATION	44,027		44,027
3600	0207581F	156	JOINT SURVEILLANCE/TARGET ATTACK RADAR SYSTEM (JSTAR)	152,696		152,696
3600	0207590F	157	SEEK EAGLE	16,426		16,426
3600	0207591F	158	ADVANCED PROGRAM EVALUATION	437,057		437,057
3600	0207601F	159	USAF MODELING AND SIMULATION	23,470		23,470
3600	0207605F	160	WARGAMING AND SIMULATION CENTERS	6,595		6,595
3600	0207697F	161	DISTRIBUTED TRAINING AND EXERCISES	6,138		6,138
3600	0208006F	162	MISSION PLANNING SYSTEMS	146,396		146,396
3600	0208021F	163	INFORMATION WARFARE SUPPORT	24,758		24,758
3600	0301310F	164	NATIONAL AIR INTELLIGENCE CENTER	[ ]		[ ]
3600	0301314F	165	COBRA BALL	[ ]		[ ]
3600	0301315F	166	MISSILE AND SPACE TECHNICAL COLLECTION	[ ]		[ ]
3600	0301324F	167	FOREST GREEN	[ ]		[ ]

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3600	0301386F	168	GDIP COLLECTION MANAGEMENT	[ ]	[ ]	[ ]
3600	0302015F	169	E-4B NATIONAL AIRBORNE OPERATIONS CENTER (NAOC)	283	283	283
3600	0303131F	170	MINIMUM ESSENTIAL EMERGENCY COMMUNICATIONS NETWO	64,109	64,109	64,109
3600	0303140F	171	INFORMATION SYSTEMS SECURITY PROGRAM	183,523	183,523	183,523
3600	0303141F	172	GLOBAL COMBAT SUPPORT SYSTEM	19,895	19,895	19,895
3600	0303150F	173	GLOBAL COMMAND AND CONTROL SYSTEM	3,348	3,348	3,348
3600	0303158F	174	JOINT COMMAND AND CONTROL PROGRAM (JC2)	5,818	5,818	5,818
3600	0303601F	175	MILSATCOM TERMINALS	271,562	271,562	271,562
3600	0304111F	176	SPECIAL ACTIVITIES	[ ]	[ ]	[ ]
3600	0304260F	177	AIRBORNE SIGINT ENTERPRISE	117,834	117,834	117,834
3600	0304311F	178	SELECTED ACTIVITIES	[ ]	[ ]	[ ]
3600	0304346F	179	IMAGERY DERIVED MASINT	[ ]	[ ]	[ ]
3600	0304347F	180	OVERHEAD NON-IMAGING INFRARED	[ ]	[ ]	[ ]
3600	0305099F	181	GLOBAL AIR TRAFFIC MANAGEMENT (GATM)	6,620	6,620	6,620
3600	0305110F	182	SATELLITE CONTROL NETWORK (SPACE)	19,907	19,907	19,907
3600	0305111F	183	WEATHER SERVICE	34,899	34,899	34,899
3600	0305114F	184	AIR TRAFFIC CONTROL, APPROACH, AND LANDING SYSTEM (AT			
3600	0305116F	185	AERIAL TARGETS	5,203	5,203	5,203
3600	0305124F	186	SPECIAL APPLICATIONS PROGRAM	[ ]	[ ]	[ ]
3600	0305128F	187	SECURITY AND INVESTIGATIVE ACTIVITIES	509	509	509
3600	0305142F	188	APPLIED TECHNOLOGY AND INTEGRATION	[ ]	[ ]	[ ]
3600	0305148F	189	MEASUREMENT AND SIGNATURE INTELLIGENCE (MASINT) SYS			
3600	0305159F	190	DEFENSE RECONNAISSANCE SUPPORT ACTIVITIES (SPACE)	[ ]	[ ]	[ ]
3600	0305160F	191	DEFENSE METEOROLOGICAL SATELLITE PROGRAM (SPACE)	969	969	969
3600	0305164F	192	NAVSTAR GLOBAL POSITIONING SYSTEM (USER EQUIPMENT) (S	131,083	131,083	131,083

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3600	0305165F	193	NAVSTAR GLOBAL POSITIONING SYSTEM (SPACE AND CONTRO	177,792		177,792
3600	0305172F	194	COMBINED ADVANCED APPLICATIONS	[ ]		[ ]
3600	0305173F	195	SPACE AND MISSILE TEST AND EVALUATION CENTER	4,675		4,675
3600	0305174F	196	SPACE WARFARE CENTER	726		726
3600	0305182F	197	SPACELIFT RANGE SYSTEM (SPACE)	38,044		38,044
3600	0305193F	198	INTELLIGENCE SUPPORT TO INFORMATION OPERATIONS (IO)	3,813		3,813
3600	0305202F	199	DRAGON U-2			
3600	0305206F	200	AIRBORNE RECONNAISSANCE SYSTEMS	52,824		52,824
3600	0305207F	201	MANNED RECONNAISSANCE SYSTEMS	10,132		10,132
3600	0305208F	202	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	120,777		120,777
3600	0305219F	203	PREDATOR UAV (JMIP)	61,466		61,466
3600	0305220F	204	GLOBAL HAWK UAV	247,665		247,665
3600	0305221F	205	NETWORK-CENTRIC COLLABORATIVE TARGET (TIARA)	8,499		8,499
3600	0305887F	206	INTELLIGENCE SUPPORT TO INFORMATION WARFARE	5,163		5,163
3600	0305906F	207	NCMC - TW/AA SYSTEM	50,908	5,000	55,908
			Single integrated space picture		[5,000]	
3600	0305910F	208	SPACETRACK (SPACE)			
3600	0305913F	209	NUDET DETECTION SYSTEM (SPACE)	60,281		60,281
3600	0305917F	210	SPACE ARCHITECT			
3600	0305924F	211	NATIONAL SECURITY SPACE OFFICE	13,437		18,437
			National security space office		5,000	
3600	0305940F	212	SPACE SITUATION AWARENESS OPERATIONS	31,401		31,401
3600	0307141F	213	NASS, IO TECHNOLOGY INTEGRATION & TOOL DEV	15,449		15,449
3600	0308699F	214	SHARED EARLY WARNING (SEW)	2,999		2,999
3600	0401115F	215	C-130 AIRLIFT SQUADRON	248,283		248,283

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<u>Acct</u>	<u>Account</u>	<u>Line</u>	<u>Program Title</u>	<u>FY2007</u> <u>Request</u>	<u>Senate</u> <u>Change</u>	<u>Senate</u> <u>Authorized</u>
3600	0401119F	216	C-5 AIRLIFT SQUADRONS (IF)	150,209		150,209
3600	0401130F	217	C-17 AIRCRAFT (IF)	173,781		173,781
3600	0401132F	218	C-130J PROGRAM	40,542		40,542
3600	0401133F	219	AEROMEDICAL EVACUATION			
3600	0401134F	220	LARGE AIRCRAFT IR COUNTERMEASURES (LAIRCM)	34,916		34,916
3600	0401218F	221	KC-135S	1,126		1,126
3600	0401219F	222	KC-10S	4,781		4,781
3600	0401221F	223	KC-135 TANKER REPLACEMENT	203,932	-199,000	4,932
			KC-135 aircraft replacement		[-199,000]	
3600	0401839F	224	AIR MOBILITY TACTICAL DATA LINK	32,099		32,099
3600	0408011F	225	SPECIAL TACTICS / COMBAT CONTROL	1,024		1,024
3600	0702207F	226	DEPOT MAINTENANCE (NON-IF)	1,457		1,457
3600	0702239F	227	AVIONICS COMPONENT IMPROVEMENT PROGRAM			
3600	0702806F	228	ACQUISITION AND MANAGEMENT SUPPORT	17,706		17,706
3600	0708011F	229	INDUSTRIAL PREPAREDNESS	36,673	10,000	46,673
			Advanced prototyping of nanomaterials		[8,000]	
			Rapid manufacturing and repair of composites for high temp apps		[2,000]	
3600	0708012F	230	LOGISTICS SUPPORT ACTIVITIES	166,338		166,338
3600	0708610F	231	LOGISTICS INFORMATION TECHNOLOGY (LOGIT)	10,596	3,000	13,596
3600	0708611F	232	SUPPORT SYSTEMS DEVELOPMENT		[3,000]	
			Aircraft sustainment and availability tools			
3600	0804757F	233	JOINT NATIONAL TRAINING CENTER	3,073		3,073
3600	0808716F	234	OTHER PERSONNEL ACTIVITIES	113		113
3600	0901202F	235	JOINT PERSONNEL RECOVERY AGENCY	992		992
3600	0901218F	236	CIVILIAN COMPENSATION PROGRAM	7,779		7,779

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3600	0901220F	237	PERSONNEL ADMINISTRATION	18,262		18,262
3600	0901538F	238	FINANCIAL MANAGEMENT INFORMATION SYSTEMS DEVELOPM	27,541		27,541
3600	XXXXXXXX	999	CLASSIFIED PROGRAMS	7,196,154		7,196,154
<b>Total, RDT&amp;E Air Force</b>				<b>24,396,767</b>	<b>4,090</b>	<b>24,400,857</b>

**Air Force basic research**

The budget request included \$250.2 million in PE 61102F, for defense research sciences and \$107.6 million in PE 61103F, for university research initiatives. Air Force fundamental and university research focuses on defense-related technical challenges in a wide range of scientific and engineering disciplines are important to maintaining U.S. military technology superiority. The committee recommends an increase of \$2.0 million in PE 61102F for improved measurements and simulation of hypersonic air flows.

As noted elsewhere in this report, the committee is concerned with deficiencies in cyber and national security information assurance capabilities. The committee recommends an increase of \$5.5 million in PE 61103F for information assurance-focused research, including \$2.0 million for high assurance software engineering; \$1.5 million for secure grid research; and \$2.0 million for secure grids for network-centric operations.

**Air Force materials research**

The budget request included \$111.1 million in PE 62102F, for materials research. The committee recommends an increase of \$6.5 million in PE 62102F for research and development on materials, composites, and structural designs to protect personnel and equipment from threats such as explosives and fires, including \$3.0 million for blast resistant barrier research; \$2.0 million for expansion of advanced materials development and corresponding manufacturing trials; and \$1.5 million for development of a domestic source for production of high modulus carbon fibers.

The committee continues to monitor with great interest developments in materials and composites with space and unmanned systems applications. The committee recommends an increase of \$2.5 million in PE 62102F for acceleration of research on complex composites and structures for manned and unmanned air vehicles and expects these efforts to meet objectives for joint unmanned systems outlined elsewhere in this report.

**Applied aerospace propulsion**

The budget request included \$170.9 million in PE 62203F, for applied research in aerospace propulsion. The committee notes that hypersonic technologies have the potential to enable the development of new military capabilities in time of a critical strike, as demonstrated by the Air Force X-51 program. The committee recommends an increase of \$3.0 million in PE 62203F to pursue alternate propulsion flow path efforts on the X-51 flight test bed.

The committee further recommends an increase of \$2.0 million in PE 62203F for high energy laser research to demonstrate a capability to inspect the internal condition of military hardware with significant potential savings in maintenance of critical components.

**Space technology**

The budget request included \$85.6 million in PE 62601F, for space technology. Programs supported under this account focus on improving satellite payload capabilities and developing technologies for protection of U.S. space assets. The committee recommends an increase of \$290,000 in PE 62601F for a project to shield rocket

payloads with particular emphasis on solving low frequency noise insulation challenges.

#### **MASINT visualization tool**

The budget request included \$119.3 million in PE 62702F, for command, control, and communications. Measurement and signals intelligence (MASINT) enables identification of obscured and hidden targets, but must be integrated into user friendly information processors and architectures. The committee recommends an increase of \$1.5 million in PE 62702F to accelerate development of MASINT visualization tools.

#### **Air Force materials technologies**

The budget request included \$48.9 million in PE 63112F, for advanced materials for weapon systems. The committee recommends an increase of \$3.0 million in PE 63112F to continue the development of inspection techniques to detect fatigue related damage on aircraft components. These techniques can support the extension of aircraft service life and improve operational readiness of assets and are consistent with the Defense Technology Objective of developing systems for nondestructive evaluation for system health management.

The committee recommends an increase of \$3.0 million in PE 63112F for research on specialty aerospace metals as part of the Metals Affordability Initiative. This type of research could lead to cheaper and higher performance aerospace metals and alloys, which will contribute significantly to future military capabilities.

#### **Aerospace propulsion and power technology**

The budget request included \$115.5 million in PE 63216F, for aerospace propulsion and power technology. The committee recommends an increase of \$12.5 million in PE 63216F to accelerate development and transition of engine and fuel conversion technologies and to scale battery technology for system level charges and low temperature reliability. Of this amount, the committee recommends \$2.0 million for certification of the flexible JP8 military fuel; \$6.0 million for the turbine engine supersonic cruise missile; \$2.5 million for the versatile affordable advanced turbine engine; and \$2.0 million for bipolar wafer-cell, nickel-metal hydride aircraft battery research.

#### **Radically Segmented Launch Vehicle**

The budget request included \$68.0 million in PE 63401F, for advanced spacecraft technology, but included no funding for the Radically Segmented Launch Vehicle (RSLV).

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

The committee recommends an increase of \$4.0 million in PE 63401F to perform engineering development, prototype hardware fabrication, and ground testing of the RSLV.

#### **Thin film amorphous solar arrays**

The budget request included \$68.0 million in PE 63401F, for Advanced Spacecraft Technology, but included no funding for thin film amorphous solar arrays.

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

The committee recommends an increase of \$16.0 million in PE 63401F for thin film amorphous solar array research and development.

#### **Massively parallel optical interconnects for battlespace information exchange**

The budget request included \$35.8 million in PE 63789F, Command, Control, Communications, and Intelligence Advanced Development, but included no funding for development of massively parallel optical interconnects (MPOI) for avionic systems. Recent advances in this technology offer potential to significantly enhance sensor and signals processing of unmanned and manned aircraft. This technology can significantly increase the communications capacity of the air fleet by replacing electronic technology with optical networking technology.

The two major aspects to the on-board networking infrastructure of unmanned air vehicles include: (1) command and control; and (2) payload-related data exchange. The MPOI technology offers a unified and efficient solution to both demands by reducing space, weight, and power consumption, while increasing data rates to the multi-gigabit level.

The committee recommends an increase of \$4.8 million in PE 63789F to develop the MPOI primarily for insertion into manned and unmanned aircraft.

#### **Transformational Satellite Communications**

The budget request included \$867.0 million in PE 63845F, for the Transformational Satellite Communications (TSAT) program. While supporting the TSAT satellite program as a key enabler of the Department of Defense's future communication architecture, Congress has, for the past 4 years, reduced funding for TSAT due to concerns over technological maturity and an overly aggressive development schedule. The committee is therefore gratified that Air Force leadership has restructured the TSAT program to follow an incremental development approach, supported by realistic cost estimates, that may serve to lower program risk and provide the first block of capability to the warfighter as soon as possible. The committee notes that both the Government Accountability Office (GAO) and the independent TSAT Program Review Group have acknowledged that the restructured TSAT program incorporates many of

the lessons learned from the troubled history of space acquisition efforts.

While remaining fully supportive of the TSAT program, the committee notes that the budget request for fiscal year 2007 represents a 100 percent increase over last year's appropriated amount of \$429.0 million. The GAO does not believe the contractors associated with the space segment of the TSAT program will be able to increase development activities to the requested fiscal year 2007 budget level. The committee therefore recommends a decrease of \$70.0 million, or 8 percent, in PE 63845F, for TSAT, due to unexecutable growth in the program budget.

The committee directs the Secretary of the Air Force to submit a report to the congressional defense committees by February 15, 2007, explaining what actions the Air Force has taken to address the remaining concerns of the TSAT Program Review Group and GAO, including: (1) the need to significantly refine requirements so that program content can be matched to budget constraints, and how the Department plans to control requirements to prevent problems associated with "requirements creep"; (2) the need to adequately staff the TSAT program office with experienced space acquisition professionals; (3) the status of refining key performance parameters so they provide specificity and validation metrics; (4) the implications for other programs, such as Space Radar and Future Combat System, of a less capable initial block of TSAT satellites; and (5) the last date by which the fourth Advanced Extremely High Frequency satellite could be put on contract without a production break.

#### **Satellite command and control consolidation**

The budget request included \$37.7 million in PE 63854F, for Wideband gap filler system, but included no funding for satellite command and control consolidation. The committee is aware that all military satellite communications systems need to be connected into a single consolidated command and control system to provide standardized operations. While the current generation of satellites have transitioned to Command and Control System-Consolidated, the Advanced Extremely High Frequency and Wideband gapfiller satellites have yet to do so. The committee recommends an increase of \$8.5 million in PE 63854F to complete the development and integration of the satellite control system with the new satellites to ensure the warfighter receives increased communications capabilities as soon as possible.

#### **Space Radar**

The budget request includes \$266.4 million in PE 63858F for Space Radar (SR).

SR is a constellation of surveillance and reconnaissance satellites being developed by the Air Force to find, identify, track, and monitor moving or stationary targets under all weather conditions and in darkness. Although the committee supports the development of this important military and intelligence capability, it remains concerned about the wisdom and affordability of starting a new, expensive space acquisition program when so many current space programs remain in difficulty. This concern is compounded by the in-

ability of the Air Force to identify the scope of the SR architecture, or provide a reasonable range of cost estimates for the objective system. The committee is aware that the SR program is undergoing restructure, and may benefit from the incremental, block approach chosen for the Transformational Satellite Communications (TSAT) program. While the committee would welcome such an approach, it does not believe it is prudent to move beyond technology development and concept definition activities until the Air Force provides the committee further definition of the program.

In the Ronald W. Reagan National Defense Act for Fiscal Year 2005 (Public Law 108-375), the Congress expressed the view that the affordability of a space-based radar program would be dependent on the development of a single radar satellite system to meet both military and intelligence community needs and the integration of a space radar into an architecture consisting of other intelligence, surveillance, and reconnaissance capabilities. The committee is aware that in 2005 the then-Director of the Central Intelligence Agency and the Secretary of Defense signed a letter to the Director of the Office of Management and Budget stating their intent to pursue joint development of a single space radar capability for the nation, and to develop an approach for sharing costs starting in fiscal year 2008. The committee, however, has not yet seen a solid cost-share agreement between the Department of Defense and the Office of the Director of National Intelligence to jointly fund the SR program, nor has the committee identified funding for such activities in the intelligence community budget. The committee remains concerned about the inability to resolve this impasse and believes two systems are not affordable.

The committee recommends a decrease of \$66.4 million in PE 63858F for the SR program, and recommends that remaining funds be directed toward technology development, system engineering, and concept definition that assumes a single SR system that will meet joint requirements and employ a joint concept of operations with the intelligence community.

The committee directs the Secretary, in coordination with the Director of National Intelligence, to submit a report to the congressional defense committees by January 30, 2007, containing the following elements: (1) a description of the respective roles and missions of the intelligence community and the Department with respect to the development of the SR program; (2) the process by which the intelligence community and the Department coordinate joint development efforts and requirements definition; (3) the plans for achieving a cost-share agreement between the intelligence community and the Department for the development and acquisition of a space radar capability; and (4) a commitment from the Secretary and the Director of National Intelligence that the SR program will be a single system responsive to the requirements of each organization.

The committee further directs the Secretary to submit a report to the congressional defense committees by March 15, 2007, addressing the following: (1) the scope of the SR architecture, including the system's interactions with other ground and air-based platforms providing similar capability as well as interactions with TSAT or alternative systems for processing and transmitting SR

data to other military applications; (2) the block, or incremental approach, that will be pursued by the SR acquisition program, including key technologies that will be included in blocks 1 and 2 as well as their corresponding levels of sophistication and maturity at the time of program initiation; (3) the extent to which blocks 1 and 2 will meet objective requirements for the SR program and which requirements will need to be delayed as a result; and (4) the schedule for meeting a realistic launch date and potential risks to that schedule.

#### **Increased funding for O2 diesel particulate emission reduction research**

The budget request included \$2.9 million in PE 63859F for pollution prevention, but included no funding for O2 diesel particulate emission reduction research. The committee notes that the Energy Policy Act of 2005 strengthens the requirement that federal vehicle fleets use alternative fuels in those vehicles capable of using such fuels and requires ongoing assessment of renewable energy resources. The committee believes that research on O2 diesel to date shows demonstrated emissions benefits with regards to carbon monoxide, nitrogen oxides, particulate matter, and visible smoke that meets or exceeds the levels achieved by the 20 percent biodiesel blend currently used in Department of Defense vehicles. The committee recommends an increase of \$1.5 million in PE 63859F to continue O2 diesel particulate emission reduction research.

#### **Space control test capabilities**

The budget request included \$47.3 million in PE 64421F, for Air Force counterspace systems.

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

The committee recommends an increase of \$8.0 million in PE 64421F for the ground-based simulated testbed for space control assets.

#### **Joint space intelligent decision support**

The budget request included \$121.2 million in PE 64425F, for space situational awareness systems, but included no funding for joint space intelligent decision support.

The committee is aware that timely space situational awareness and decision support to Air Force and joint operators is essential for successful space operations. The Army currently has an effort underway to develop this technology for space support. The Air Force effort would complete research conducted by the Army and provide production software code to support global users who are connected via the secure Internet. The committee recommends an

increase of \$4.0 million in PE 64425F for completion of joint space intelligent decision support software development to provide space operators situational awareness.

#### **Global awareness presentation system**

The budget request included \$0.2 million in PE 64740F, for integrated command and control applications. Information integration and exchange among the tactical, operational, and strategic levels of U.S. Strategic Command is essential to successful mission assignments in information operations; global intelligence, surveillance, and reconnaissance (ISR); integrated missile defense; and space and global strike. Global Battlespace View (GBV) supports operations centers and fielded units with a seamless information exchange environment. The committee recommends an increase of \$4.0 million in PE 64740F for the global awareness presentation system, which provides a visually fused ISR situational awareness and collection capability for the GBV.

#### **RAND Project Air Force**

The budget request included \$25.2 million in PE 65101F, for RAND Project Air Force. The committee notes that RAND studies and analyses have supported Air Force planning and operations, particularly in acquisition planning and analyses, tanker recapitalization, and assessments of international threats and capabilities. The committee recommends an increase of \$4.5 million in PE 65101F to sustain RAND analytical support for the Air Force.

#### **Ballistic missile range safety technology**

The budget request included \$14.7 million in PE 65860F, for the rocket systems launch program, but included no funding for ballistic missile range safety technology (BMRST).

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

The committee recommends an increase of \$13.0 million in PE 65860F to support expanded BMRST system capability, critical certification, and testing requirements.

#### **Global command and control development center**

The budget request included \$27.3 million in PE 11313F, for Strategic War Planning System, but included no funding for the global command and control development center.

The U.S. Strategic Command is assigned multiple global missions, including space and global strike; integrated missile defense; integrated information operations, intelligence, surveillance, and reconnaissance; global command and control; and combatting weapons of mass destruction. Command and control for these missions requires a robust global Internet-like capability to provide the right information to the right people at the right time. The committee recommends an increase of \$6.0 million in PE 11313F for the establishment of a global command and control development center.

**Single integrated space picture**

The budget request included \$51.0 million in PE 35906F for threat warning and attack assessment, but included no funding for the single integrated space picture.

In March 2006, the Commander, U.S. Strategic Command testified before the Subcommittee on Strategic Forces of the Committee on Armed Services that “we must improve space situational awareness and protection.” Accordingly, the committee supports efforts to enable military commanders to understand the status of adversary and friendly space forces. The committee recommends an increase of \$5.0 million in PE 35906F for the combatant commanders command and control system integrated space picture.

**National Security Space Office**

The budget request included \$13.4 million in PE 35924F, for the National Security Space Office (NSSO). The “National Space Policy” signed in 1996 directs the Secretary of Defense and the then-Director of Central Intelligence to “ensure that defense and intelligence space activities are closely coordinated,” and “that space architectures are integrated to the maximum extent feasible.” The committee strongly endorses this direction and believes that a coherent, effective, and efficient national security space enterprise is in the best interests of the United States. The committee is aware that the Director of National Intelligence has decided not to provide intelligence community funding and support for the collaborative, enterprise-level activities of the NSSO. The committee believes this position is short-sighted and will have serious implications for the nation’s future space capabilities.

The committee recommends an increase of \$5.0 million in PE 35924F for enterprise-level system engineering, architecture work, and strategy and planning efforts for national security space capabilities. The committee also urges the Director of National Intelligence to reconsider his decision to withdraw support for these important collaborative efforts.

**Air Force industrial preparedness activities**

The budget request included \$36.7 million in PE 78011F, for Air Force industrial preparedness activities and \$10.6 million in PE 78611F, for support systems development. The committee notes that the Defense Science Board highlighted the role that the Department of Defense manufacturing technology programs play in reducing the cost of weapons systems and improving the acquisition process. Air Force manufacturing technology programs in propulsion, electronics, and munitions systems have enabled billions of dollars in cost avoidance. The committee recommends an increase of \$10.0 million in PE 78011F, including \$8.0 million for the development of advanced prototyping of nanomaterials and \$2.0 million for rapid manufacturing and repair of composite components for high temperature applications. The committee also recommends an increase of \$3.0 million in PE 78611F for aircraft sustainment and availability tools to improve readiness through automated tracking of aircraft maintenance and mission records.

The committee commends Air Force efforts to develop and utilize Manufacturing Readiness Levels as a tool to accelerate technology

transition and the acquisition process through the analysis and reduction of manufacturing risk in weapon systems and other programs.

**Budget Items—Defense-wide**

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(Dollars in Thousands)

Acct	Account	Line	Program Title	FY2007 Request	Senate Change	Senate Authorized
			<b>RESEARCH, DEVELOPMENT, TEST &amp; EVALUATION, DEFENSE-WIDE</b>			
0400	0601000BR	1	DTRA UNIVERSITY STRATEGIC PARTNERSHIP BASIC RESEARCH	5,000		5,000
0400	0601101E	2	DEFENSE RESEARCH SCIENCES	150,690	3,000	153,690
			Next-generation protective gear for small arms threats		[3,000]	
0400	0601111D8Z	3	GOVERNMENT/INDUSTRY COSPONSORSHIP OF UNIVERSITY RE	9,532		9,532
0400	0601114D8Z	4	DEFENSE EXPERIMENTAL PROGRAM TO STIMULATE COMPETIT	19,532		19,532
0400	0601120D8Z	5	NATIONAL DEFENSE EDUCATION PROGRAM	99,182		108,882
0400	0601384BP	6	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM		9,700	
			Detection of biological agents in water		[1,500]	
			Organic light emitting receptor based nanosensors		[2,000]	
			Next-generation protective gear for chem bio defense		[3,000]	
			Superstructural particle evaluation and characterization with targeted reaction analysis		[3,200]	
0400	0602000D8Z	7	SENSITIVE MUNITIONS - EXPLORATORY DEVELOPMENT	10,447		10,447
0400	0602227D8Z	8	MEDICAL FREE ELECTRON LASER (MFEL)	10,255	10,000	20,255
			Program increase (MFEL)		[10,000]	
0400	0602228D8Z	9	HISTORICALLY BLACK COLLEGES AND UNIVERSITIES (HBCU) S	14,423		14,423
0400	0602234D8Z	10	LINCOLN LABORATORY RESEARCH PROGRAM	28,975		28,975
0400	0602303E	11	INFORMATION & COMMUNICATIONS TECHNOLOGY	242,852		242,852
0400	0602304E	12	COGNITIVE COMPUTING SYSTEMS	220,085		220,085
0400	0602383E	13	BIOLOGICAL WARFARE DEFENSE	112,242		112,242

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				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
0400	0602384BP	14	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM Alternative delivery methods for recombinant protein vaccines Chemical agent fate evaporation model verification and validation Multi-purpose biodefense immunarray Mustard gas antidote research consortium (STIMAL) CB smart materials Rapid identification of biological warfare agents Next-generation chem-bio protection suit Escape mask	280,422	25,600 [5,100] [2,000] [1,500] [3,000] [4,000] [1,000] [4,000] [4,000] [1,000]	306,022
0400	0602702E	15	TACTICAL TECHNOLOGY Personal protection against infectious agents Automated battle management HEDLight TETURAN	383,680	-10,000 [-6,000] [-2,000] [-2,000]	373,680
0400	0602715E	16	MATERIALS AND BIOLOGICAL TECHNOLOGY Biochemical materials	297,277	-5,000 [-5,000]	292,277
0400	0602716BR	17	WMD DEFEAT TECHNOLOGY	213,152		213,152
0400	0602716E	18	ELECTRONICS TECHNOLOGY	246,978		246,978
0400	0602717BR	19	WMD DEFENSE TECHNOLOGIES Modeling and simulation	105,021	5,000 [5,000]	110,021
0400	0602787D8Z	20	MEDICAL TECHNOLOGY			
0400	1160401BB	21	SPECIAL OPERATIONS TECHNOLOGY DEVELOPMENT Wearable Hyperspectral Imaging System	12,698	3,600 [3,600]	16,298
0400	1160407BB	22	SOF MEDICAL TECHNOLOGY DEVELOPMENT			
0400	0603002D8Z	23	MEDICAL ADVANCED TECHNOLOGY	2,293		2,293

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(Dollars in Thousands)

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0400	0603121D8Z	24	SO/LIC ADVANCED DEVELOPMENT	30,575		30,575
0400	0603122D8Z	25	COMBATING TERRORISM TECHNOLOGY SUPPORT	65,768		65,768
0400	0603160BR	26	COUNTERPROLIFERATION INITIATIVES - PROLIFERATION PREVI	104,582	4,000	108,582
			Glass Scintillation fiber radiation detectors		[2,000]	
			Radiation portal monitor		[2,000]	
0400	0603175C	27	BALLISTIC MISSILE DEFENSE TECHNOLOGY	206,676		206,676
0400	0603225D8Z	28	JOINT DOD-DOE MUNITIONS TECHNOLOGY DEVELOPMENT	16,862		16,862
0400	0603286E	29	ADVANCED AEROSPACE SYSTEMS	115,829	-16,300	99,529
			Heavy fuel engine		[-4,000]	
			Comorant		[-4,000]	
			Global range transatmospheric vehicle		[-5,300]	
			Reduction in new starts		[-3,000]	
0400	0603287E	30	SPACE PROGRAMS AND TECHNOLOGY	254,913		254,913
0400	0603384BP	31	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM - ADVANCED	207,114	2,000	209,114
			Next-generation gas chromatographic mass spectrometer		[2,000]	
0400	0603400D8Z	32	JOINT UNMANNED COMBAT AIR SYSTEMS (J-UCAS) ADVANCED	9,400		9,400
0400	0603618D8Z	33	JOINT ELECTRONIC ADVANCED TECHNOLOGY	35,553		37,753
0400	0603648D8Z	34	JOINT CAPABILITY TECHNOLOGY DEMONSTRATIONS		2,200	
			Large data joint capability technology demonstration		[2,200]	
0400	0603711D8Z	35	JOINT ROBOTICS PROGRAM/AUTONOMOUS SYSTEMS	7,700	3,000	10,700
			Versatile, Modular, Diesel Hybrid Unmanned System		[3,000]	

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				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
0400	0603712S	36	GENERIC LOGISTICS R&D TECHNOLOGY DEMONSTRATIONS	23,437	35,900	59,337
			Vehicle fuel cell program		[7,000]	
			Embedded passives test bed		[4,000]	
			Emergency power source development		[1,700]	
			Comprehensive and integrated strategy for hydrogen		[3,000]	
			New England manufacturing supply chain		[3,000]	
			Aging systems and sustainment technologies		[4,200]	
			Advanced mobile gas-to-liquid fueler		[5,000]	
			Solid hydrogen storage systems		[8,000]	
0400	0603713S	37	DISTRIBUTION PROCESS OWNER TECHNOLOGY DEVELOPMENT	15,215		15,215
0400	0603716D8Z	38	STRATEGIC ENVIRONMENTAL RESEARCH PROGRAM	67,149	2,000	69,149
			Dendrimer enhanced water remediation research		[2,000]	
0400	0603720S	39	MICROELECTRONICS TECHNOLOGY DEVELOPMENT AND SUPP			
0400	0603727D8Z	40	JOINT WARFIGHTING PROGRAM	10,641		10,641
0400	0603739E	41	ADVANCED ELECTRONICS TECHNOLOGIES	248,627		248,627
0400	0603750D8Z	42	ADVANCED CONCEPT TECHNOLOGY DEMONSTRATIONS	158,334	2,000	160,334
			Masking shunt		[2,000]	
0400	0603755D8Z	43	HIGH PERFORMANCE COMPUTING MODERNIZATION PROGRAM	175,313	2,000	177,313
			Simulation center upgrades		[2,000]	
0400	0603760E	44	COMMAND, CONTROL AND COMMUNICATIONS SYSTEMS	232,489	-7,800	224,689
			PANDA		[-5,000]	
			XG		[-2,800]	
0400	0603764E	45	LAND WARFARE TECHNOLOGY	48,975		48,975
0400	0603765E	46	CLASSIFIED DARPA PROGRAMS	151,598		151,598
0400	0603766E	47	NETWORK-CENTRIC WARFARE TECHNOLOGY	174,276		174,276

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0400	0603767E	48	SENSOR TECHNOLOGY	205,519		205,519
0400	0603768E	49	GUIDANCE TECHNOLOGY	157,367		157,367
0400	0603769SE	50	DISTRIBUTED LEARNING ADVANCED TECHNOLOGY DEVELOPN	14,918		14,918
0400	0603781D8Z	51	SOFTWARE ENGINEERING INSTITUTE	26,594		26,594
0400	0603805S	52	DUAL USE TECHNOLOGY			
0400	0603826D8Z	53	QUICK REACTION SPECIAL PROJECTS	107,782	3,500	111,282
			Portable explosive screening and countermeasures		[3,500]	
0400	0603828D8Z	54	JOINT EXPERIMENTATION	115,684	10,000	125,684
			Joint modeling, simulation and experimentation		[10,000]	
0400	0603832D8Z	55	JOINT WARGAMING SIMULATION MANAGEMENT OFFICE	36,179		36,179
0400	0603941D8Z	56	TEST & EVALUATION SCIENCE & TECHNOLOGY	39,939		39,939
0400	0603942D8Z	57	TECHNOLOGY LINK	6,822		6,822
0400	0605160D8Z	58	COUNTERPROLIFERATION SUPPORT			
0400	1160402BB	59	SPECIAL OPERATIONS ADVANCED TECHNOLOGY DEVELOPMEN	80,402	-6,800	73,602
			Small and medium caliber recoil mitigation technologies		[3,000]	
			Advanced tactical laser		[-20,000]	
			Special operations portable power source program		[5,000]	
			Flashlight Soldier to Soldier Combat Identification System (FSCIS)		[2,000]	
			Advanced tactical airborne C4ISR systems (ATACS)		[3,200]	
0400	0603161D8Z	60	NUCLEAR AND CONVENTIONAL PHYSICAL SECURITY EQUIPME	33,890		33,890
0400	0603228D8Z	61	PHYSICAL SECURITY EQUIPMENT			
0400	0603527D8Z	62	RETRACT LARCH	22,383		22,383
0400	0603709D8Z	63	JOINT ROBOTICS PROGRAM	12,210		12,210
0400	0603714D8Z	64	ADVANCED SENSOR APPLICATIONS PROGRAM	18,820		18,820
0400	0603851D8Z	65	ENVIRONMENTAL SECURITY TECHNICAL CERTIFICATION PROG	28,841		28,841

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0400	0603879C	66	ADVANCED CONCEPTS, EVALUATIONS AND SYSTEMS			1,038,310
0400	0603881C	67	BALLISTIC MISSILE DEFENSE TERMINAL DEFENSE SEGMENT	1,038,310		
0400	0603882C	68	BALLISTIC MISSILE DEFENSE MIDCOURSE DEFENSE SEGMENT	2,876,972	200,000	3,076,972
			Ground-Based Midcourse Defense System		[200,000]	
0400	0603883C	69	BALLISTIC MISSILE DEFENSE BOOST DEFENSE SEGMENT	631,616	4,000	631,616
0400	0603884BP	70	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM	73,111	[4,000]	77,111
			Oral anthrax/plague vaccine		[4,000]	
0400	0603884C	71	BALLISTIC MISSILE DEFENSE SENSORS	514,510	5,000	519,510
			Airborne Infrared Surveillance System		[5,000]	
0400	0603886C	72	BALLISTIC MISSILE DEFENSE SYSTEM INTERCEPTOR	405,508	-200,000	205,508
			BMD System interceptor		[-200,000]	
0400	0603888C	73	BALLISTIC MISSILE DEFENSE TEST & TARGETS	591,911		591,911
0400	0603889C	74	BALLISTIC MISSILE DEFENSE PRODUCTS	506,840	-40,000	466,840
			BMD products		[-40,000]	
0400	0603890C	75	BALLISTIC MISSILE DEFENSE SYSTEMS CORE	473,077	-40,000	433,077
			BMD core		[-40,000]	
0400	0603891C	76	SPECIAL PROGRAMS - MDA	374,532	-20,000	354,532
			Special programs -- MDA		[-20,000]	
0400	0603892C	77	AEGIS BMD	1,031,874	100,000	1,131,874
			Aegis BMD		[100,000]	
0400	0603893C	78	SPACE TRACKING & SURVEILLANCE SYSTEM	390,585		390,585
0400	0603894C	79	MULTIPLE KILL VEHICLE	164,975		164,975
0400	0603920D8Z	80	HUMANITARIAN DEMINING	14,489		14,489
0400	0603923D8Z	81	COALITION WARFARE	5,878		5,878

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0400	0604016D8Z	82	DEPARTMENT OF DEFENSE CORROSION PROGRAM Corrosion prevention research	4,966	2,000 [2,000]	6,966
0400	0604400D8Z	83	JOINT UNMANNED COMBAT AIR SYSTEMS (J-UCAS) ADVANCED			
0400	0604648D8Z	84	JOINT CAPABILITY TECHNOLOGY DEMONSTRATIONS	3,047		3,047
0400	0604722D8Z	85	JOINT SYSTEMS INTEGRATION COMMAND (JSIC)	20,755		20,755
0400	0604828D8Z	86	JOINT FIRES INTEGRATION AND INTEROPERABILITY TEAM	16,782		16,782
0400	0605017D8Z	87	REDUCTION OF TOTAL OWNERSHIP COST	25,289		25,289
0400	0303191D8Z	88	JOINT ELECTROMAGNETIC TECHNOLOGY (JET) PROGRAM	3,672		3,672
0400	0604051D8Z	89	DEFENSE ACQUISITION CHALLENGE PROGRAM (DACP)	29,500		29,500
0400	0604161D8Z	90	NUCLEAR AND CONVENTIONAL PHYSICAL SECURITY EQUIPME	9,277		9,277
0400	0604384BP	91	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM	212,072		212,072
0400	0604618D8Z	92	MANPADS DEFENSE PROGRAM			
0400	0604709D8Z	93	JOINT ROBOTICS PROGRAM	6,004		6,004
0400	0604764K	94	ADVANCED IT SERVICES JOINT PROGRAM OFFICE (AITS-JPO)	9,392		9,392
0400	0604771D8Z	95	JOINT TACTICAL INFORMATION DISTRIBUTION SYSTEM (JTIDS)	8,177		8,177
0400	0605013BL	96	INFORMATION TECHNOLOGY DEVELOPMENT	11,005		11,005
0400	0605015BL	97	INFORMATION TECHNOLOGY DEVELOPMENT-STANDARD PROC			
0400	0605016D8Z	98	FINANCIAL MANAGEMENT SYSTEM IMPROVEMENTS			
0400	0605018SE	99	DEFENSE INTEGRATED MILITARY HUMAN RESOURCES SYSTEM			
0400	0605019D8Z	100	ACQUISITION DOMAIN			
0400	0605020BTA	101	BUSINESS TRANSFORMATION AGENCY R&D ACTIVITIES	140,245		140,245
0400	0605140D8Z	102	TRUSTED FOUNDRY	42,522		42,522
0400	0605648D8Z	103	DEFENSE ACQUISITION EXECUTIVE (DAE) PILOT PROGRAM	6,015		6,015
0400	0303129K	104	DEFENSE MESSAGE SYSTEM	11,202		11,202
0400	0303140K	105	INFORMATION SYSTEMS SECURITY PROGRAM			

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0400	0303141K	106	GLOBAL COMBAT SUPPORT SYSTEM	18,556		18,556
0400	0303158K	107	JOINT COMMAND AND CONTROL PROGRAM (JC2)	47,031		47,031
0400	0305840K	108	ELECTRONIC COMMERCE			
0400	0305840S	109	ELECTRONIC COMMERCE			
0400	0901200D8Z	110	BMMP DOMAIN MANAGEMENT AND SYSTEMS INTEGRATION			
0400	0603704D8Z	111	SPECIAL TECHNICAL SUPPORT			
0400	0603757D8Z	112	TRAINING TRANSFORMATION (T2) Command and control network	72,897	5,000 [5,000]	77,897
0400	0603858D8Z	113	UNEXPLODED ORDNANCE DETECTION AND CLEARANCE			
0400	0604140D8Z	114	CAPITAL ASSET MANAGEMENT SYSTEM-MILITARY EQUIPMENT	10,322		10,322
0400	0604774D8Z	115	DEFENSE READINESS REPORTING SYSTEM (DRRS)	9,390		9,390
0400	0604875D8Z	116	JOINT SYSTEMS ARCHITECTURE DEVELOPMENT	130,290		130,290
0400	0604940D8Z	117	CENTRAL TEST AND EVALUATION INVESTMENT DEVELOPMENT	7,492		7,492
0400	0604943D8Z	118	THERMAL VICAR			
0400	0605100D8Z	119	JOINT MISSION ENVIRONMENT TEST CAPABILITY (JMETS)	10,600		10,600
0400	0605104D8Z	120	TECHNICAL STUDIES, SUPPORT AND ANALYSIS	30,339		30,339
0400	0605110BR	121	CRITICAL TECHNOLOGY SUPPORT			
0400	0605110D8Z	122	USD(A&T)--CRITICAL TECHNOLOGY SUPPORT Militarily critical technologies program (Transfer from OMDW 260)	2,029	2,000 [2,000]	4,029
0400	0605114D8Z	123	BLACK LIGHT			
0400	0605117D8Z	124	FOREIGN MATERIAL ACQUISITION AND EXPLOITATION	38,253		38,253
0400	0605123D8Z	125	INTERAGENCY EXPORT LICENSE AUTOMATION			
0400	0605124D8Z	126	DEFENSE TRAVEL SYSTEM			
0400	0605126J	127	JOINT THEATER AIR AND MISSILE DEFENSE ORGANIZATION	52,486		52,486
0400	0605128D8Z	128	CLASSIFIED PROGRAM USD(E)			

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				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
0400	0605130D8Z	129	FOREIGN COMPARATIVE TESTING	31,995		31,995
0400	0605161D8Z	130	NUCLEAR MATTERS-PHYSICAL SECURITY	4,285		4,285
0400	0605170D8Z	131	SUPPORT TO NETWORKS AND INFORMATION INTEGRATION	10,990		10,990
0400	0605200D8Z	132	GENERAL SUPPORT TO USD (INTELLIGENCE)	5,637		5,637
0400	0605384BP	133	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM	80,134		80,134
0400	0605502BR	134	SMALL BUSINESS INNOVATION RESEARCH			
0400	0605502C	135	SMALL BUSINESS INNOVATIVE RESEARCH - MDA			
0400	0605502D8Z	136	SMALL BUSINESS INNOVATIVE RESEARCH			
0400	0605502E	137	SMALL BUSINESS INNOVATIVE RESEARCH			
0400	0605790D8Z	138	SMALL BUSINESS INNOVATION RESEARCH/CHALLENGE ADMIN.	2,073		2,073
0400	0605798S	139	DEFENSE TECHNOLOGY ANALYSIS	5,577		5,577
0400	0605799D8Z	140	FORCE TRANSFORMATION DIRECTORATE	20,404	25,000	45,404
			Operationally responsive space		[20,000]	
			Airborne reconnaissance sensor for ORS		[5,000]	
0400	0605801KA	141	DEFENSE TECHNICAL INFORMATION CENTER (DTIC)	51,929		51,929
0400	0605803SE	142	R&D IN SUPPORT OF DOD ENLISTMENT, TESTING AND EVALUA	9,348		9,348
0400	0605804D8Z	143	DEVELOPMENT TEST AND EVALUATION	9,203		9,203
0400	0605898E	144	MANAGEMENT HQ - R&D	50,951	-5,000	45,951
			Management headquarters		[-5,000]	
0400	0301555G	145	CLASSIFIED PROGRAMS	[ ]		[ ]
0400	0301556G	146	SPECIAL PROGRAM	[ ]		[ ]
0400	0303169D8Z	147	INFORMATION TECHNOLOGY RAPID ACQUISITION	5,090		5,090
0400	0305193D8Z	148	INTELLIGENCE SUPPORT TO INFORMATION OPERATIONS (IO)	14,128		14,128
0400	0305193G	149	INTELLIGENCE SUPPORT TO INFORMATION OPERATIONS (IO) (I)	[ ]		[ ]
0400	0901585C	150	PENTAGON RESERVATION	15,586		15,586
0400	0901598C	151	MANAGEMENT HQ - MDA	87,389		87,389

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				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
0400	0901598D8W	152	IT SOFTWARE DEV INITIATIVES	1,412		1,412
0400	0604130V	153	DEFENSE INFORMATION SYSTEM FOR SECURITY (DISS)	35,439		35,439
0400	0605127T	154	PARTNERSHIP FOR PEACE (PPP) INFORMATION MANAGEMENT S	1,521		1,521
0400	0607384BP	155	CHEMICAL AND BIOLOGICAL DEFENSE (OPERATIONAL SYSTEM	7,035		7,035
0400	0607828D8Z	156	JOINT INTEGRATION AND INTEROPERABILITY	66,906		66,906
0400	0204571J	157	JOINT STAFF ANALYTICAL SUPPORT	7,686		7,686
0400	0208043J	158	CLASSIFIED PROGRAMS	1,662		1,662
0400	0208045K	159	C4I INTEROPERABILITY	84,313		84,313
0400	0208052J	160	JOINT ANALYTICAL MODEL IMPROVEMENT PROGRAM			
0400	0301011G	161	CRYPTOLOGIC ACTIVITIES	[ ]		[ ]
0400	0301301L	162	GENERAL DEFENSE INTELLIGENCE PROGRAM	[ ]	6,500	6,500
			High performance computational systems		[2,000]	
			Armed Forces medical and food research		[4,500]	
0400	0301318BB	163	HUMINT (CONTROLLED)	[ ]		[ ]
0400	0301398L	164	MANAGEMENT HQ - GDIP	[ ]		[ ]
0400	0301555BB	165	CLASSIFIED PROGRAMS	[ ]		[ ]
0400	0301556BB	166	SPECIAL PROGRAM	[ ]		[ ]
0400	0302016K	167	NATIONAL MILITARY COMMAND SYSTEM-WIDE SUPPORT	721		721
0400	0302019K	168	DEFENSE INFO INFRASTRUCTURE ENGINEERING AND INTEGRA	34,007		34,007
0400	0303126K	169	LONG-HAUL COMMUNICATIONS - DCS	1,523		1,523
0400	0303131K	170	MINIMUM ESSENTIAL EMERGENCY COMMUNICATIONS NETWO	7,691		7,691
0400	0303135G	171	PUBLIC KEY INFRASTRUCTURE (PKI)	14,240		14,240
0400	0303136G	172	KEY MANAGEMENT INFRASTRUCTURE (KMI)	38,257		38,257
0400	0303140D8Z	173	INFORMATION SYSTEMS SECURITY PROGRAM	14,856		14,856
0400	0303140G	174	INFORMATION SYSTEMS SECURITY PROGRAM	404,337		404,337

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				<u>Request</u>	<u>Change</u>	<u>Authorized</u>
0400	0303148K	175	DISA MISSION SUPPORT OPERATIONS	1,224		1,224
0400	0303149J	176	C4I FOR THE WARRIOR	3,556		3,556
0400	0303149K	177	C4I FOR THE WARRIOR	6,551		6,551
0400	0303150K	178	GLOBAL COMMAND AND CONTROL SYSTEM	59,681		59,681
0400	0303153K	179	JOINT SPECTRUM CENTER	12,448		12,448
0400	0303165K	180	DEFENSE COLLABORATION TOOL SUITE (DCTS)			
0400	0303170K	181	NET-CENTRIC ENTERPRISE SERVICES (NCES)	28,630		28,630
0400	0303610K	182	TELEPORT PROGRAM	14,424		14,424
0400	0304210BB	183	SPECIAL APPLICATIONS FOR CONTINGENCIES	11,302		11,302
0400	0304345BQ	184	NATIONAL GEOSPACIAL - INTELLIGENCE PROGRAM (NGP)	[ ]		[ ]
0400	0305102BQ	185	DEFENSE GEOSPACIAL - INTELLIGENCE PROGRAM Commercial airborne IFSAR mapping for NGIA	[ ]	10,000	10,000
0400	0305125D8Z	186	CRITICAL INFRASTRUCTURE PROTECTION (CIP)	12,422		12,422
0400	0305127BZ	187	FOREIGN COUNTERINTELLIGENCE ACTIVITIES Credibility Assessment Research Initiative	[ ]	2,000	2,000
0400	0305146BZ	188	DEFENSE JOINT COUNTERINTELLIGENCE ACTIVITIES	20,791		20,791
0400	0305183L	189	DEFENSE HUMAN INTELLIGENCE (HUMINT) PROGRAM (DHIP)	[ ]		[ ]
0400	0305193L	190	INTELLIGENCE SUPPORT TO INFORMATION OPERATIONS (IO) (JI)	[ ]		[ ]
0400	0305199D8Z	191	NET CENTRICITY	8,746		8,746
0400	0305202G	192	DRAGON U-2 (JMIP)	[ ]		[ ]
0400	0305206G	193	AIRBORNE RECONNAISSANCE SYSTEMS Combat Sent wideband sensor upgrade program	[ ]	6,000	6,000
0400	0305207G	194	MANNED RECONNAISSANCE SYSTEMS	[ ]		[ ]
0400	0305208BQ	195	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	[ ]		[ ]
0400	0305208G	196	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	[ ]		[ ]

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0400	0305208K	197	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	7,451		7,451
0400	0305208L	198	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	[ ]		[ ]
0400	0305880L	199	COMBATANT COMMAND INTELLIGENCE OPERATIONS	[ ]		[ ]
0400	0305883L	200	HARD AND DEEPLY BURIED TARGET (HDBT) INTEL SUPPORT	[ ]		[ ]
0400	0305884L	201	INTELLIGENCE PLANNING AND REVIEW ACTIVITIES	[ ]		[ ]
0400	0305885G	202	TACTICAL CRYPTOLOGICAL ACTIVITIES	[ ]		[ ]
0400	0305889G	203	COUNTERDRUG INTELLIGENCE SUPPORT	[ ]		[ ]
0400	0305889L	204	COUNTERDRUG INTELLIGENCE SUPPORT	[ ]		[ ]
0400	0307141G	205	NASS, IO TECHNOLOGY INTEGRATION AND TOOL DEV	[ ]		[ ]
0400	0307207G	206	AERIAL COMMON SENSOR (ACS)	[ ]		[ ]
0400	0708011S	207	INDUSTRIAL PREPAREDNESS	18,748	8,000	26,748
			Castings for improved readiness		[3,000]	
			High performance defense manufacturing tech R&D		[5,000]	
0400	0708012S	208	LOGISTICS SUPPORT ACTIVITIES	2,912		2,912
0400	0902298J	209	MANAGEMENT HEADQUARTERS (JCS)	3,090		3,090
0400	1001018D8Z	210	NATO JOINT STARS	41,670		41,670
0400	1160279BB	211	SMALL BUSINESS INNOVATIVE RESEARCH/SMALL BUS TECH TR			
0400	1160403BB	212	SPECIAL OPERATIONS AVIATION SYSTEMS ADVANCED DEVELC	83,704		83,704
0400	1160404BB	213	SPECIAL OPERATIONS TACTICAL SYSTEMS DEVELOPMENT	45,241	10,900	56,141
			Wavelet packet modulation		[4,400]	
			Special operations combat assault rifle (scar)		[4,100]	
			Helmet Mount Track System		[2,400]	
0400	1160405BB	214	SPECIAL OPERATIONS INTELLIGENCE SYSTEMS DEVELOPMENT	29,011	10,000	39,011
			Wireless management and control project		[4,000]	
			Multi-spectral laboratory and analytical services center		[6,000]	
0400	1160408BB	215	SOF OPERATIONAL ENHANCEMENTS	99,010		99,010

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0400	1160421BB	216	SPECIAL OPERATIONS CV-22 DEVELOPMENT			
0400	1160425BB	217	SPECIAL OPERATIONS AIRCRAFT DEFENSIVE SYSTEMS	7,850		7,850
0400	1160426BB	218	OPERATIONS ADVANCED SEAL DELIVERY SYSTEM (ASDS) DEVI	32,452		32,452
0400	1160427BB	219	MISSION TRAINING AND PREPARATION SYSTEMS (MTPS)	1,782		1,782
0400	1160428BB	220	UNMANNED VEHICLES (UV)	1,521		1,521
0400	XXXXXXXX	999	CLASSIFIED PROGRAMS	3,312,490		3,312,490
			<b>Total, RDT&amp;E Defense-Wide</b>	<b>20,809,939</b>	<b>169,000</b>	<b>20,978,939</b>
			<b>OPERATIONAL TEST &amp; EVALUATION, DEFENSE</b>			
0460	0603941D8Z	1	TEST & EVALUATION SCIENCE & TECHNOLOGY			
0460	0604940D8Z	2	CENTRAL TEST AND EVALUATION INVESTMENT DEVELOPMENT			
0460	0605118D8Z	3	OPERATIONAL TEST AND EVALUATION			
0460	0605118OTE	4	OPERATIONAL TEST AND EVALUATION			
0460	0605131D8Z	5	LIVE FIRE TESTING	50,161		50,161
0460	0605131OTE	6	LIVE FIRE TEST AND EVALUATION			
0460	0605804D8Z	7	DEVELOPMENT TEST AND EVALUATION	11,245		11,245
0460	0605814OTE	8	OPERATIONAL TEST ACTIVITIES AND ANALYSES	120,114		120,114
			<b>Total, Operational Test &amp; Evaluation, Defense</b>	<b>181,520</b>		<b>181,520</b>
			<b>TOTAL RDT&amp;E</b>	<b>73,156,008</b>	<b>1,008,140</b>	<b>74,164,148</b>

**Force protection basic research**

The budget request included \$150.7 million in PE 61101E, for defense research sciences and \$99.2 million in PE 61328BP, for the chemical and biological defense basic research program. The committee recommends an increase of \$3.0 million in PE 61101E and \$3.0 million in PE 61384BP to expand research programs focused on development of next generation protective gear to counter small-arms threats and chemical-biological threats to service members, respectively.

**National Defense Education Program**

The budget request included \$19.5 million in PE 61102D8Z, for the National Defense Education Program (NDEP). The committee commends the Department of Defense for supporting this targeted and timely program, but notes that the request includes funds for activities that are not authorized including institutional scholarships, fellowships, and traineeships. Of the amount requested in PE 61102D8Z, the committee authorizes \$17.0 million specifically for Science, Mathematics, and Research for Transformation scholarships and \$2.5 million for other NDEP activities; but authorizes no funding for institutional scholarships, fellowships, and traineeships. The committee recommends that the Department provide information on the need for this activity along with a request for legislative authority to conduct it.

**Detection of biological agents in water**

The budget request included \$99.1 million in PE 61384BP, for chemical and biological defense basic research. The committee notes that the ability to detect the introduction of manmade or natural toxins into inland or coastal waterways is an important component of the overall force protection of U.S. forces. The committee commends the Department of Defense for supporting the advanced technology development of data fusion technologies and mathematical modeling to predict and counter the detection of biological agents in water. The committee recommends an increase of \$1.5 million in PE 61384BP to support the demonstration of selected near real-time sensors on buoys, submerged fixtures, and potable water pump stations.

**Organic light emitting receptor-based nanosensors**

The budget request included \$99.2 million in PE 61384BP, for chemical and biological defense basic research, but included no funding for the research and development of organic light emitting receptor-based nanosensors.

The committee supports the Department of Defense's efforts to develop low-cost and lightweight nanosensors for the rapid detection of toxins and the rapid display of alerts for the presence of toxins.

The committee recommends an increase of \$2.0 million in PE 61384BP for the development of nanosensors that are capable of simultaneously generating optical and photo acoustic signals upon interaction with target toxins.

**Superstructural particle evaluation**

The budget request included \$99.2 million in PE 61384BP, for chemical and biological defense basic research. Basic science challenges continue to plague efforts to develop comprehensive methods for countering threats posed by chemical and biological warfare agents. The committee commends the Department of Defense for supporting basic research to address both the chemical and biological threat. The committee recommends an increase of \$3.2 million in PE 61384BP to accelerate promising work in superstructural particle evaluation and characterization with targeted reaction analysis. This program will allow investigations of real-time, micro-scale responses of cells and microbes to the influence of a variety of chemical species, including chemical warfare agents, toxins, or potential protective or therapeutic substances.

**Medical free electron laser**

The budget request included \$10.3 million in PE 62227D8Z, for the medical free electron laser program. The committee recommends an increase of \$10.0 million in PE 62227D8Z to continue research efforts that utilize free electron lasers to address critical military medical requirements.

**Alternative delivery of recombinant protein vaccines**

The budget request included \$280.4 million in PE 62384BP, for chemical and biological defense applied research. The committee commends the Department of Defense for supporting research to address the need for new vaccine delivery devices and powder vaccine technologies to improve the performance of biodefense vaccines and reduce the logistical challenges in delivering those vaccines. The committee recommends an increase of \$5.1 million in PE 62384BP to accelerate promising work on vaccine-device combinations. This program will facilitate the rapid deployment in minimally invasive delivery formats, provide superior protection, and in some cases, improve the stability for stockpiled vaccines.

**Chemical and biological smart materials**

The budget request included \$280.4 million in PE 62384BP, for chemical and biological defense applied research, but included no funding for the research and development of chemical and biological smart materials to enhance individual and collective protection.

The committee notes that the Department of Defense has identified warfighter protection capability shortfalls in several research areas to include individual and collective protection. The committee recognizes the importance of the development of technologies for the improvement of chemical and biological agent individual protection ensembles. The committee recommends an increase of \$4.0 million in PE 62384BP for the research and development of chemical and biological smart materials to address this shortfall.

**Escape mask**

The budget request included \$280.4 million in PE 62384BP, for chemical and biological defense applied research, but included no funding for the research and development of escape masks or hoods. The committee notes the importance of the development of

escape masks and respirators with a capability to protect individuals from carbon monoxide. The committee recommends an increase of \$4.0 million in PE 62384BP for the development of escape mask capability shortfalls.

#### **Multipurpose biodefense immunoarray**

The budget request included \$280.4 million in PE 62384BP, for chemical and biological defense applied research, but included no funding for the research and development of multipurpose biodefense immunoarray technology.

The committee notes that protein microarrays have the potential to screen hundreds of proteins simultaneously for reactivity with serum antibodies.

The committee recommends an increase of \$1.5 million in PE 62384BP, for the continued development of microarray diagnostics, which could determine previous exposure to biological agents; assess the effectiveness of vaccine immunizations; and determine the potential of new vaccines to elicit an immune response.

#### **Mustard gas antidote**

The budget request included \$30.7 million in PE 62384BP, for medical chemical defense applied research. This program emphasizes the prevention of chemical casualties and addresses capability gaps in the area of prophylaxes for chemical warfare agents. The committee recommends an increase of \$3.0 million in PE 62384BP for mustard gas antidote research. The committee commends the Department of Defense for current research focused on a mustard gas antidote using signal transduction inhibition antioxidant liposomes (STIMAL), and notes that STIMAL research has demonstrated the potential to substantially reduce the effects of a range of chemical agents.

#### **Next-generation chemical biological protective suit**

The budget request included \$280.4 million in PE 62384BP, for chemical and biological defense applied research, but included no funding for the research and development of the next-generation chemical and biological protective suit.

The committee notes the importance of the development of a next-generation, self-decontaminating chemical and biological protective suit for U.S forces to reduce the physiological and logistical burden of protective clothing. The committee recommends an increase of \$4.0 million in PE 62384BP for the development of self-decontaminating materials to address this shortfall.

#### **Personal protection against infectious agents**

The budget request included \$280.4 million in PE 62384BP, for chemical and biological defense applied research, but included no funding for collaborative research and development related to personal protective masks and anti-microbial filters that protect against exposure to infectious agents and diseases. The committee recommends an increase of \$1.0 million in PE 62384BP for research and development to improve the respiratory protection for individual protection ensembles from emerging infectious agents and diseases.

**Rapid identification of biological warfare agents**

The budget request included \$280.4 million in PE 62384BP, for chemical and biological defense applied research. The committee commends the efforts of the Department of Defense to develop the Joint Biological Standoff Detection System (JBSDS) as the first stand-off early warning biological detection system capable of providing near real time, early warning detection of biological warfare agents.

The committee notes the importance of the development of technologies for the rapid detection of biological agents such as anthrax and ricin that could be weaponized and employed against U.S. forces. The committee recommends an increase of \$1.0 million in PE 62384BP for the research and development of an early warning, biological detection system capable of providing near real time detection of the biological agents most likely to be weaponized and employed against U.S. forces.

**Verification and validation of chemical agent persistence models**

The budget request included \$280.4 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 notes 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 persistent models will help protect U.S. military forces and equipment, and permit those forces to operate effectively in a chemically contaminated environment.

The committee recommends an increase of \$2.0 million in PE 62384BP, for verification and validation of chemical agent persistence models to ensure U.S. forces are capable of operating effectively in a chemically contaminated environment.

**Tactical technology**

The budget request included \$383.7 million in PE 62702E, for applied research on tactical technology. The committee notes that the request represents an increase of nearly \$40.0 million over current funding levels. The committee recommends a decrease of \$10.0 million in PE 62702E, including: \$2.0 million for the HEDLight program, which is not currently a high priority for the Navy; \$2.0 million to delay the Tethered Urban Airborne Node new start program; and \$6.0 million for research on automated battle management systems. It is unclear how this effort is coordinated with the major, Department-wide effort to develop a Joint Battle Management Command and Control roadmap.

**Biochemical materials**

The budget request included \$297.3 million in PE 62715E, for materials and biological technology. The committee recommends a decrease of \$5.0 million in PE 62715E to limit growth in biochemical materials research programs. The committee notes that

some of these activities are more appropriately performed at civilian agencies.

#### **Modeling and simulation**

The budget request included \$105.0 million in PE 62717BR, for weapons of mass destruction (WMD) defense technologies. Detailed and comprehensive characterization of catastrophic attacks and disasters is critical to crisis and logistical planning. The committee recommends an increase of \$5.0 million in PE 62717BR for development of a comprehensive national incident characterization and management system.

#### **Wearable hyperspectral imaging system**

The budget request included \$12.7 million in PE 116401BB for Special Operations Forces (SOF), Technology Development. The committee notes the need to integrate technologies currently under development into a low cost, wearable, hyperspectral imaging system to assist SOF elements with the detection of improvised explosive devices, target location, and target identification. The committee recommends an increase of \$3.6 million in PE 116401BB, for the development of wearable hyperspectral imaging technology for SOF elements.

#### **Radiation detection technology**

The budget request included \$8.7 million in PE 63160BR, for proliferation prevention and defeat radiation detection technology. The committee notes the importance of developing higher quality, more cost-effective nuclear radiation detectors to enhance the ability to detect and identify hazardous materials that pose a proliferation threat. The committee recommends an increase of \$2.0 million in PE 63160BR for procuring glass scintillation fiber radiation detectors and developing new portable applications, including backpack detectors, panels for aircraft, and detectors included in clothing systems. The committee further recommends an increase of \$2.0 million in PE 63160BR for the development of a state-of-the-art radiation portal monitor using High Purity Germanium technology, which will enable the Defense Threat Reduction Agency to replace lower resolution technology at defense installations with better performing nuclear detection equipment with greater sensitivity.

#### **Advanced aerospace systems**

The budget request included \$115.8 million in PE 63286E, for advanced aerospace systems research. The committee recommends a decrease of \$16.3 million in PE 63286E, including: \$5.3 million for efforts to develop a global range transatmospheric vehicle that is not consistent with current service acquisition plans or goals; \$4.0 million for the development of a heavy fuel engine for the A160, which lacks a transition pathway to Army Future Combat Systems; \$4.0 million for the Cormorant air vehicle program; and a general decrease of \$3.0 million to new start efforts in the account.

#### **Next Generation Gas Chromatographic Mass Spectrometer**

The budget request included \$207.1 million in PE 63384BP, for chemical and biological defense advanced research. The Weapons of

Mass Destruction Civil Support Teams (WMD-CST) currently use commercial, off-the-shelf (COTS) Gas Chromatographic Mass Spectrometers (GCMS) to identify threats posed by chemical warfare agents. The committee commends the Department of Defense for supporting the advanced technology development of next generation COTS GCMS. The committee recommends an increase of \$2.0 million in PE 63384BP to continue the development, modification, test, and evaluation of next generation COTS GCMS products. This program will allow WMD-CST the ability to refresh their inventory with a technically superior GCMS capability.

#### **Joint advanced concept technology demonstration**

The budget request included \$35.6 million in PE 63648D8Z, for joint capability technology demonstrations. The Department of Defense initiated this new technology transition program in the fiscal year 2006 budget request to update the successful advanced concepts technology demonstrations to more closely align with the Joint Capabilities Interoperability Development System (JCIDS) and to enhance the participation of the combatant commanders through the JCIDS process. The committee recommends an increase of \$2.2 million in PE 63648D8Z to accelerate transition of the large data image visualization capability that will assist the joint warfighter and the intelligence community in processing increasing volumes of data in real time.

#### **Joint robotic autonomous systems**

The budget request included \$7.7 million in PE 63711D8Z, for joint robotics program/autonomous systems, but included no funding for development of a versatile, modular, diesel hybrid unmanned system capable of delivering multiple payloads in the 2000–4000 pound range. The committee recommends an increase of \$3.0 million in PE 63711D8Z to modify existing capabilities for additional unmanned logistics support missions.

#### **Advanced mobile gas-to-liquid fueler**

The budget request included \$23.4 million in PE 63712S, for generic logistics research and development technology demonstrations. Adequate, reliable, and cost-effective fuel supplies are important for military operations in changing or hostile environments. Alternative fuel systems offer possible long-term solutions in reducing the logistical footprint of deployed forces, if successfully configured to meet military requirements. The committee recommends an increase of \$5.0 million in PE 63712S for continued development of mobile gas-to-liquid fuelers to demonstrate innovations in converting biomass to synthetic diesel fuel.

#### **Defense Logistics Agency research and technology demonstrations**

The budget request included \$23.4 million in PE 63712S, for generic logistics research and development technology demonstrations. The committee notes that the Department of Defense is the largest single user of energy in the United States. Energy and power represent significant and growing burdens on the Department budget. The Defense Logistics Agency recently reported that

hydrogen as a fuel may become a viable option for the Department, if remaining technical and logistical challenges can be solved. The committee recommends an increase of \$3.0 million in PE 63712S to create a comprehensive and integrated strategy and to plan for the appropriate use and acquisition of hydrogen fuel.

The committee further notes that the use of solid hydrogen storage materials for portable, vehicle, and stationary fuel cell applications shows promise in addressing safety, cost, and performance issues related to fuel cell systems. The committee recommends an increase of \$8.0 million in PE 63712S for research on and technology demonstrations of solid hydrogen storage systems that can support military requirements and technology development goals. The committee further recommends an increase of \$7.0 million in PE 63712S for the continuation of the vehicle fuel cell program to accelerate the development and deployment of fuel cell technologies in military vehicles through advanced research and demonstration programs.

The committee also recommends an increase of \$12.9 million in PE 63712S, including \$3.0 million to support the manufacturing supply chain and for increased involvement of small- and medium-sized firms in meeting defense surge production requirements; \$4.0 million for the embedded passives test bed program; \$4.2 million for aging systems sustainment and enabling technologies; and \$1.7 million for the development of an emergency power source to meet National Guard requirements.

#### **Dendrimer enhanced water remediation research**

The budget request included \$67.1 million in PE 63716D8Z, for the Strategic Environmental Research and Development Program, but included no funding for dendrimer enhanced water remediation research. The committee notes that research has shown that dendrimers have remarkable capacity to retain a variety of metal and organic molecules, making them ideal materials for water remediation. This project would demonstrate the feasibility of dendrimers in reusable cartridges for point-of-use water filtration units. The committee recommends an increase of \$2.0 million in PE 63716D8Z for dendrimer enhanced water remediation research.

#### **Computer modernization technologies**

The budget request included \$158.3 million in PE 63750D8Z, for advanced concepts technology demonstrations and \$175.3 million in PE 63755D8Z for the high performance computing modernization program.

The committee recommends an increase of \$2.0 million in PE 63750D8Z for the continued development of masking shunt cybersecurity techniques and technologies to increase the security of military networks and information systems against enemy information operations. The Joint Chiefs of Staff's Coalition Warrior Interoperability Demonstration Joint Management Office recommended further development and procurement of this technology after successful demonstration.

The committee further recommends an increase of \$2.0 million in PE63755D8Z for upgrades to the Space and Missile Defense Command simulation center to meet increasing computational de-

mands. The center supports high performance computing modernization efforts to accelerate the development and transition of advanced defense technologies into warfighting capabilities through supercomputing and computational modeling, including supporting the development of armor systems, weather forecasting models, and test and evaluation.

#### **Command, control, and communications systems**

The budget request included \$232.5 million in PE 63760E, for command, control, and communications systems. The committee recommends a decrease of \$2.8 million in PE 63760E for the Next Generation (XG) program. The XG communications technology had been planned for a fiscal year 2007 transition to the Army in the Joint Tactical Radio Systems (JTRS) clusters. The committee notes that the JTRS program is undergoing significant technical reevaluation and program restructuring, so transition of this and other technologies appears problematic. The committee further recommends a decrease of \$5.0 million in PE 63760E to better align the budget with proposed activities of the Predictive Analysis for Naval Deployment Activities program.

#### **Portable explosive detection**

The budget request included \$107.8 million in PE 63826D8Z, for quick reaction special projects. The committee notes that advances in capabilities to detect trace amounts of explosive materials support efforts to prevent attacks using bombs and improvised explosive devices. The committee recommends an increase of \$3.5 million in PE 63826D8Z for rapid testing, training, and logistics support for a low-cost, portable, easy-to-operate explosive screening and countermeasure system.

#### **Joint modeling, simulation, and experimentation**

The budget request included \$115.7 million in PE 63828D8Z, for joint experimentation, modeling, and simulation technologies, but included no funding for joint effects-based modeling and simulation that effectively incorporates political, economic, infrastructure, information, societal, and diplomatic factors, as well as coalition warfare, at the tactical level of operations.

The 2006 Quadrennial Defense Review (QDR) Report noted that the Department of Defense must “shift its emphasis from Department-centric approaches toward interagency solutions” to incorporate all elements of national power. Cooperation across the Federal Government is essential and can be facilitated efficiently by enhanced modeling, simulation, and experimentation. Similarly, the Report identified that the ability of the United States and its allies to work together to influence the global environment is fundamental to defeating terrorist networks.

The committee believes that the Department must develop a world-class experimentation, modeling, and simulation capability that is joint, interagency, and coalition at the tactical level of operation. This is especially important since Cold War era distinctions between tactical and strategic have been increasingly obscured. The committee also believes that joint modeling, simulation, and

experimentation would be most effectively conducted at Joint Forces Command.

The committee recommends an increase of \$10.0 million in PE 63828D8Z, for Joint Experimentation, to further develop joint, interagency, and coalition modeling, simulation, and experimentation.

**Advanced tactical airborne command, control, communications, computer, intelligence, surveillance, and reconnaissance system**

The budget request included \$80.4 million in PE 116402BB for Special Operations Forces (SOF), Advanced Technology Development, but included no funding for a SOF stand-off, airborne, modular advanced tactical airborne command, control, communications, computer, intelligence, surveillance and reconnaissance (C4ISR) system.

The committee notes SOF elements require a C-130-based, roll-on, C4ISR system to respond to current and emerging asymmetrical warfare threats. The committee recommends an increase of \$3.2 million in PE 116402BB for the further development of a roll-on C4ISR sensor and communications suite to enhance the intelligence gathering capabilities and command and control relay capability of SOF elements engaged in the global war on terror.

**Advanced tactical laser**

The budget request included \$80.4 million in PE 116402BB, for Special Operations Forces (SOF), Advanced Technology Development, including \$45.0 million for the advanced tactical laser (ATL) program.

The ATL Advance Concepts Technology Demonstration (ACTD) is a long-standing effort to weaponize directed energy technology into an existing tactical platform. While a potentially promising concept, the program has faced formidable challenges, including the absence of a technology transition plan.

The committee recommends a decrease of \$20.0 million in PE 116402BB, while the technical challenges associated with ATL are addressed and an effective transition plan for this technology is developed and implemented.

**Flashlight soldier-to-soldier combat identification system**

The budget request included \$80.4 million in PE 116402BB for Special Operations Forces (SOF), Advanced Technology Development, but included no funding to develop new capabilities to address the identification of friendly forces for SOF elements in a ground combat environment.

The committee commends the Department of Defense's efforts to develop technologies to assist in the prevention and ultimate elimination of friendly fire incidents on changing and complex battlefields. Flashlight soldier-to-soldier combat identification system (FSCIS) is a friend-or-foe combat identification system that employs focused radio frequency beams to identify the presence of friendly units in an area of impending combat.

The committee recommends an increase of \$2.0 million in PE 116402BB, for SOF Advanced Technology Development, for the development of FSCIS technology.

#### **Small and medium caliber recoil mitigation technologies**

The budget request included \$80.4 million in PE 116402BB for Special Operations Forces (SOF), Advanced Technology Development, but included no funding for SOF small and medium caliber recoil mitigation technology.

The committee notes that the current small and medium caliber weapons in use today by SOF elements possess recoil technologies more than 50 years old. The committee further notes that recoil management is at the core of reducing small arms weight, while improving lethality and reliability.

The committee recommends an increase of \$3.0 million in PE 116402BB for the further development of advanced prototypes of small and medium caliber weapons to improve SOF lethality in close-quarter and urban combat environments.

#### **Special Operations portable power source program**

The budget request included \$80.4 million in PE 116402BB for Special Operations Forces (SOF), Advanced Technology Development, but included no funding to develop solid oxide fuel cell systems.

The committee notes such systems are designed to significantly reduce the weight burden of batteries for SOF operators, and that a reduction in battery weight will have a direct impact on increasing the capability of SOF elements and their equipment. The committee further notes that the Department of Defense is exploring various approaches to solving energy and power challenges for dismounted forces, including lightweight zinc-air batteries for the Marine Corps.

The committee recommends an increase of \$5.0 million in PE 116402BB for SOF, Advanced Technology Development, for the SOF portable power source.

#### **Anthrax and plague oral vaccine research and development**

The budget request included \$73.1 million in PE 63884BP, for advanced technology development specific to medical bio-defense. The committee supports the Department of Defense's efforts under this account to develop and test safe and effective prophylaxes and therapeutics for pre- and post-exposure to biological threats and agents. The committee recommends an increase of \$4.0 million in PE 63884BP for the development of a single-dose oral vaccine that can protect against multiple biological warfare agents, including anthrax and plague. This effort parallels the Department's plague vaccine development program and may provide superior protection against pneumonic plague.

#### **Airborne Infrared System**

The budget request included \$514.5 million in PE 63884C, for ballistic missile defense sensors, but included no funding for the Airborne Infrared System (AIRS).

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

The committee recommends an increase of \$5.0 million in PE 63884C for AIRS research and development. This increase will allow the Missile Defense Agency to proceed with final engineering development and “in-line” demonstrations of system connectivity, a closed loop fire control system, and prototype design for integration on manned or unmanned vehicles.

### **Corrosion prevention research**

The budget request included \$5.0 million in PE 64016D8Z, for the Department of Defense corrosion program. Established by the committee in section 1067 of the Bob Stump National Defense Authorization Act for Fiscal year 2003 (Public Law 107-314), this program is developing a comprehensive capability to prevent and mitigate corrosion and its effects on Department weapon systems and infrastructure, which some estimates indicate cost the Department over \$20.0 billion annually.

The committee is concerned that corrosion prevention and control is not effectively incorporated into existing accredited undergraduate engineering curricula resulting in continued development of new designs that do not utilize existing corrosion data and corrosion resistant technologies and materials. The committee directs the Secretary of Defense, working through the Department of Defense Corrosion Executive and the Department of Defense Corrosion Policy and Oversight Office, to commission a study by the National Academy of Sciences to assess undergraduate corrosion education in engineering programs and develop recommendations for curricula that could enhance the corrosion-based skill and knowledge base of graduating engineers. The study should build on the congressionally-mandated report, entitled the “2001 Corrosion Costs and Preventive Strategies in the United States.” The results of the study should be transmitted to the congressional defense committees not later than April 1, 2008.

The committee recommends an increase of \$2.0 million in PE 64016D8Z to support efforts to reduce corrosion costs to the military through improved corrosion education and training and application of corrosion prevention and control technologies. Not more than \$0.8 million of the funds provided should be available for the required study.

### **Playas command and control network**

The budget request included no funding for a command and control network at the training, research, development, test and evaluation complex at Playas, New Mexico. The development of a comprehensive command and control network at this facility was initiated in 2005. This network includes video and network monitoring equipment to control, communicate, observe, and record training taking place at the facility. The committee recommends an increase of \$5.0 million in PE 63757D8Z for a command and control network at Playas, New Mexico.

**Militarily critical technologies support**

The budget request included \$2.0 million in Operation and Maintenance, Defense-wide (OMDW) for specific analytical capabilities to enhance the militarily critical technologies program. The committee recommends a transfer of \$2.0 million from OMDW to Research, Development, Test and Evaluation in PE 65110D8Z for critical technology support, which conducts the technical analysis to support timely updates to the militarily critical technologies list.

**Operationally responsive space payloads**

The budget request included \$20.4 million in PE 65799D8Z, for the Office of Force Transformation (OFT) in the Office of the Secretary of Defense. One of the activities, for which funding is requested, includes the critical design of a standardized bus for tactical satellite operations and the development of operationally responsive payloads in support of the warfighter. The committee notes that the Department of Defense has requested insufficient funding for fiscal year 2007 to continue development of a modular, standard bus, develop responsive payloads, and complete the experimentation necessary to demonstrate tactical satellite capabilities.

The committee recommends an increase of \$25.0 million in PE 65799D8Z for development of operationally responsive space capabilities. Of this amount, \$20.0 million is for payloads, satellite busses, integration, command and control, and joint warfighter experimentation; and \$5.0 million is to support adapting existing airborne reconnaissance sensor capabilities for use in response space missions.

**DARPA management headquarters**

The budget request included \$51.0 million in PE 65898E, for the management headquarters overhead account for the Defense Advanced Research Projects Agency (DARPA). The committee notes that this account has risen 58 percent between fiscal years 2000 and 2007. The committee understands that some of these costs are due to additional security measures installed in the last few years, but believes that DARPA should continue to strive to limit overhead expenditures so that more funding is available to support high-risk, high-payoff research efforts. The committee recommends a decrease of \$5.0 million in PE 65898E for research overhead costs.

**Armed Forces medical and food research**

The committee believes that the funding requested in PE 31301L, for General Defense Intelligence Program (GDIP), and in Operation and Maintenance, Defense-wide (OMDW), is insufficient for medical intelligence research and development.

The committee recommends an increase of \$4.5 million in PE 31301L, for GDIP, and \$2.2 million in OMDW to develop capabilities to conduct threat and vulnerability analysis of medical and food processing and handling systems in a laboratory environment using biological and chemical threat agents.

**High performance computational systems**

The budget request included no funding for the General Defense Intelligence Program to continue the evaluation of computing technologies required for the performance of next generation analysis, modeling, and simulation tasks. Continued research and analysis in this field will lead to more effective data fusion from distributed sensor networks for use in combat situations and urban environments.

The committee is aware that the Defense Intelligence Agency (DIA) established a laboratory for high performance computational systems at the University of Alabama in Huntsville in 2005. It was funded at \$1.6 million in fiscal year 2006. The committee recommends an increase of \$2.0 million in PE 31301L for the continuation and expansion of a laboratory for high performance computational systems to support the DIA.

**Commercial airborne interferometric synthetic aperture radar imagery**

Commercial airborne interferometric synthetic aperture radar (IFSAR) imagery provides imagery and elevation data used for mapping. Commercial IFSAR imagery is used regularly by the National Geospatial-Intelligence Agency (NGA) to update maps and conduct intelligence analysis. The technology was designed for broad area collection and is especially well-suited for regions of the world with frequent cloud cover, such as Colombia, Indonesia, and the Philippines. It is also used to support coalition and allied countries. The use of commercial IFSAR imagery will assist NGA in its mapping requirements and permit collection platforms to satisfy other imagery requirements.

The committee recommends an increase of \$10.0 million in PE 35102BQ, for Defense Geospatial Program, to further the use of commercial IFSAR imagery for map updates, intelligence analysis, and to support coalition and allied nations.

**Credibility assessment research**

The demand for polygraph examinations, employment screening, and access control in the Department of Defense has increased in recent years. The committee is aware of research conducted at Boise State University which demonstrated that automated polygraph tests conducted in the context of an employment interview can be significantly more accurate than those conducted by a human examiner. The university has also begun work a Computerized Port of Entry Screening System to meet the critical need for rapid and easy credibility assessment at ports of entry.

The committee recommends an increase of \$2.0 million in PE 35127BZ, for Foreign Counterintelligence Activities, to allow for continued research and initial laboratory validation of a fully standardized, machine-administered, scientifically-based polygraph test.

**Combat sent wideband sensor upgrade**

The proliferation of wideband threat radars drives the requirement for continued advancements in wideband signal detection, measurement, and identification.

The committee recommends an increase of \$6.0 million in PE 35206G, for Airborne Reconnaissance Systems, for the Combat Sent wideband sensor upgrade program to ensure the United States maintains the ability to process threat radars and effectively track the proliferation of potentially hostile radar equipment. The desired goal is to have software reprogrammable systems that will support rapid and cost-effective upgrades as threat radars continue to evolve.

#### **Castings for improved readiness**

The budget request included \$18.7 million in PE 78011S for industrial preparedness programs of the Defense Logistics Agency (DLA). The committee recommends an increase of \$3.0 million in PE 78011S to support castings for improved readiness program, aimed at bringing castings expertise into defense supply centers; reducing backorder times for critical cast and forged parts; developing new manufacturing processes for the defense industrial base, and establishing a data exchange system to coordinate castings information and ensure timely parts availability.

#### **High performance defense manufacturing technology research and development**

The budget request included \$18.7 million in PE 78011S, for industrial preparedness activities. The committee recommends an increase of \$5.0 million in PE 78011S to enable the Joint Defense Manufacturing Technology Panel to execute activities mandated in sections 241 through 245 of the National Defense Authorization Act for Fiscal Year 2006 (Public Law 109-163). The committee notes that this legislation has been supported by the Defense Science Board (DSB) in its recent report, entitled "The Manufacturing Technology Program: A key to Affordably Equipping the Future Force." The DSB report stated that "the task force supports the intent of the proposed amendment drafted by the Senate Armed Services Committee to enhance manufacturing technology strategies ..., which calls for public-private partnership incentives, industry roadmaps for new manufacturing and technology processes, test beds for technology transition, and other cooperative programs."

The committee endorses the DSB recommendation to establish an additional Defense-wide program element ("D line") to execute "multi-Service, multi-platform" manufacturing technology initiatives. The committee encourages the Department of Defense to create a Defense-wide program element, managed by the Joint Defense Manufacturing Technology Panel for execution of the High Performance Defense Manufacturing Technology Research and Development program, and to transfer the additional authorized funds above from PE 78011S into the new line for this purpose.

#### **Helmet mount track system**

The budget request included \$45.2 million in PE 116404BB for Special Operations Forces (SOF), Tactical Systems Development, but included no funding to develop new capabilities for the helmet mount track system.

The helmet mount track system has enhanced features that allows the operator to modify the position of their night vision gog-

gles, which can lower the operator's profile, reduces the weight placed on the operator's neck eliminating the cantilever effect that otherwise causes operator injuries, and enhances the operator's combat identification capability.

The committee recommends an increase of \$2.4 million in PE 116404BB for the development of the helmet mount track system for SOF elements.

#### **Special Operations combat assault rifle**

The budget request included \$45.2 million in PE 116404BB for Special Operations Forces (SOF), Tactical Systems Development, but included no funding for the Special Operations Combat Assault Rifle (SCAR).

The committee notes that the SCAR is a multipurpose weapon that integrates an enhanced grenade launcher module and will replace five different individual weapons currently used by SOF elements, which will vastly reduce the logistics and maintenance support effort. The committee further notes that the rifle's operating system and external configuration are based on an open architecture design, which will permit the system to accommodate future improvements in ammunition and accessories. The SCAR is characterized by unprecedented lethality, effectiveness, modularity, and dependability.

The committee recommends an increase of \$4.1 million in PE 116404BB for SOF Tactical Systems Development for development of the SCAR.

#### **Wavelet packet modulation**

The budget request included \$45.2 million in PE 116404BB for Special Operations Forces (SOF), Tactical Systems Development, but included no funding for Wavelet Packet Modulation (WPM). SOF operate in a global environment where their presence and communications must remain undetected. WPM technology surveys the signal environment to adequately disburse communications so that it is nearly impossible to detect the signal or waveform. The committee recommends an increase of \$4.4 million in PE 116404BB for the continued development of WPM technology for communications and networked threat warning sensor systems.

#### **Multi-spectral laboratory and analytical services center program**

The budget request included \$29.0 million in PE 116405BB, for Special Operations Forces (SOF), Intelligence Systems Development, but included no funding for multi-spectral sensors. The committee notes the urgent need for next generation, multi-spectral sensors to support the warfighter, specifically in the areas of stand-off biometric collection. The committee recommends an increase of \$6.0 million in PE 116405BB, for the development of sensors for SOF elements to effectively integrate stand-off biometric capabilities.

**Special Operations wireless management and control project**

The budget request included \$29.0 million in PE 116405BB for Special Operations Forces (SOF), Intelligence Systems Development, but included no funding to develop new capabilities for the Joint Threat Warning System (JTWS) as threats evolve.

The special operations wireless management and control project will develop capabilities that can be integrated into the JTWS that will provide special operations forces the tactical capabilities to maintain situational awareness of the wireless communications being used by potential adversaries.

The committee recommends an increase of \$4.0 million in PE 116405BB for the development and integration of a wireless management and control capability for the JTWS.

**Items of Special Interest****Airborne Laser**

The budget request contained \$632.0 million in PE 63883C, for Ballistic Missile Defense Boost Defense Segment. The committee is encouraged with the recent technical progress the Airborne Laser (ABL) program has demonstrated over the previous two years, including first flight, firing of the high energy laser modules in ground tests, and flight testing of the aircraft with the beam control/fire control system installed. The committee further notes that these technical challenges were accomplished on the current schedule and within the current budget.

The committee notes the decision by the Missile Defense Agency (MDA) to defer the procurement of a second ABL aircraft two years later than proposed in the President's budget request for fiscal year 2006 for purposes of assessing the results of a lethal shoot-down demonstration planned for late 2008. The committee further notes that a mature ABL platform, the primary boost phase ballistic missile defense capability, may not be ready for deployment until late next decade. Therefore, the Committee believes that if the planned shoot-down demonstration is fully successful, MDA should be prepared, consistent with its knowledge-based acquisition approach, to continue development, design, and testing of the ABL system in an effort to provide this transformational war fighting capability to the military commanders and war fighters.

The committee directs the Missile Defense Agency to submit a report to the congressional defense committees by February 1, 2007 to provide a detailed explanation of its plan for the future of the ABL program, including testing, development, design, and funding in the future-years defense program.

**Air Force science, technology, test and evaluation**

The committee notes that the Air Force budget request for science and technology programs is \$2.1 billion, an increase of over \$150.0 million compared to the fiscal year 2006 budget request. In times of limited budgetary resources and increasing near-term demands, the committee commends the Air Force for committing to continued stable support of the critical Air Force research and technology enterprise. These well-managed and well-focused efforts are

creating the capabilities that will shape the Air Force of the future and enable it to meet the threats of the 21st century. The Air Force appreciation of the vital role of science and technology in supporting Air Force missions and the resources required for quality research efforts extends to the inclusion of science and technology on the Chief of Staff of the Air Force's unfunded priorities list.

The committee further commends Air Force efforts to leverage the technical skills resident in its science and technology enterprise to address pressing problems in weapon systems development and acquisition. The committee notes that the Air Force has begun a program to utilize assessment and analysis of manufacturing readiness levels to reduce risk in acquisition programs. The committee also notes that efforts led by the Air Force science and technology community to support the service acquisition executive with more disciplined systems engineering in the pre-acquisition planning phases will further strengthen the transition process resulting in acquisition programs with the latest technology and more mature technical planning and credibility.

The committee notes that these activities are in contrast to Air Force disinvestment in vital test and evaluation (T&E) activities. In the fiscal year 2007 budget request, the Air Force has reduced T&E activities by nearly \$400.0 million over the future-years defense program, relative to projected budgets for this activity presented to Congress with the fiscal year 2006 budget request. The committee notes that T&E activities support the acquisition process by reducing technical risk and protect the warfighter by developing technologies that are reliable, safe, and operationally effective. The committee believes that the proposed reduction in T&E funding could result in delayed and more expensive acquisition programs, and even potentially in the deployment of unproven or ineffective technologies to the warfighters.

#### **Future Combat Systems and current force interoperability**

The Future Combat Systems (FCS) program includes four "spin-out" technologies, that will introduce FCS technologies and systems into the current force. These fielding spin-outs are currently planned to occur in 2008, 2010, 2012, and 2014 to an experimental brigade and then two years later to the rest of the Army. The first spin-out of FCS technology in 2008 is to emphasize improved munitions and sensors connected in an initial version of the FCS network. FCS network capabilities will include a pre-engineering design module of Joint Tactical Radio System (JTRS) radio and a wideband networking waveform. While the Army's focus is on FCS networking capabilities, the committee is concerned that funding constraints may limit the spin-out of FCS technologies to the current force, especially those capabilities that will enable FCS-equipped brigade combat teams (BCT) to interoperate with current force BCT. There is little doubt that current force systems will be in the inventory for decades while the Army fields FCS-equipped BCTs. There is also doubt that future Army budgets will be able to afford FCS, modularity, and reset. The Army should be exploring affordable alternatives to ensure that FCS-equipped and current force BCTs are interoperable.

The committee believes that the Force XXI Battle Command Brigade and Below (FBCB2) program may provide the backbone for an architecture that could meet FCS-equipped and current force BCTs interoperability requirements. The committee also believes that the Army's FCS spin-out plan can provide the basis to develop, test, and field affordable alternatives. The committee directs the Secretary of the Army to provide a report to the congressional defense committees no later than March 1, 2007, on the Army's strategy to ensure that FCS-equipped and current force BCTs can achieve affordable interoperability.

### **Information assurance progress report**

The committee commends the Department of Defense for recent efforts to focus high-level attention on the importance of information assurance (IA) for classified systems and for critical Department networks and data. New directives and guidance issued by the Chairman of the Joint Chiefs and the U.S. Strategic Command in late 2005 and early 2006 have reportedly resulted in improvements to IA compliance, awareness, and accountability. Although these recent steps to improve information security and assurance are encouraging, the committee remains concerned about the vulnerability of the cyber infrastructure and the number of deficiencies that have not yet been addressed.

In a September 2005 report, the Department Inspector General determined that "DoD cannot be assured that it has a complete inventory of major information systems. Without a complete inventory of DoD major information systems, answers to questions from OMB or Congress on major information systems may not be accurate and information assurance is at risk because there is little assurance that all systems are adequately protected."

The Department has issued numerous strategies, policies, directives, and implementation guidance documents designed to ensure protection of information systems, networks, and communications. As noted above and in other reports and audits, progress has been slow.

The committee directs the Secretary of Defense to report to Congress no later than March 1, 2007, on progress in addressing identified deficiencies and continued vulnerabilities in IA. The report should address timely implementation of identified network and information systems security gaps, which continue to result in unreliable critical information systems and unknown large quantities of information lost or unsecured. The report should include schedules for, and details of, Department progress in the following areas:

- (1) development of a complete, comprehensive, enterprise-wide inventory of information systems;
- (2) implementation of standards for interoperable, joint communications;
- (3) plans to incorporate IA as a critical operational training objective in every major joint exercise;
- (4) maturation of tactics, techniques, and procedures for information intrusion detect, react, and restore missions; and plans for strengthening forensic capabilities;

(5) development of information system and network failure response and continuity plans that keep pace with the pace of technology development;

(6) implementation of firewalls or intrusion detection systems in all deployed units;

(7) definition and identification of positions with significant security responsibilities;

(8) development of training and certification requirements for information technology security professionals, including tracking and monitoring of training progress;

(9) determination of appropriate penalties for noncompliance with IA directives and guidance;

(10) standardization of a working definition of “system” for purposes of management oversight;

(11) establishment of relationships between Department IA components and IA components in other federal departments and agencies;

(12) establishment of mechanisms to utilize industry technology, expertise, and knowledge to address long-term Department needs and capability to confront specific threats and events;

(13) allocation of resources to support science and technology developments specific to national security IA requirements; analysis of international capabilities in IA; and

(14) other relevant Department IA activities and efforts.

The committee expects that the required report should focus attention on incomplete tasks and place a priority on timely implementation of completion of these tasks.

### **Joint Tactical Radio System**

In the Defense Appropriations Act for Fiscal Year 2006 (Public Law 109–148), the Joint Tactical Radio System (JTRS) budget request was reduced \$334.3 million due to program delays. In response to the urging of Congress, the Department of Defense established a JTRS Joint Program Executive Office (JPEO), and the program was restructured. On March 31, 2006, the Undersecretary of Defense for Acquisition, Logistics, and Technology (USD(AT&L)) signed the JTRS Acquisition Decision Memorandum which reflected the restructured program.

The committee understands the complex nature of the JTRS program and the related difficulties of working within the consensus-driven Overarching Integrated Program Team management structure. The committee understands that the USD(AT&L) and the Vice Chairman of the Joint Chiefs have agreed to use the JTRS program as a pilot for a new acquisition governance model. The committee strongly encourages the Department to implement this pilot model now.

### **Survey of science and engineering workforce shaping programs**

The committee directs the Under Secretary of Defense for Acquisition, Technology, and Logistics to conduct a survey of programs designed to educate, train, and recruit scientists and engineers for Department of Defense laboratories and components. The report

should outline the historical and current program budgets; targeted populations; program structures and management; and program results. The programs to be considered as part of the technical workforce shaping survey include: teacher education and mentoring; curriculum development; prize competitions; K-12 outreach; scholarships, fellowships, traineeships, and internships; and coordination with service academies and academic institutions specific to education and workforce development and recruitment activities. The Under Secretary of Defense for Acquisition, Technology, and Logistics should submit a report on the results of the survey to the congressional defense committees in conjunction with the March 2007 strategic human capital plan for civilian employees of the Department.