

tion 135 Public Law 108–136 or under section 8159 of the Department of Defense Appropriations Act, 2002 (Public Law 107–117).

#### Section 117—Other Matters Relating to KC–767 Tanker Acquisition Program

This section would express the Sense of Congress that: (1) aerial refueling capability is a critical combat force multiplier, (2) the nation must expeditiously proceed with a program to replace the existing aging fleet of aerial refueling tankers, (3) in pursuing such a program, the Department of Defense should take full advantage of the United States’ commercial aircraft production base, and (4) anyone currently or previously associated with this program that is found to have engaged in illegal activities should be prosecuted to the fullest extent of the law. The provision would also direct the Secretary of the Air Force to proceed with one or more new contracts to execute the program authorized by subsection (a) in section 135 of the National Defense Authorization Act for Fiscal Year 2004 (Public Law 108–136), section 8159 of the Department of Defense Appropriations Act, 2002 (Public Law 107–117), and section 116(a) of this Act. Finally, the provision would require the creation of an advisory panel of experts to review and assess the terms of the new contract and advise the Department of Defense and Congress on whether it provides the best value for the funds expended.

The committee is deeply concerned that the ongoing multiple investigations into allegations of wrongdoing associated with this program, while necessary and proper, are needlessly delaying the pressing requirement to proceed with the acquisition of a replacement aircraft for our aging fleet of KC–135 tankers. The committee believes that a “fresh start” approach is warranted on the question of the contract proposed for the execution of the so-called 20–80 plan authorized by section 135 of Public Law 108–136. By negotiating a new contract and submitting the outcome of such negotiations to review by an independent panel of experts, the committee believes the Department can proceed with this important program without jeopardizing or undermining the various investigations presently under way at the direction of the Secretary of Defense. In turn, this approach would also help ensure that the Air Force can take full advantage of the existing availability of a “warm” domestic commercial aircraft production line ideal for the aerial tanker role. The committee is concerned that the increased costs associated with starting the production line, should production cease in the immediate future, would be significant and wholly unnecessary.

The committee notes that there is no legal or other impediment presently precluding the Department from immediately pursuing this strategy and strongly urges the Secretary of Defense to pursue this approach in advance of the enactment of the fiscal year 2005 defense authorization bill.

## TITLE II—RESEARCH, DEVELOPMENT, TEST, & EVALUATION

### OVERVIEW

The budget request contained \$67,772.3 million for research, development, test, & evaluation (RDT&E). The committee rec-

ommends \$68,128.4 million, an increase of \$356.1 million to the budget request.

**Title II - RESEARCH, DEVELOPMENT, TEST AND EVALUATION**  
(Dollars in Thousands)

| PE Name | Line | PROGRAM TITLE   | FY 2005                  |                     | FY 2005               |                       | Committee<br>Decrease | Committee<br>Increase | FY 2005<br>Committee<br>Authorization |
|---------|------|---|--------------------------|---------------------|-----------------------|-----------------------|-----------------------|-----------------------|---------------------------------------|
|         |      |   | Authorization<br>Request | Committee<br>Change | Committee<br>Increase | Committee<br>Decrease |                       |                       |                                       |
|         |      | TOTAL, BASIC RESEARCH   | 317,506                  | 13,000              | 13,000                |                       |                       | 330,506               |                                       |
|         |      | TOTAL, APPLIED RESEARCH   | 651,192                  | 208,300             | 208,300               |                       |                       | 859,492               |                                       |
|         |      | TOTAL, ADVANCED TECHNOLOGY DEVELOPMENT                                | 814,615                  | 83,500              | 83,500                |                       |                       | 898,115               |                                       |
|         |      | TOTAL, ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES                    | 737,373                  | 26,500              | 26,500                |                       |                       | 763,873               |                                       |
|         |      | TOTAL, SYSTEM DEVELOPMENT & DEMONSTRATION                             | 4,919,649                | (151,397)           | 811,657               | (963,054)             |                       | 4,768,252             |                                       |
|         |      | TOTAL, RDT&E MANAGEMENT SUPPORT                                       | 859,798                  | 2,500               | 2,500                 |                       |                       | 862,298               |                                       |
|         |      | TOTAL, OPERATIONAL SYSTEMS DEVELOPMENT                                | 966,125                  | 29,503              | 30,500                | (937)                 |                       | 995,628               |                                       |
|         |      | <b>TOTAL, RESEARCH, DEVELOPMENT, TEST &amp; EVALUATION, ARMY</b>      | <b>9,266,258</b>         | <b>211,906</b>      | <b>1,175,957</b>      | <b>(964,051)</b>      |                       | <b>9,478,164</b>      |                                       |
|         |      | TOTAL, BASIC RESEARCH   | 476,984                  | 3,000               | 3,000                 |                       |                       | 479,984               |                                       |
|         |      | TOTAL, APPLIED RESEARCH   | 564,067                  | 58,200              | 58,200                |                       |                       | 622,267               |                                       |
|         |      | TOTAL, ADVANCED TECHNOLOGY DEVELOPMENT                                | 677,172                  | (27,152)            | 140,500               | (167,652)             |                       | 650,020               |                                       |
|         |      | TOTAL, ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES                    | 2,803,667                | (8,598)             | 126,100               | (134,698)             |                       | 2,795,069             |                                       |
|         |      | TOTAL, SYSTEM DEVELOPMENT & DEMONSTRATION                             | 8,008,517                | (360,700)           | 163,400               | (524,100)             |                       | 7,647,817             |                                       |
|         |      | TOTAL, RDT&E MANAGEMENT SUPPORT                                       | 653,996                  |                     |                       |                       |                       | 653,996               |                                       |
|         |      | TOTAL, OPERATIONAL SYSTEMS DEVELOPMENT                                | 3,161,988                | 36,700              | 36,700                |                       |                       | 3,198,688             |                                       |
|         |      | <b>TOTAL, RESEARCH, DEVELOPMENT, TEST &amp; EVALUATION, NAVY</b>      | <b>16,346,391</b>        | <b>(238,550)</b>    | <b>527,900</b>        | <b>(826,450)</b>      |                       | <b>16,047,841</b>     |                                       |
|         |      | TOTAL, BASIC RESEARCH   | 345,500                  | 2,000               | 2,000                 |                       |                       | 347,500               |                                       |
|         |      | TOTAL, APPLIED RESEARCH   | 786,180                  | 41,000              | 41,000                |                       |                       | 827,180               |                                       |
|         |      | TOTAL, ADVANCED TECHNOLOGY DEVELOPMENT                                | 786,994                  | 71,000              | 71,000                |                       |                       | 857,994               |                                       |
|         |      | TOTAL, ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES                    | 2,384,536                | 50,000              | 150,000               | (100,000)             |                       | 2,434,536             |                                       |
|         |      | TOTAL, SYSTEM DEVELOPMENT & DEMONSTRATION                             | 4,708,025                | 223,000             | 223,000               |                       |                       | 4,931,025             |                                       |
|         |      | TOTAL, RDT&E MANAGEMENT SUPPORT                                       | 747,114                  |                     |                       |                       |                       | 747,114               |                                       |
|         |      | TOTAL, OPERATIONAL SYSTEMS DEVELOPMENT                                | 11,356,318               | 26,300              | 61,700                | (35,400)              |                       | 11,382,618            |                                       |
|         |      | <b>TOTAL, RESEARCH, DEVELOPMENT, TEST &amp; EVALUATION, AIR FORCE</b> | <b>21,114,667</b>        | <b>413,300</b>      | <b>548,700</b>        | <b>(135,400)</b>      |                       | <b>21,527,967</b>     |                                       |

**Title II - RESEARCH, DEVELOPMENT, TEST AND EVALUATION**  
(Dollars in Thousands)

| PE Name | Line | PROGRAM TITLE                                      | FY 2005               |                  | FY 2005            |                    | FY 2005                 |                   |
|---------|------|--|-----------------------|------------------|--------------------|--------------------|-------------------------|-------------------|
|         |      |  | Authorization Request | Committee Change | Committee Increase | Committee Decrease | Committee Authorization |                   |
|         |      | TOTAL, BASIC RESEARCH                              | 190,088               | 20,000           | 20,000             |                    |                         | 210,088           |
|         |      | TOTAL, APPLIED RESEARCH                            | 1,876,306             | (11,000)         | 58,000             | (69,000)           |                         | 1,865,306         |
|         |      | TOTAL, ADVANCED TECHNOLOGY DEVELOPMENT             | 3,047,451             | 55,500           | 200,500            | (145,000)          |                         | 3,102,951         |
|         |      | TOTAL, ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES | 9,429,174             | 27,102           | 298,102            | (271,000)          |                         | 9,456,276         |
|         |      | TOTAL, SYSTEM DEVELOPMENT & DEMONSTRATION          | 424,870               | (50,135)         | 13,000             | (63,135)           |                         | 374,735           |
|         |      | TOTAL, RDT&E MANAGEMENT SUPPORT                    | 711,326               | 30,950           | 47,950             | (17,000)           |                         | 742,276           |
|         |      | TOTAL, OPERATIONAL SYSTEMS DEVELOPMENT             | 5,060,622             | (43,000)         | 30,200             | (73,200)           |                         | 5,017,622         |
|         |      | <b>TOTAL, RDT&amp;E, DEFENSE WIDE</b>              | <b>20,739,837</b>     | <b>-29,417</b>   | <b>667,752</b>     | <b>(638,336)</b>   |                         | <b>20,769,254</b> |
|         |      | TOTAL, OPERATIONAL TEST & EVALUATION, DEFENSE      | 305,135               |                  |                    |                    |                         | 305,135           |
|         |      | <b>TOTAL, RESEARCH AND DEVELOPMENT</b>             | <b>67,772,288</b>     | <b>356,073</b>   | <b>2,920,309</b>   | <b>(2,564,236)</b> |                         | <b>68,128,361</b> |

ARMY RESEARCH, DEVELOPMENT, TEST, & EVALUATION

OVERVIEW

The budget request contained \$9,266.3 million for Army research, development, test, and evaluation (RDT&E).

The committee recommends \$9,478.2 million, an increase of \$211.9 million to the budget request.

Title II - RESEARCH, DEVELOPMENT, TEST AND EVALUATION  
(Dollars in Thousands)

| PE Name   | Line | PROGRAM TITLE  | FY 2005               |                  |                    | FY 2005            |                         |
|---|------|--|-----------------------|------------------|--------------------|--------------------|-------------------------|
|   |      |  | Authorization Request | Committee Change | Committee Increase | Committee Decrease | Committee Authorization |
| <b>RESEARCH, DEVELOPMENT, TEST &amp; EVALUATION, ARMY</b> |      |  |                       |                  |                    |                    |                         |
| <b>BASIC RESEARCH</b>                                     |      |  |                       |                  |                    |                    |                         |
| 0601101A  | 1    | In-House Laboratory Independent Research                     | 23,971                |                  |                    |                    | 23,971                  |
| 0601102A  | 2    | Defense Research Sciences                                    | 131,206               | 6,000            |                    |                    | 137,206                 |
| 0601103A  | 3    | Carbon Nano Technology                                       |                       |                  | 6,000              |                    |                         |
| 0601103A  | 3    | University Research Initiatives                              | 75,133                | 4,000            |                    |                    | 79,133                  |
| 0601103A  | 3    | Smart Responsive Nanocomposites                              |                       |                  | 4,000              |                    |                         |
| 0601104A  | 4    | University and Industry Research Centers                     | 77,658                | 3,000            |                    |                    | 80,658                  |
| 0601104A  | 4    | Centers of Excellence  |                       |                  | 3,000              |                    |                         |
| 0601105A  | 5    | Force Health Protection                                      | 9,538                 |                  |                    |                    | 9,538                   |
| <b>TOTAL, BASIC RESEARCH</b>                              |      |  | <b>317,506</b>        | <b>13,000</b>    | <b>13,000</b>      |                    | <b>330,506</b>          |
| <b>APPLIED RESEARCH</b>                                   |      |  |                       |                  |                    |                    |                         |
| 0602105A  | 6    | Materials Technology   |                       |                  |                    |                    |                         |
| 0602105A  | 6    | Titanium Alloy Powder  | 15,385                | 8,300            |                    |                    | 23,685                  |
| 0602105A  | 6    | Ultrasonic Consolidation Matrix for Metal Composites         |                       |                  | 5,000              |                    |                         |
| 0602105A  | 6    | Ballistic Shields Technology                                 |                       |                  | 2,300              |                    |                         |
| 0602105A  | 6    | Ballistic Shields Technology                                 |                       |                  | 1,000              |                    |                         |
| 0602120A  | 7    | Sensors and Electronic Survivability                         | 25,629                |                  |                    |                    | 25,629                  |
| 0602122A  | 8    | TRACTOR HIP  | 6,627                 |                  |                    |                    | 6,627                   |
| 0602211A  | 9    | Aviation Technology  | 41,629                | 17,000           |                    |                    | 58,629                  |
| 0602211A  | 9    | National Full Scale Aerodynamic Complex                      |                       |                  | 10,000             |                    |                         |
| 0602211A  | 9    | Center for Rotocraft Innovation                              |                       |                  | 5,000              |                    |                         |
| 0602211A  | 9    | Xenon Light Source for Non Lethal Deterrence from Small UAVs |                       |                  | 2,000              |                    |                         |
| 0602270A  | 10   | EW Technology  | 18,034                |                  |                    |                    | 18,034                  |
| 0602303A  | 11   | Missile Technology   | 51,993                | 10,000           |                    |                    | 61,993                  |
| 0602303A  | 11   | Unmanned Systems Initiative                                  |                       |                  | 10,000             |                    |                         |
| 0602307A  | 12   | Advanced Weapons Technology/HEL                              | 16,641                | 30,000           |                    |                    | 46,641                  |
| 0602307A  | 12   | Solid State Lasers   |                       |                  | 10,000             |                    |                         |
| 0602307A  | 12   | Applied Weapons Technology                                   |                       |                  | 20,000             |                    |                         |

**Title II - RESEARCH, DEVELOPMENT, TEST AND EVALUATION**  
(Dollars in Thousands)

| PE Name  | Line | PROGRAM TITLE  | FY 2005               |                  |                    | FY 2005            |                         |
|----------|------|--|-----------------------|------------------|--------------------|--------------------|-------------------------|
|          |      |  | Authorization Request | Committee Change | Committee Increase | Committee Decrease | Committee Authorization |
| 0602308A | 13   | Advanced Concepts and Simulation                       | 15,041                | 7,000            |                    |                    | 22,041                  |
| 0602308A |      | Institute for Creative Technologies                    |                       |                  | 7,000              |                    |                         |
| 0602601A | 14   | Combat Vehicle and Automotive Technology               | 69,838                | 15,000           |                    |                    | 84,838                  |
| 0602601A |      | Hydrogen Proton Exchange Membrane                      |                       |                  | 10,000             |                    |                         |
| 0602601A |      | Light Utility Vehicle                                  |                       |                  | 5,000              |                    |                         |
| 0602618A | 15   | Ballistics Technology/FCS                              | 51,301                |                  |                    |                    | 51,301                  |
| 0602622A | 16   | Chemical, Smoke and Equipment Defeating Technology     | 3,476                 |                  |                    |                    | 3,476                   |
| 0602623A | 17   | Joint Service Small Arms Program                       | 5,739                 |                  |                    |                    | 5,739                   |
| 0602624A | 18   | Weapons and Munitions Technology                       | 44,666                | 20,000           |                    |                    | 64,666                  |
| 0602624A |      | Strategic Materials Strategic Manufacturing Initiative |                       |                  | 6,000              |                    |                         |
| 0602624A |      | TEMPER   |                       |                  | 12,000             |                    |                         |
| 0602624A |      | Active Coating Technology                              |                       |                  | 2,000              |                    |                         |
| 0602705A | 19   | Electronics and Electronic Devices                     | 41,236                | 39,000           |                    |                    | 80,236                  |
| 0602705A |      | Advanced Battery Technology Initiative                 |                       |                  | 20,000             |                    |                         |
| 0602705A |      | Flexible Display Initiative                            |                       |                  | 13,500             |                    |                         |
| 0602705A |      | JP-8 Soldier Fuel Cell                                 |                       |                  | 2,000              |                    |                         |
| 0602705A |      | Silicon Based Alternative Substrates for IR Images     |                       |                  | 3,500              |                    |                         |
| 0602709A | 20   | Night Vision Technology                                | 22,617                | 5,000            |                    |                    | 27,617                  |
| 0602709A |      | UAV Miniature Hyperspectral Coherent Imaging           |                       |                  | 5,000              |                    |                         |
| 0602712A | 21   | Countermine Systems                                    | 20,547                | 1,500            |                    |                    | 22,047                  |
| 0602712A |      | Stoichiometric Explosive Detection Systems             |                       |                  | 1,500              |                    |                         |
| 0602716A | 22   | Human Factors Engineering Technology                   | 16,899                | 5,500            |                    |                    | 22,399                  |
| 0602716A |      | Manpower and Personnel Integration (MANPRINT)          |                       |                  | 5,500              |                    |                         |
| 0602720A | 23   | Environmental Quality Technology                       | 17,026                |                  |                    |                    | 17,026                  |
| 0602782A | 24   | Command, Control, Communications Technology            | 18,604                |                  |                    |                    | 18,604                  |
| 0602783A | 25   | Computer and Software Technology                       | 3,982                 |                  |                    |                    | 3,982                   |
| 0602784A | 26   | Military Engineering Technology                        | 47,152                | 5,000            |                    |                    | 52,152                  |
| 0602784A |      | Modeling and Analysis of Response of Structures        |                       |                  | 5,000              |                    |                         |
| 0602784A | 27   | Manpower/Personnel/Training Technology                 | 15,322                |                  |                    |                    | 15,322                  |

**Title II - RESEARCH, DEVELOPMENT, TEST AND EVALUATION**  
(Dollars in Thousands)

| PE Name                                | Line | PROGRAM TITLE   | FY 2005               |                  | FY 2005            |                         | Committee Increase | Committee Decrease | FY 2005 Committee Authorization |
|--|------|---|-----------------------|------------------|--------------------|-------------------------|--------------------|--------------------|---------------------------------|
|  |      |   | Authorization Request | Committee Change | Committee Increase | Committee Authorization |                    |                    |                                 |
| 0602786A                               | 28   | Logistics Technology                                    | 21,131                | 10,000           |                    |                         |                    |                    | 31,131                          |
| 0602786A                               |      | M5 High Performance Fibers                              |                       |                  | 10,000             |                         |                    |                    |                                 |
| 0602787A                               | 29   | Medical Technology                                      | 60,877                | 35,000           |                    |                         |                    |                    | 95,877                          |
| 0602787A                               |      | Amputee R&D   |                       |                  | 10,000             |                         |                    |                    |                                 |
| 0602787A                               |      | Applied Research Initiative                             |                       |                  | 25,000             |                         |                    |                    |                                 |
| <b>TOTAL, APPLIED RESEARCH</b>         |      |   | <b>651,192</b>        | <b>208,300</b>   | <b>208,300</b>     |                         |                    |                    | <b>859,492</b>                  |
| <b>ADVANCED TECHNOLOGY DEVELOPMENT</b> |      |   |                       |                  |                    |                         |                    |                    |                                 |
| 0603001A                               | 30   | Warfighter Advanced Technology                          | 68,034                |                  |                    |                         |                    |                    | 68,034                          |
| 0603002A                               | 31   | Medical Advanced Technology                             | 38,404                | 8,000            |                    |                         |                    |                    | 46,404                          |
| 0603002A                               |      | Patient Monitor with Defibrillator                      |                       |                  | 5,000              |                         |                    |                    |                                 |
| 0603002A                               |      | Rugged Textile Electronic Garments                      |                       |                  | 3,000              |                         |                    |                    |                                 |
| 0603003A                               | 32   | Aviation Advanced Technology                            | 69,549                | 2,000            |                    |                         |                    |                    | 71,549                          |
| 0603003A                               |      | VTDP Compound Helicopter Program                        |                       |                  | 2,000              |                         |                    |                    |                                 |
| 0603004A                               | 33   | Weapons and Munitions Advanced Technology               | 67,622                | 16,000           |                    |                         |                    |                    | 83,622                          |
| 0603004A                               |      | Silicon Power Light Sandwich Technology                 |                       |                  | 1,000              |                         |                    |                    |                                 |
| 0603004A                               |      | ALACV Air Burst Munition                                |                       |                  | 15,000             |                         |                    |                    |                                 |
| 0603005A                               | 34   | Combat Vehicle and Automotive Advanced Technology / FCS | 203,126               | 22,000           |                    |                         |                    |                    | 225,126                         |
| 0603005A                               |      | Lightweight Structures Initiative                       |                       |                  | 9,000              |                         |                    |                    |                                 |
| 0603005A                               |      | UAV Weaponization                                       |                       |                  | 4,000              |                         |                    |                    |                                 |
| 0603005A                               |      | Advanced Composite Bridge                               |                       |                  | 9,000              |                         |                    |                    |                                 |
| 0603006A                               | 35   | Command, Control, Communications Advanced Technology    | 9,946                 |                  |                    |                         |                    |                    | 9,946                           |
| 0603007A                               | 36   | Manpower, Personnel and Training Advanced Technology    | 7,288                 |                  |                    |                         |                    |                    | 7,288                           |
| 0603008A                               | 37   | Electronic Warfare Advanced Technology / FCS            | 41,760                | 17,000           |                    |                         |                    |                    | 58,760                          |
| 0603008A                               |      | Portable and Emergency Broadband System                 |                       |                  | 4,000              |                         |                    |                    |                                 |
| 0603008A                               |      | Applied Communications and Information Networking       |                       |                  | 10,000             |                         |                    |                    |                                 |
| 0603008A                               |      | GalaxyVue Compression Technology                        |                       |                  | 2,000              |                         |                    |                    |                                 |
| 0603008A                               |      | Advanced Antenna Technologies                           |                       |                  | 1,000              |                         |                    |                    |                                 |
| 0603009A                               | 38   | TRACTOR HIKE  | 8,035                 |                  |                    |                         |                    |                    | 8,035                           |

**Title II - RESEARCH, DEVELOPMENT, TEST AND EVALUATION**  
(Dollars in Thousands)

| PE Name  | Line | PROGRAM TITLE   | FY 2005                  |                     |                       | Committee<br>Increase | Committee<br>Decrease | FY 2005<br>Committee<br>Authorization |
|----------|------|---|--------------------------|---------------------|-----------------------|-----------------------|-----------------------|---------------------------------------|
|          |      |   | Authorization<br>Request | Committee<br>Change | Committee<br>Increase |                       |                       |                                       |
|          |      |   | 18,072                   |                     |                       |                       | 18,072                |                                       |
| 0603015A | 39   | Next Generation Training & Simulation Systems / FCS                       | 4,736                    |                     |                       |                       | 4,736                 |                                       |
| 0603020A | 40   | TRACTOR ROSE  | 9,706                    |                     |                       |                       | 9,706                 |                                       |
| 0603103A | 41   | Explosives Demilitarization Technology                                    | 6,641                    |                     |                       |                       | 6,641                 |                                       |
| 0603105A | 42   | Military HIV Research   | 3,383                    |                     |                       |                       | 3,383                 |                                       |
| 0603125A | 43   | Combating Terrorism, Technology Development                               | 10,721                   |                     |                       |                       | 10,721                |                                       |
| 0603238A | 44   | Global Surveillance/Air Defense/Precision Strike Technology Demonstration | 9,382                    |                     |                       |                       | 9,382                 |                                       |
| 0603270A | 45   | EW Technology / FCS   | 92,800                   |                     |                       |                       | 92,800                |                                       |
| 0603313A | 46   | Missile and Rocket Advanced Technology / FCS                              | 13,312                   |                     |                       |                       | 13,312                |                                       |
| 0603322A | 47   | TRACTOR CAGE  | 25,577                   |                     |                       |                       | 25,577                |                                       |
| 0603606A | 48   | Landmine Warfare and Barrier Advanced Technology                          | 5,968                    |                     |                       |                       | 5,968                 |                                       |
| 0603607A | 49   | Joint Service Small Arms Program  |                          | 11,500              |                       |                       |                       |                                       |
| 0603654A | 50   | Line-Of-Sight Technology Demonstration                                    |                          |                     |                       |                       |                       |                                       |
| 0603710A | 51   | Night Vision Advanced Technology  | 50,071                   |                     |                       |                       | 50,071                |                                       |
| 0603710A |      | Night Vision Fusion Technology  |                          |                     | 9,500                 |                       |                       |                                       |
| 0603710A |      | Integrated Autonomous Situation Awareness Sensor                          |                          |                     | 2,000                 |                       |                       |                                       |
| 0603728A | 52   | Environmental Quality Technology Demonstrations                           | 14,666                   |                     |                       |                       | 14,666                |                                       |
| 0603734A | 53   | Military Engineering Advanced Technology                                  | 3,865                    |                     |                       |                       | 3,865                 |                                       |
| 0603772A | 54   | Advanced Tactical Computer Science and Sensor Technology                  | 31,951                   | 7,000               |                       |                       | 38,951                |                                       |
| 0603772A |      | Digital Army Radar Technology Development                                 |                          |                     | 7,000                 |                       |                       |                                       |
|          |      | <b>TOTAL, ADVANCED TECHNOLOGY DEVELOPMENT</b>                             | <b>814,615</b>           | <b>83,500</b>       | <b>83,500</b>         |                       | <b>898,115</b>        |                                       |
|          |      | <b>ADVANCED COMPONENT DEVELOPMENT &amp; PROTOTYPES</b>                    |                          |                     |                       |                       |                       |                                       |
| 0603305A | 55   | Army Missile Defense Systems Integration (Non Space)/MTHL                 | 53,509                   | 10,000              |                       |                       | 63,509                |                                       |
| 0603305A |      | Joint and Combined Communications Test Tool                               |                          |                     | 10,000                |                       |                       |                                       |
| 0603308A | 56   | Army Missile Defense Systems Integration (Space)                          | 4,871                    |                     |                       |                       | 4,871                 |                                       |
| 0603327A | 57   | Air and Missile Defense Systems Engineering                               | 91,713                   | 14,000              |                       |                       | 105,713               |                                       |
| 0603327A |      | Space and Missile Defense Architecture Analysis Program                   |                          |                     | 7,000                 |                       |                       |                                       |
| 0603327A |      | Geospatial Information Decision Support                                   |                          |                     | 7,000                 |                       |                       |                                       |
| 0603619A | 58   | Landmine Warfare and Barrier - Adv Dev                                    | 11,634                   |                     |                       |                       | 11,634                |                                       |

**Title II - RESEARCH, DEVELOPMENT, TEST AND EVALUATION**  
(Dollars in Thousands)

| PE Name                                       | Line | PROGRAM TITLE   | FY 2005               |                  | FY 2005            |                    |
|---|------|---|-----------------------|------------------|--------------------|--------------------|
|   |      |   | Authorization Request | Committee Change | Committee Increase | Committee Decrease |
| 0603627A                                      | 59   | Smoke, Obscurant and Target Defeating Sys-Adv Dev             | 6,249                 |                  |                    | 6,249              |
| 0603639A                                      | 60   | Tank and Medium Caliber Ammunition                            | 39,697                |                  |                    | 39,697             |
| 0603645A                                      | 61   | Armored System Modernization - Adv Dev                        |                       |                  |                    |                    |
| 0603653A                                      | 62   | Advanced Tank Armament System (ATAS) / STRYKER                | 51,892                |                  |                    | 51,892             |
| 0603747A                                      | 63   | Soldier Support and Survivability                             | 13,810                |                  |                    | 13,810             |
| 0603766A                                      | 64   | Tactical Electronic Surveillance System - Adv Dev             | 15,441                |                  |                    | 15,441             |
| 0603774A                                      | 65   | Night Vision Systems Advanced Development                     | 14,047                |                  |                    | 14,047             |
| 0603779A                                      | 66   | Environmental Quality Technology                              | 9,356                 | 2,500            |                    | 11,856             |
| 0603779A                                      | 66   | Aberdeen Proving Ground Asbestos Conversion Facility          |                       |                  | 2,500              |                    |
| 0603782A                                      | 67   | Warfighter Information Network-Tactical                       | 99,645                |                  |                    | 99,645             |
| 0603790A                                      | 68   | NATO Research and Development                                 | 4,801                 |                  |                    | 4,801              |
| 0603801A                                      | 69   | Aviation - Adv Dev  | 12,113                |                  |                    | 12,113             |
| 0603802A                                      | 70   | Small Arms Improvement  | 2,382                 |                  |                    | 2,382              |
| 0603804A                                      | 71   | Logistics and Engineer Equipment - Adv Dev                    | 10,485                |                  |                    | 10,485             |
| 0603805A                                      | 72   | Combat Service Support Control System Evaluation and Analysis | 6,366                 |                  |                    | 6,366              |
| 0603807A                                      | 73   | Medical Systems - Adv Dev                                     | 10,258                |                  |                    | 10,258             |
| 0603850A                                      | 74   | Integrated Broadcast Service (JMIP/DISTP)                     | 4,356                 |                  |                    | 4,356              |
| 0603854A                                      | 75   | Artillery Systems   |                       |                  |                    |                    |
| 0603856A                                      | 76   | SCAMP Block II  | 10,221                |                  |                    | 10,221             |
| 0603869A                                      | 77   | Medium Extended Air Defense System (MEADS) Concepts           | 264,527               |                  |                    | 264,527            |
|   |      | <b>TOTAL, ADVANCED COMPONENT DEVELOPMENT &amp; PROTOTYPES</b> | <b>737,373</b>        | <b>26,500</b>    | <b>26,500</b>      | <b>763,873</b>     |
| <b>SYSTEM DEVELOPMENT &amp; DEMONSTRATION</b> |      |   |                       |                  |                    |                    |
| 0604201A                                      | 78   | Aircraft Avionics   | 68,857                |                  |                    | 68,857             |
| 0604220A                                      | 79   | Armed, Deployable OH-58D                                      | 20,000                |                  |                    | 20,000             |
| 0604223A                                      | 80   | Comanche  |                       |                  |                    |                    |
| 0604270A                                      | 81   | EW Development  | 16,879                |                  |                    | 16,879             |
| 0604280A                                      | 82   | Joint Tactical Radio  | 121,400               |                  |                    | 121,400            |
| 0604321A                                      | 83   | All Source Analysis System                                    | 5,346                 |                  |                    | 5,346              |

**Title II - RESEARCH, DEVELOPMENT, TEST AND EVALUATION**  
(Dollars in Thousands)

| PE Name  | Line | PROGRAM TITLE                                       | FY 2005               |                  |                    | FY 2005            |                         |
|----------|------|---|-----------------------|------------------|--------------------|--------------------|-------------------------|
|          |      |   | Authorization Request | Committee Change | Committee Increase | Committee Decrease | Committee Authorization |
| 0604328A | 84   | TRACTOR CAGE  | 14,149                |                  |                    |                    | 14,149                  |
| 0604329A | 85   | JT Common Missile                                   | 152,381               |                  |                    |                    | 152,381                 |
| 0604601A | 86   | Infantry Support Weapons                            | 28,187                | 2,500            |                    |                    | 30,687                  |
| 0604601A |      | Low Cost Course Correction M135 AT4                 |                       |                  | 2,500              |                    |                         |
| 0604604A | 87   | Medium Tactical Vehicles/FMTV                       | 2,854                 | 9,700            |                    |                    | 12,554                  |
| 0604604A |      | FMTV A2   |                       |                  | 9,700              |                    |                         |
| 0604609A | 88   | Smoke, Obscurant and Target Defeating Sys-SDD       | 3,798                 |                  |                    |                    | 3,798                   |
| 0604611A | 89   | JAVELIN   | 944                   |                  |                    |                    | 944                     |
| 0604622A | 90   | Family of Heavy Tactical Vehicles                   | 2,479                 |                  |                    |                    | 2,479                   |
| 0604633A | 91   | Air Traffic Control                                 | 2,088                 |                  |                    |                    | 2,088                   |
| 0604641A | 92   | Tactical Unmanned Ground Vehicle (TUGV)             |                       |                  |                    |                    |                         |
| 0604642A | 93   | Light Tactical Wheeled Vehicles                     |                       |                  |                    |                    |                         |
| 0604645A | 94   | FCS -SDD  | 2,700,455             | (963,054)        |                    | (963,054)          | 1,737,401               |
| 646XAA   | 94a  | Reconnaissance and Sensors                          |                       | 35,300           | 35,300             |                    | 35,300                  |
| 646XBA   | 94b  | Unmanned Ground Vehicles                            |                       | 57,600           | 57,600             |                    | 57,600                  |
| 646XCA   | 94c  | MGVs  |                       | 186,900          | 186,900            |                    | 186,900                 |
| 646XDA   | 94d  | UGS   |                       | 15,700           | 15,700             |                    | 15,700                  |
| 646XEA   | 94e  | NLOS-LS   |                       | 76,400           | 76,400             |                    | 76,400                  |
| 0604647A | 95   | Non-Line of Sight Cannon                            | 497,643               | 345,857          | 345,857            |                    | 843,500                 |
| 0604649A | 96   | Engineer Mobility Equipment Development             |                       |                  |                    |                    |                         |
| 0604710A | 97   | Night Vision Systems - SDD                          | 24,693                |                  |                    |                    | 24,693                  |
| 0604713A | 98   | Combat Feeding, Clothing, and Equipment             | 115,093               | 4,200            |                    |                    | 119,293                 |
| 0604713A |      | Mounted Warrior Nomad C2 HUD                        |                       |                  |                    |                    |                         |
| 0604715A | 99   | Non-System Training Devices - SDD                   | 51,694                |                  |                    |                    | 51,694                  |
| 0604716A | 100  | Terrain Information - SDD                           | 3,199                 |                  |                    |                    | 3,199                   |
| 0604726A | 101  | Integrated Meteorological Support System            | 2,485                 |                  |                    |                    | 2,485                   |
| 0604738A | 102  | JSIMS Core Program                                  |                       |                  |                    |                    |                         |
| 0604741A | 103  | Air Defense Command, Control and Intelligence - SDD | 27,376                |                  |                    |                    | 27,376                  |
| 0604742A | 104  | Constructive Simulation Systems Development         | 42,869                |                  |                    |                    | 42,869                  |

**Title II - RESEARCH, DEVELOPMENT, TEST AND EVALUATION**  
(Dollars in Thousands)

| PE Name  | Line | PROGRAM TITLE   | FY 2005<br>Request | Committee<br>Change | Committee<br>Increase | Committee<br>Decrease | FY 2005<br>Committee<br>Authorization |
|--|------|---|--------------------|---------------------|-----------------------|-----------------------|---------------------------------------|
| 0604746A   | 105  | Automatic Test Equipment Development                        | 4,713              |                     |                       |                       | 4,713                                 |
| 0604760A   | 106  | Distributive Interactive Simulations (DIS) - SDD            | 26,985             |                     |                       |                       | 26,985                                |
| 0604766A   | 107  | Tactical Surveillance Systems - SDD                         | 21,821             |                     |                       |                       | 21,821                                |
| 0604768A   | 108  | Army Tactical Missile System (ATACMS)                       | 21                 |                     |                       |                       | 21                                    |
| 0604770A   | 109  | Joint Surveillance/Target Attack Radar System               |                    |                     |                       |                       |                                       |
| 0604778A   | 110  | Positioning Systems Development (SPACE)                     | 2,048              |                     |                       |                       | 2,048                                 |
| 0604780A   | 111  | Combined Arms Tactical Trainer (CATT) Core                  | 23,849             |                     |                       |                       | 23,849                                |
| 0604783A   | 112  | Joint Network Management System                             | 10,726             |                     |                       |                       | 10,726                                |
| 0604801A   | 113  | Aviation - SDD  | 2,378              |                     |                       |                       | 2,378                                 |
| 0604802A   | 114  | Weapons and Munitions - SDD / APKWS / GAMRAAM               | 125,885            | 70,000              |                       |                       | 195,885                               |
| 0604804A   | 115  | Common Remotely Operated Weapon System                      |                    |                     | 70,000                |                       |                                       |
| 0604805A   | 116  | Logistics and Engineer Equipment - SDD                      | 89,151             |                     |                       |                       | 89,151                                |
| 0604807A   | 117  | Command, Control, Communications Systems - SDD              | 219,790            |                     |                       |                       | 219,790                               |
| 0604807A   | 117  | Medical Materiel/Medical Biological Defense Equipment - SDD | 11,727             | 2,500               |                       |                       | 14,227                                |
| 0604807A   |      | LSTAT   |                    |                     | 2,500                 |                       |                                       |
| 0604808A   | 118  | Landmine Warfare/Barrier - SDD                              | 51,045             |                     |                       |                       | 51,045                                |
| 0604814A   | 119  | Artillery Munitions   | 133,297            | 5,000               |                       |                       | 138,297                               |
| 0604814A   |      | BONUS Compliance Program                                    |                    |                     | 5,000                 |                       |                                       |
| 0604817A   | 120  | Combat Identification                                       | 6,994              |                     |                       |                       | 6,994                                 |
| 0604818A   | 121  | Army Tactical Command & Control Hardware & Software         | 60,115             |                     |                       |                       | 60,115                                |
| 0604818A   | 121a | Airborne C2   | 7,995              |                     |                       |                       | 7,995                                 |
| 0604819A   | 122  | LOSAT   | 22,628             |                     |                       |                       | 22,628                                |
| 0604820A   | 123  | Radar Development / Sentinel                                | 6,107              |                     |                       |                       | 6,107                                 |
| 0604823A   | 124  | Firefinder  | 18,516             |                     |                       |                       | 18,516                                |
| 0604854A   | 125  | Artillery Systems   | 9,550              |                     |                       |                       | 9,550                                 |
| 0604865A   | 126  | Patriot PAC-3 Theater Missile Defense Acquisition           | 64,178             |                     |                       |                       | 64,178                                |
| 0605013A   | 127  | Information Technology Development                          | 95,261             |                     |                       |                       | 95,261                                |
| <b>TOTAL, SYSTEM DEVELOPMENT &amp; DEMONSTRATION</b> |      |   | <b>4,919,649</b>   | <b>(151,397)</b>    | <b>811,657</b>        | <b>(963,054)</b>      | <b>4,768,252</b>                      |

**Title II - RESEARCH, DEVELOPMENT, TEST AND EVALUATION**  
(Dollars in Thousands)

| PE Name                                   | Line | PROGRAM TITLE  | FY 2005                  |                     |                       | FY 2005<br>Committee<br>Authorization |
|---|------|--|--------------------------|---------------------|-----------------------|---------------------------------------|
|   |      |  | Authorization<br>Request | Committee<br>Change | Committee<br>Increase |                                       |
| <b>RD&amp;E MANAGEMENT SUPPORT</b>        |      |  |                          |                     |                       |                                       |
| 0604256A                                  | 128  | Threat Simulator Development   | 22,101                   |                     |                       | 22,101                                |
| 0604258A                                  | 129  | Target Systems Development   | 11,017                   |                     |                       | 11,017                                |
| 0604759A                                  | 130  | Major T&E Investment   | 57,987                   |                     |                       | 57,987                                |
| 0605103A                                  | 131  | Rand Arroyo Center   | 20,012                   |                     |                       | 20,012                                |
| 0605301A                                  | 132  | Army Kwajalein Atoll   | 143,921                  |                     |                       | 143,921                               |
| 0605326A                                  | 133  | Concepts Experimentation Program   | 22,727                   |                     |                       | 22,727                                |
| 0605502A                                  | 134  | Small Business Innovative Research   |                          |                     |                       |                                       |
| 0605601A                                  | 135  | Army Test Ranges and Facilities  | 181,114                  |                     |                       | 181,114                               |
| 0605602A                                  | 136  | Army Technical Test Instrumentation and Targets                            | 52,433                   |                     |                       | 52,433                                |
| 0605604A                                  | 137  | Survivability/Lethality Analysis   | 44,648                   |                     |                       | 44,648                                |
| 0605605A                                  | 138  | DOD High Energy Laser Test Facility  | 15,725                   |                     |                       | 15,725                                |
| 0605606A                                  | 139  | Aircraft Certification   | 3,485                    |                     |                       | 3,485                                 |
| 0605702A                                  | 140  | Meteorological Support to RD&E Activities                                  | 8,711                    |                     |                       | 8,711                                 |
| 0605706A                                  | 141  | Material Systems Analysis  | 18,000                   |                     |                       | 18,000                                |
| 0605709A                                  | 142  | Exploitation of Foreign Items  | 4,740                    |                     |                       | 4,740                                 |
| 0605712A                                  | 143  | Support of Operational Testing   | 71,239                   |                     |                       | 71,239                                |
| 0605716A                                  | 144  | Army Evaluation Center   | 62,209                   |                     |                       | 62,209                                |
| 0605718A                                  | 145  | Simulation & Modeling for Acq. Rqts. & Tng (SMART)                         | 1,935                    |                     |                       | 1,935                                 |
| 0605801A                                  | 146  | Programwide Activities   | 59,368                   |                     |                       | 59,368                                |
| 0605803A                                  | 147  | Technical Information Activities   | 27,713                   |                     |                       | 27,713                                |
| 0605805A                                  | 148  | Munitions Standardization, Effectiveness and Safety<br>MEMS/IMU Technology | 14,611                   | 2,500               | 2,500                 | 17,111                                |
| 0605857A                                  | 149  | Environmental Quality Technology Mgmt Support                              | 4,527                    |                     |                       | 4,527                                 |
| 0605898A                                  | 150  | Management Headquarters (Research and Development)                         | 11,575                   |                     |                       | 11,575                                |
| 0909999A                                  | 151  | Financing for Cancelled Account Adjustments                                |                          |                     |                       |                                       |
| <b>TOTAL, RD&amp;E MANAGEMENT SUPPORT</b> |      |  | <b>859,798</b>           | <b>2,500</b>        | <b>2,500</b>          | <b>862,298</b>                        |

**Title II - RESEARCH, DEVELOPMENT, TEST AND EVALUATION**  
(Dollars in Thousands)

| PE Name                                | Line | PROGRAM TITLE   | FY 2005                  |                     |                       |                       | FY 2005<br>Committee<br>Authorization |
|--|------|---|--------------------------|---------------------|-----------------------|-----------------------|---------------------------------------|
|  |      |   | Authorization<br>Request | Committee<br>Change | Committee<br>Increase | Committee<br>Decrease |                                       |
| <b>OPERATIONAL SYSTEMS DEVELOPMENT</b> |      |   |                          |                     |                       |                       |                                       |
| 0603778A                               | 152  | MLRS Product Improvement Program  | 97,422                   |                     |                       |                       | 97,422                                |
| 0102419A                               | 153  | JT Land Attack Cruise Missile Defense<br>Aerostat Joint Program Office      | 81,514                   | 3,000               | 3,000                 |                       | 84,514                                |
| 0203610A                               | 154  | Domestic Preparedness Against Weapons of Mass Destruction                   |                          |                     |                       |                       |                                       |
| 0203726A                               | 155  | Adv Field Artillery Tactical Data System                                    | 17,994                   |                     |                       |                       | 17,994                                |
| 0203735A                               | 156  | Combat Vehicle Improvement Programs   | 15,952                   | 5,000               | 5,000                 |                       | 20,952                                |
| 0203735A                               |      | Combat Vehicle Electronics  |                          |                     |                       |                       |                                       |
| 0203740A                               | 157  | Maneuver Control System - Tactical C2                                       | 24,753                   |                     |                       |                       | 24,753                                |
| 0203744A                               | 158  | Aircraft Modifications/Product Improvement Programs / Guardrail             | 242,853                  |                     |                       |                       | 242,853                               |
| 0203752A                               | 159  | Aircraft Engine Component Improvement Program<br>Electronic Flight Planning | 2,427                    | 3,500               | 3,500                 |                       | 5,927                                 |
| 0203758A                               | 160  | Digitization  | 24,506                   |                     |                       |                       | 24,506                                |
| 0203759A                               | 161  | Force XXI Battle Command, Brigade and Below (FBCB2)                         | 23,510                   |                     |                       |                       | 23,510                                |
| 0203801A                               | 162  | Patriot Product Improvement   | 31,690                   |                     |                       |                       | 31,690                                |
| 0203802A                               | 163  | Other Missile Product Improvement Programs                                  | 4,863                    |                     |                       |                       | 4,863                                 |
| 0203806A                               | 164  | TRACTOR RUT   | 3,321                    |                     |                       |                       | 3,321                                 |
| 0203808A                               | 165  | TRACTOR CARD  | 9,023                    |                     |                       |                       | 9,023                                 |
| 0206010A                               | 166  | Joint Tactical Communications Program (TRI-TAC)                             | 18,177                   |                     |                       |                       | 18,177                                |
| 0208053A                               | 167  | Joint Tactical Ground System  | 9,967                    |                     |                       |                       | 9,967                                 |
| 0301359A                               | 168  | Special Army Program  |                          |                     |                       |                       |                                       |
| 0301555A                               | 169  | Classified Programs   |                          |                     |                       |                       |                                       |
| 0301556A                               | 170  | Special Program   |                          |                     |                       |                       |                                       |
| 0303028A                               | 171  | Security and Intelligence Activities<br>Information Dominance Center        |                          | 4,000               | 4,000                 |                       | 4,000                                 |
| 0303028A                               |      | Information Dominance Center  |                          |                     |                       |                       |                                       |
| 0303140A                               | 172  | Information Systems Security Program  | 24,725                   |                     |                       |                       | 24,725                                |
| 0303141A                               | 173  | Global Combat Support System  | 94,215                   |                     |                       |                       | 94,215                                |
| 0303142A                               | 174  | SATCOM Ground Environment (SPACE)   | 70,459                   |                     |                       |                       | 70,459                                |
| 0303142A                               | 175  | WMCCS/Global Command and Control System                                     | 19,204                   |                     |                       |                       | 19,204                                |

**Title II - RESEARCH, DEVELOPMENT, TEST AND EVALUATION**  
(Dollars in Thousands)

| PE Name  | Line | PROGRAM TITLE  | FY 2005<br>Authorization<br>Request | Committee<br>Change | Committee<br>Increase | Committee<br>Decrease | FY 2005<br>Committee<br>Authorization |
|----------|------|--|-------------------------------------|---------------------|-----------------------|-----------------------|---------------------------------------|
| 0305114A | 176  | Traffic Control, Approach and Landing System/JPALs               |                                     |                     |                       |                       |                                       |
| 0305204A | 177  | Tactical Unmanned Aerial Vehicles                                | 27,127                              | 3,500               |                       |                       | 30,627                                |
| 0305204A |      | Shadow UAV Improvements  |                                     |                     | 3,500                 |                       |                                       |
| 0305206A | 178  | Airborne Reconnaissance Systems                                  | 5,128                               | 3,500               |                       |                       | 8,628                                 |
| 0305206A |      | H/LITE   |                                     |                     | 3,500                 |                       |                                       |
| 0305208A | 179  | Distributed Common Ground Systems                                | 43,254                              |                     |                       |                       | 43,254                                |
| 0702239A | 180  | Avionics Component Improvement Program                           | 997                                 | (997)               |                       | (997)                 |                                       |
| 0708045A | 181  | End Item Industrial Preparedness Activities                      | 67,236                              | 3,000               |                       |                       | 70,236                                |
| 0708045A |      | LEAN Munitions   |                                     |                     | 3,000                 |                       |                                       |
| 1001018A | 182  | NATO Joint STARS   | 595                                 |                     |                       |                       | 595                                   |
| XXXXXXX  | 183  | Defense Language Institute Foreign Learning Center               | 5,213                               | 5,000               |                       |                       | 5,000                                 |
| XXXXXXX  | 999  | Classified Programs  | 5,213                               |                     |                       |                       | 5,213                                 |
|          |      | <b>TOTAL, OPERATIONAL SYSTEMS DEVELOPMENT</b>                    | <b>966,125</b>                      | <b>29,503</b>       | <b>30,500</b>         | <b>(997)</b>          | <b>995,628</b>                        |
|          |      | <b>TOTAL, RESEARCH, DEVELOPMENT, TEST &amp; EVALUATION, ARMY</b> | <b>9,266,258</b>                    | <b>211,906</b>      | <b>1,175,957</b>      | <b>(964,051)</b>      | <b>9,478,164</b>                      |

## Items of Special Interest

*Advanced amputee treatment research and development*

The budget request contained \$60.9 million in PE 62787A for applied research in medical technology.

The committee notes that in Afghanistan and Iraq approximately 60 to 80 percent of all survivable combat injuries are to the extremities with 20 percent resulting in traumatic amputation. In order to provide the best care for these patients, the Surgeon General established the Walter Reed Amputee Care Center and the Army Amputee Patient Care Program at Walter Reed Army Medical Center (WRAMC). The program provides state-of-the-art treatment and is the center of a multi-site, coordinated complex of facilities involving regional military medical centers, the Department of Veterans Affairs, and other military and civilian treatment facilities. The goal of the program is to ensure that amputee patients receive the kind of care that will allow them to lead lives unconstrained by their amputation.

Highlights of the program include innovative prosthetic technology; computer-assisted design and manufacturing of prosthetic devices; laboratory and training facilities, amputee education and peer visitation; clinical developments; and collaborative research in treatment, prosthetic design, and rehabilitation.

The committee strongly endorses the Army's initiative in establishing the Amputee Patient Care Program. The committee notes that one element of the program is an infrastructure improvement plan for the center, which proposes construction of an advanced amputee training center at WRAMC at a cost of \$10.9 million and is addressed elsewhere in this report.

The committee recommends an increase of \$10.0 million in PE 62787A for the Army program in clinical and applied collaborative research in amputee treatment, prosthetics, and rehabilitation.

*Advanced battery technology initiative*

The budget request contained \$41.2 million in PE 62705A for applied research in electronics and electronic devices.

The committee continues to note continuing requirements for small, light-weight, efficient, and portable battery and non-battery power sources for U.S. forces and of on-going applied research and development activities of the military departments that address these requirements. The committee is aware of a number of emerging battery and non-battery power technologies that have the potential for meeting the requirements of the military services, including but not limited to alkaline cylindrical cells, cylindrical zinc air batteries, high capacity nickel/zinc rechargeable cells, lithium oxyhalide and lithium ion thin-film technology, lithium copper oxide, lithium carbon monofluoride cells, and proton exchange membrane fuel cells. The committee recommends that these technologies be considered for potential funded research and development under the services' on-going programs on the basis of technical merit, cost effectiveness, and the potential of the particular technology to meet service needs.

The committee requests the Secretary of Defense provide a report to the congressional defense committees on the next generation of lithium battery technologies for military applications. New lithium

batteries for advanced portable electronic applications should be able to significantly increase energy and power, increase safety, lower cost, and/or weigh less. The Secretary should report on all phases of research, development and production for new systems and recommend actions necessary for commercial production in a one-to-three year time frame.

The committee recommends an increase of \$20.0 million in PE 62705A for the battery/portable power technology initiative.

*Advanced carbon nano technology*

The budget request contained \$131.2 million in PE 61102A for defense research sciences, but included no funding for advanced carbon nanotechnology.

The committee is aware that advanced carbon nanotechnology has the potential to open the door to the creation of new sensors and other devices.

The committee recommends \$137.2 million in PE 61102A for defense research sciences, an increase of \$6.0 million for a multi-institution, peer reviewed program for development of advanced carbon nanotechnology.

*Advanced weapons technology*

The budget request contained \$16.6 million in PE 62307A for Advanced Weapons Technology.

The committee understands the need to carry out applied research in support of existing and future missile defense technologies. The committee is specifically aware of the need to conduct research on systemic issues common to Terminal High Altitude Area Defense, PAC-3/ Medium Extended Air Defense System, Ground-based Midcourse Defense and future systems in areas such as radar and radio frequency sensors, electronics and micro-fabrication, optical sensors and composite material and structures.

The committee is also aware of the Army's need for additional funding for solid state technology laser research in support of directed energy weapons.

The committee recommends \$46.6 million in PE 62307A, an increase of \$30.0 million. Of the \$30.0 million increase, \$20.0 million shall be for missile defense applied technology research conducted by the Army Space and Missile Defense Command. The remaining \$10.0 million of the increase shall be for solid state laser technology research conducted by the Army Space and Missile Defense Command.

*Aerostat joint project office*

The budget request contained \$81.5 million for the Aerostat Joint Project Office.

The committee is aware of the importance of Micro Electro Mechanical (MEMS) antenna technology to the radar system for the Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS).

The committee recommends \$84.5 million, an increase of \$3.0 million for MEMS antenna technology in support of JLENS radar development.

*Applied communications and information networking*

The budget request contained \$41.8 million in PE 63008A for electronic warfare advanced technology, but included no funding for applied communications and information networking (ACIN).

The committee realizes that the goal of ACIN is to revolutionize military doctrine and methods by enhancing high-value military systems with rapidly advancing commercial information technologies and innovative applications of those technologies.

The committee supports the application of state-of-the art commercial technology to improve military systems and recommends an increase of \$10.0 million in PE 63008A for ACIN.

*Center for rotorcraft innovation*

The budget request included \$41.7 million in PE 62211A for Aviation and Applied Research and Technology. No request was included for a center for rotorcraft innovation.

The committee is concerned that continued shortcomings in national policy planning for rotorcraft research and production is resulting in the inability of the United States to effectively produce competitive world-class rotorcraft products. This is evident by key decision-makers within federal, state, and local governments, as well as private sector users, selecting foreign products to meet their rotorcraft needs. National shortcomings in this regard are further evidenced by the closure of unique National Full Scale Aerodynamic Complex rotorcraft wind tunnel resources at the National Aeronautical and Space Administration (NASA) Ames Research Center at Moffett Field, California.

The committee believes there exists a requirement to establish a center for rotorcraft innovation to coordinate technology strategies and areas of cooperative research efforts and increase public and private resources available for rotorcraft research. The committee understands that the first step toward creation of a center for rotorcraft innovation was recently taken when industry and academic leaders signed an agreement to work together with the federal government to coordinate rotorcraft research.

The committee directs the Secretary of the Army to establish a center for rotorcraft innovation to facilitate the furtherance of the recently created partnership between the rotorcraft industry and academia to administer collaborative research projects. Members shall include major helicopter manufacturing companies, rotorcraft academic institutions, and technology firms; the Department of Defense; NASA; and the Federal Aviation Administration (FAA). The center shall take advantage of historical and present-day sites of helicopter technology development, rotorcraft academic institutions, and FAA technology facilities. Further, since NASA has concluded it is unable to continue to operate the National Full Scale Aerodynamic Complex, the committee recommends that the Secretary of the Army seek the transfer of the Complex to the Department of the Army.

Accordingly, the committee recommends an increase of \$15.0 million in PE 62211A, \$10.0 million to retain the availability of the wind tunnel facilities at Ames Research Center and \$5.0 million for the establishment of a center for rotorcraft innovation.

*Center for tribology*

The budget request contained \$69.6 million in PE 62601A for combat vehicle and automotive technology, but included no funding for a center for tribology.

The committee notes that new coatings and other surface treatments commercially available today could extend the useful life of gears and other commercially available parts from 4 to 10 times longer than current treatments. The committee is aware that this technology holds great promise for increasing the reliability for all types of military equipment, extending equipment life, and reducing fuel costs.

The committee directs the Secretary of the Army to work with the friction, wear and abrasion test equipment manufacturing industry to develop a commercial capability to create and standardize new test apparatus and methods to analyze new coatings more quickly.

*Centers of excellence*

The budget request contained \$77.7 million in PE 61104A for university and industry research centers and included \$2.5 million for a collaborative academic research effort leveraging Army Training and Doctrine (TRADOC) Battle Labs in accordance with the Army Science and Technology Master Plan.

The committee notes the Army initiative to harness university research expertise for Army-unique science and technology problems. The committee further notes the Army effort to partner university researchers at Historically Black Colleges and Universities/Minority Institutions (HBCU/MI) with Army TRADOC Battle Labs in an effort to accelerate the transition of research to actual technology demonstration. The committee recognizes the potential benefits in the cognitive research areas of modeling and simulation, data fusion, protective materials, maneuver, health, and human systems integration. The committee encourages a continuation of this initiative.

The committee recommends \$80.7 million in PE 61104A, an increase of \$3.0 million for the collaborative effort between HBCU/MI centers and TRADOC Battle Labs.

*Combat vehicle electronics*

The budget request contained \$16.0 million in PE 23735A for combat vehicle improvements, but included no funding to develop standardized next generation electronics architectures for current combat vehicle programs.

The committee is aware that current combat vehicles face accelerated component obsolescence issues.

The committee recommends \$21.0 million in PE 23735A, an increase of \$5.0 million to develop standardized next generation electronics architectures for current and future combat vehicle programs.

*Defense language institute/foreign language center*

The budget request contained no funds for the Defense Language Institute Foreign Learning Center (DLI/FLC) for research and development.

The committee notes the National Defense Authorization Act for Fiscal Year 2004 Public Law 108–136) recommended that the Secretary of the Army establish a research and development line, specifically focused on the latest technologies and instructional methods in language and language learning that are required by the DLI/FLC. The committee is surprised that a budget request was not included in the fiscal year 2005 budget request.

The committee is aware of the increased demands within the Department of Defense for increased student throughput and expanded off-campus and distant learning sites. These current endeavors necessitate innovative approaches in the instruction of foreign languages and the educational processes to administer them.

The committee applauds the progress of DLI/FLC's innovative practices in meeting this challenge and supports the efforts in seeking new methods in teaching foreign languages and language learning to meet the goals of the Department and the National Security Agency.

Therefore the committee directs the Secretary of the Army to establish a new research and development program in fiscal year 2005 for the DLI/FLC, entitled, "Defense Language Institute, Foreign Learning Center" and recommends \$5.0 million for this purpose.

#### *Digital array radar technology development*

The budget request contained \$32.0 million in PE 63772A for advanced tactical computer science and sensor technology, but included no funds for digital array radar technology development.

The committee is aware that evolving threats place new demands on sensors and notes that in particular the ground forces need reliable, transportable counter-fire radars to protect against mobile threats.

The committee recommends an increase of \$7.0 million in PE 63772A to develop a transportable, ground-based, digital solid-state multi-mission radar.

#### *Electronic flight planning*

The budget request contained \$2.4 million in PE 23752A for the aircraft engine component improvement program, but included no funding for electronic flight planning.

The committee believes that electronic flight planning will improve force protection and operational performance knowledge of helicopter aircrews in the combat environment.

The committee recommends \$5.9 million in PE 23752A, an increase of \$3.5 million for electronic flight planning.

#### *Flexible display initiative*

The budget request contained \$41.2 million in PE 62705A for electronics and electronic devices, but included no funding for the flexible display initiative.

The committee is aware that new flexible display technology has the potential to provide the military with technology to fabricate high definition displays on rugged conformable, flexible substrates. The committee notes that the United States Display Consortium coordinates these efforts with over 80 companies, using investments from both the public and private industry to accelerate the

development of technologies and products needed by the Army, other military services, and various national security agencies.

Therefore, the committee recommends an increase of \$13.5 million in PE 62705A for the flexible display initiative.

*Force XXI battle command brigade and below blue force tracking system*

The committee recognizes the Army's superb efforts to establish a truly network-centric (tactical) command, control, and communications (C3) capability through the fielding of the Force XXI Battle Command Brigade and Below (FBCB2) Blue Force Tracking system by employing a satellite communications network. The committee notes the accelerated fielding of this enhanced version of FBCB2 prior to commencement of Operation Enduring Freedom and Operation Iraqi Freedom proved to be an invaluable situational awareness tool for the warfighters and saved lives.

The committee strongly recommends the Department of Defense leverage the Army's investment into a joint solution providing interoperability to all military services. Furthermore, the committee recommends the Army maintain the role of executive agent for this joint capability and directs the Secretary of the Army to provide a report to the congressional defense committees on its vision for a joint blue force situational awareness capability that builds upon the successes of previous operations.

*Future combat systems*

The budget request included \$3,198.1 million in PE 64645A and PE 64647A for the Future Combat Systems (FCS) program.

The committee believes that the March 2004 General Accounting Office assessment is correct and is particularly concerned that the system network, the heart of this transformational concept, is by far the most technically challenging aspect of the FCS program. The committee believes that the demonstrations required by this section should begin early in system development and become increasingly more complex. In order to accomplish the direction of this section in regard to demonstrating the capabilities of the network, the committee recommends that the Secretary of the Army direct the U.S. Army Communications Electronics Command to test emerging network concepts in small scale field exercises at readily accessible range facilities.

Further, the committee believes that to provide for necessary congressional oversight the Department of the Army's budget justification documents should provide separate justification of the major elements of the FCS program, as shown in the accompanying tables.

The committee recommends \$2,952.8 million in PE 64645A and PE 64647A for FCS, a reduction of \$245.3 million as detailed in section 211 of this report.

*Geospatial information decision support for single integrated air picture*

The budget request contained \$91.7 million in PE 63327A for air and missile defense systems engineering, but included no funding for geospatial information decision support for the single integrated air picture (GIDS-SIAP).

The committee notes that there is a need for commanders to have a clear, unambiguous geospatial foundation in order to support a common operational picture. The committee is aware that GIDS–SIAP will integrate disparate geospatial information systems to provide ground and air picture recommendations for the commanders.

The committee recommends an increase of \$7.0 million in PE 63327A for GIDS–SIAP.

#### *Human systems integration*

The budget request included \$16.9 million in PE 62716A for human factors engineering, \$61.1 million in PE 63236N for warfighter sustainment advanced technology, and \$71.5 million in PE 62202F for human effectiveness applied research.

The committee recognizes the need to consider human systems integration issues early in the development cycle. Too often, man-machine interface issues are not addressed until late in the development cycle after the configuration of a particular weapon or system has been set. What results is a degraded combat system that is not able to achieve its maximum performance and, at worst, becomes a liability on the battlefield.

The committee notes that all the military departments include some form of human systems integration in their development and acquisition process, but believes that institutionalization and standardization of human systems integration methodologies and modeling tools across the Department of Defense is desirable. To this end, the committee recommends that the Secretary of Defense conduct a comprehensive Department-wide review of the implementation of human systems integration in defense acquisition programs. Further, the committee recommends additional resources for human factors engineering initiatives in each of the military departments.

The committee recommends an increase of \$5.5 million in PE 62716A for development of manpower and personnel integration (MANPRINT) tools for modeling and predicting soldier and system performance; increases of \$3.0 million in PE 63236N and \$2.0 million in PE 62233N to develop cognitive and physiological research data under the Navy’s system engineering, acquisition and personnel integration (SEAPRINT) program; and an increase of \$3.0 million in PE 62202F for the development of new training algorithms for human performance prediction under the Air Force’s improved performance research integration tool (IMPRINT) program. The committee directs the Secretary of Defense to conduct a comprehensive review of human systems integration programs within the Department and to report the results of that review to the congressional defense committees by December 31, 2004.

#### *Hydrogen proton exchange membrane*

The budget request contained \$69.6 million in PE 62601A for combat vehicle and automotive technology, but included no funding for the hydrogen proton exchange membrane (PEM) ambient pressure fuel cell medium/heavy duty vehicle demonstration program.

The committee is aware that the hydrogen PEM fuel cell is to demonstrate zero emission, ambient pressure, highly efficient hydrogen fuel cell powered vehicles in various operating situations

and conditions. The committee notes that this development supports the government objective of tripling fuel economy while reducing harmful emissions.

The committee recommends an increase of \$10.0 million in PE 62601A for the hydrogen proton exchange membrane (PEM) ambient pressure fuel cell medium/heavy duty vehicle demonstration program.

#### *Information dominance center*

The budget request contained no funds for operations and maintenance or research and development for the Army's information dominance center (IDC) at Fort Belvoir, Virginia.

The IDC provides multi-disciplinary Information Operations (IO) support to the Army's commands. Through tailored analytical products generated to meet immediate operational needs, the IDC also monitors potential trouble spots worldwide, preparing to support contingency operations with IO-related products. The committee believes the IDC's use of high-capacity communications links to access selected information from a number of databases maintained by a number of other organizations is truly transformational.

The committee acknowledges that the IDC is one of the Army Chief of Staff's unfunded priorities intelligence objectives. The committee supports the transformation efforts of the IDC and the future plan to incorporate functions of the IDC into the Army's Distributed Common Ground Systems (DCGS).

Therefore, the committee recommends \$6.0 million in operations and maintenance, Army for IDC, an increase of \$6.0 million, and \$4.0 million in PE 33028A, an increase of \$4.0 million for research and technology development at the IDC.

#### *Institute for creative technologies*

The budget request contained \$15.0 million in PE 62308A for advanced concepts and simulation, including \$1.6 million for the institute for creative technologies (ICT).

The committee notes that the technologies developed at the ICT are being applied to significantly improve fidelity of computer-based training, which is essential to the Army.

The committee supports development of improved training devices and recommends \$22.0 million in PE 62308A, an increase of \$7.0 million for the ICT.

#### *Integrated communications navigation identification avionics program*

The committee is aware that during the execution of the now canceled Comanche program, significant progress had been made in development of the Integrated Communications Navigation Identification Avionics (ICNIA) system. The Joint Tactical Radio System (JTRS) has been selected as the joint standard radio system for all services and has also made significant technical progress and is scheduled to begin testing in the first quarter of fiscal year 2005. After the cancellation of the Comanche program the Army convened an independent assessment panel to compare the relative performance of the Joint Tactical Radio System (JTRS) and ICNIA. The committee is aware that a second evaluation has been requested as a result of the independent assessment team's review.

The committee directs the Secretary of the Army to submit the results of the independent assessment panel and subsequent evaluations to the congressional defense committees. The committee further directs the Secretary, prior to a final decision or selection of JTRS or ICNIA as the standard for Army aviation or the obligation of fiscal year 2005 authorized amounts for JTRS, to brief the congressional defense committees on the criteria of selection and the performance comparison of these two avionics systems.

*Joint and combined communications test tool product suite*

The budget request contained \$53.5 million in PE 63305A for Army missile defense systems integration, but included no funding for the joint and combined communications test tool product suite.

The committee notes that the joint and combined communications test tool product suite will provide a test tool suite that will test interoperability issues within joint and combined forces.

The committee recommends \$63.5 million in PE 63305A, an increase of \$10.0 million for the joint and combined communications test tool product suite.

*JP-8 soldier fuel cell*

The budget request contained \$41.2 million in PE 62705A for electronics and electronic devices, but included no funding for JP-8 soldier fuel cell.

The committee is aware that light, compact, high-capacity power sources are essential to success on the modern battlefield to power a variety of devices. The committee notes that an effort is on-going to modify a commercial fuel cell to run on standard, readily available JP-8 fuel.

The committee recommends an increase of \$2.0 million in PE 62705A for development of the JP-8 soldier fuel cell.

*LEAN munitions*

The budget request contained \$67.2 million in PE 78045A for end item industrial preparedness activities, but included no funds for the second phase of the LEAN Munitions program.

The committee notes that the Army Armaments Research, Development and Engineering Command (ARDEC) is responsible for 90 percent of the munitions produced and utilized by the U.S. Army. The committee further notes that the Army's increased operational tempo and transformation plans support the need to reduce the time and cost for development and production of munitions used by our armed forces. The committee believes that the use of a standards-based, model-driven design and manufacturing life cycle support environment would enable the more timely and affordable production and sustainment of current and future munitions systems.

The committee recommends \$70.2 million in PE 70845A, an increase of \$3.0 million to continue the LEAN Munitions program.

*Light unmanned aerial vehicle weaponization*

The budget request contained \$203.1 million in PE 63005A for combat vehicle and automotive technology, but included no funds for light unmanned aerial vehicle (UAV) weaponization.

The committee notes that historically, light UAVs have been unable to carry weapons. The committee is aware that a unique, pat-

ented, electronically-fired, stacked-round technology has been developed that lends itself to the stringent restrictions of lightweight UAV weaponization.

The committee recommends an increase of \$4.0 million in PE 63005A for integration of the unique electronically-fired, stacked-round capability with a light UAV such as the Defense Advanced Research Agency DP-5 UAV.

#### *Light utility vehicle*

The budget request contained \$69.6 million in PE 62601A for combat vehicle and automotive technology, but included no funding for the light utility vehicle.

The committee believes that the Army requires a low-cost, light utility vehicle (LUV) that would provide soldiers with enhanced mobility, lethality and survivability compared to the current high mobility multipurpose wheeled vehicle and understands that the design and development of a LUV demonstrator could be accelerated due to previous research in LUV technology by the National Automotive Center.

Accordingly, the committee recommends an increase of \$5.0 million in PE 62601A to design, develop, and deliver an operational prototype LUV.

#### *Lightweight structures initiative*

The budget request contained \$203.1 million in PE 63005A for combat vehicle and automotive technology, but included no funding for the Army lightweight structures initiative (ALSI).

The committee is aware that the objective of the ALSI program is to develop, design, demonstrate, validate and implement a methodology for producing lightweight vehicle structure components and assemblies for the Army Future Combat Systems. The committee notes that the methodology utilized has been proven to substantially reduce costs and weights of structures in the automotive and aerospace applications.

The committee recommends an increase of \$9.0 million in PE 63005A for the ALSI.

#### *Low cost course correction*

The budget request contained \$28.2 million in PE 64601A for infantry support weapons, of which no funds were requested for Low Cost Course Correction.

The committee has been encouraged by the demonstration of Low Cost Course Correction (LCCC) technology.

The committee recommends an increase of \$2.5 million in PE 64601A to accelerate the development of LCCC for projectiles in the 20mm to 100mm range.

#### *M5 high performance fiber for personnel armor systems*

The budget request contained \$21.1 million in PE 62786A for warfighter technology, but included no funding for M5 high performance fiber.

The committee notes that M5 fiber, based on independent evaluation, offers the possibility of a new generation of lighter and more effective body and vehicle armor as well as similar improvement in heat resistant clothing.

The committee recognizes the urgency to provide improved personnel protection and recommends \$31.1 million in PE 62786A, an increase of \$10.0 million to hasten development and evaluation of M5 fiber and M5 based armor.

*Medical technology applied research initiative*

The budget request contained \$60.9 million in PE 62787A for medical technology applied research.

The committee notes that the primary goal of medical research and development in the Department of Defense is to sustain medical technology to effectively protect and improve the survivability of U.S. armed forces in a variety of settings including, but not limited to: conventional battlefields, areas of low-intensity conflict, and military operations other than war. Operations of U.S. forces in the global war on terrorism have placed a premium on the need for a range of medical technologies in the areas of infectious diseases, combat casualty care, military operational medicine, and health hazards for materials, that are the core applied technology for the Army's military technology applied research program.

The committee recommends the establishment of a medical technology applied research initiative that would provide the opportunity for emerging medical technologies and concepts to compete for funding on the basis of peer-reviewed technical merit. The committee recommends that the medical projects and technologies to be considered for funding under the initiative, include, but are not limited to the following:

- (1) Bio-activity of nanomaterials;
- (2) Bio-defense gene knockout technology;
- (3) Dermal phase meter;
- (4) Elgen gene delivery technology;
- (5) Fibrin bandage from non-mammalian sources;
- (6) Nano-fabricated Bio-artificial kidney; and
- (7) Rapid Bio-pathogen detection technology.

The committee recommends an increase of \$25.0 million in PE 62787A for the medical technology applied research initiative.

*Clinical research programs*

The committee understands that the primary federal agency responsible for conducting research into diseases affecting a broad demographic portion of the population is the Department of Health and Human Services. Nonetheless, the Department of Defense (DOD), and in particular the Department of the Army, has at the direction of Congress conducted and managed research for a number of diseases that particularly affect military members, their family members, and military retirees. In fact, the Army provides special scrutiny to these programs, since they are congressional directed and necessarily involve clinical trials conducted over several years.

While the committee applauds the Department's efforts to manage these programs, the committee is concerned that there may be missed opportunities to conduct research into other vital areas. For example, service members, family members, and military retirees are certainly affected by such serious and increasingly prevalent diseases as lung cancer and diabetes, yet no formal program exists for either.

The committee believes that a comprehensive review of these research programs is necessary so that research can be directed into areas that may have been neglected. Accordingly, the committee directs the Secretary of Defense to review ongoing clinical research efforts within the military departments and report to the congressional defense committees by February 1, 2005, whether any research programs should be added to the DOD's efforts. The committee believes that lung cancer and diabetes are excellent candidates for military sponsored research and urges the Secretary to give every consideration to establishing formal programs to fight these diseases, as they relate to military service.

#### *Medium tactical truck development*

The budget request contained \$2.9 million in PE 64604A for the continued development of medium tactical truck technologies and enhancements.

The family of medium tactical vehicles (FMTV) A2 will be the next generation of FMTVs. The committee understands additional funds are required to ensure synchronization with the fielding of the Army's Future Combat Systems (FCS) Increment I Unit of Action. The committee also notes these additional funds will enable the spiraling of FCS-like technologies into the tactical truck fleet, ensuring interoperability and maximizing future force capability.

The committee recommends \$12.6 million in PE 64604A, an increase of \$9.7 million, to further the development of medium tactical truck technologies.

#### *Miniature sensor development for small and tactical unmanned aerial vehicles*

The budget request contained \$22.6 million in PE 62709A for night vision technology, but included no funding for miniaturized hyperspectral and coherent imaging sensors for small and tactical unmanned aerial vehicles (UAV).

The committee notes the urgent need for better sensors for small and tactical UAVs and recommends \$27.6 million in PE 62709A, an increase of \$5.0 million for miniaturized hyperspectral and coherent imaging sensors for small and tactical UAVs.

#### *Modeling and analysis of the response of structures*

The budget request contained \$47.2 million in PE 62784A for military engineering technology, but included no funding for modeling and analysis of the response of structures (MARS).

The committee notes that MARS computer simulations will provide accurate vulnerability assessments that can be used to improve warfighter protection, enhance survivability, and facilitate rapid repair of structures.

The committee recommends \$52.2 million in PE 62784A, an increase of \$5.0 million for MARS.

#### *Night vision fusion*

The budget request contained \$50.1 million in PE 63710A for night vision advanced technology, but included no funds to accelerate development of night vision fusion technology.

The committee recognizes that night vision capability has provided our armed forces a significant advantage over their adver-

saries. The committee notes that while older technology has become available to others, state-of-the-art in night vision, pixel level digital fusion of light intensification and infrared images offers a very significant advantage over previous night vision devices. The committee understands that this technology will provide vital survivability and operational enhancements.

The committee recommends an increase of \$9.5 million in PE 63710A to accelerate development and fielding of pixel level, digital fusion of light intensification and infrared image technology.

*Patient monitor with defibrillator*

The budget request contained \$38.4 million in PE 63002A for medical advanced technology development.

The committee recommends an increase of \$5.0 million in PE 63002A for development of advanced technology for a compact, lightweight, full-featured patient monitor with defibrillator.

*Portable and mobile emergency broadband system*

The budget request contained \$41.8 million in PE 63008A for electronic warfare advanced technology, but included no funding for the portable and mobile emergency broadband system.

The committee notes that the portable and mobile emergency broadband system, based on emerging commercial technology, will allow rapid establishment of emergency communications networks.

The committee recommends an increase of \$4.0 million in PE 63008A to complete critical development of the portable and mobile emergency broadband system.

*Shadow tactical unmanned aerial vehicle*

The budget request contained \$27.1 million in PE 35204A for tactical unmanned aerial vehicles (TUAV).

The committee is aware that the three major improvements to the Shadow 200 TUAV based on operational evaluation were incorporation of the tactical common data link (TCDL), changes to reduce target location error, and a larger wing to increase both payload and endurance. The committee understands that the only remaining engineering necessary to include all three improvements in future Shadow 200 production is software modifications associated with TCDL.

The committee fully supports expediting completion of these improvements in order to field the most capable Shadow 200 to ground forces. Therefore the committee recommends \$30.6 million in PE 35204A, an increase of \$3.5 million to complete required Shadow non-recurring engineering for these improvements.

*Smart responsive nanocomposites*

The budget request contained \$75.1 million in PE 61103A for University Research Initiatives, but included no funding for smart responsive nanocomposites (SRN).

The committee is aware that there is a multitude of design possibilities for nanostructured, nature-simulating materials capable of responding to outside stimuli.

The committee recommends \$79.1 million in PE 61103A, an increase of \$4.0 million to develop a smart responsive nanostructured

material, which combines detection of toxins and alarm-release with self-cleaning and self-repairing material.

*Space and missile defense architecture analysis program*

The budget request contained \$91.7 million in PE 63327A for Army air and missile defense systems engineering, but included no funding for the Army Space and Missile Defense (ASMD) architecture analysis program.

The committee places a priority on the development of a transformational capability. The committee recognizes the contributions of the ASMD architecture analysis program in providing the essential analytical, modeling, and simulation tools to support advanced concepts and architectures of future forces.

The committee recommends an increase of \$7.0 million in PE 63327A for the ASMD architecture analysis program.

*Strategic materials strategic manufacturing initiative*

The budget request contained \$44.7 million in PE 62624A for weapons and munitions technology, but included no funding for the strategic materials strategic manufacturing initiative (SM2i).

The committee notes that titanium is important for weight reduction of weapons systems. The committee is aware that SM2i will link the Army's efforts to establish a reliable low-cost domestic source of titanium with advanced domestic manufacturing capabilities.

The committee supports an increase of \$6.0 million in PE 62624A for SM2i.

*Titanium alloy powder*

The budget request contained \$15.4 million in PE 62105A for materials technology, but included no funding for titanium, titanium-alloy powder production.

The committee recommends an increase of \$5.0 million in PE 62105A to enhance the domestic capacity to produce inexpensive, high-quality titanium powder for military use.

*Titanium extraction, mining, and process engineering research*

The budget request contained \$44.7 million in PE 62624A for weapons and munitions technology, but included no funding for Titanium extraction, mining, and process engineering research (TEMPER).

The committee is aware that the TEMPER initiative is intended to enhance U.S. industrial capability for the efficient production of inexpensive titanium for military systems. The committee notes that titanium offers weight and performance advantages and that the process must be developed to produce titanium at a reasonable cost in order to realize those advantages in future military systems.

The committee recommends an increase of \$12.0 million in PE 62624A for TEMPER.

*Unmanned systems initiative*

The budget request contained \$52.0 million in PE 62303A for missile technology, but included no funding for the unmanned systems initiative.

The committee recognizes the unmanned systems initiative will support battlefield control of multiple unmanned assets.

The committee recommends \$62.0 million in PE 62303A, an increase of \$10.0 million for the unmanned systems initiative.

#### NAVY RESEARCH, DEVELOPMENT, TEST, AND EVALUATION

##### Overview

The budget request contained \$16,346.4 million for Navy research, development, test, and evaluation (RDT&E).

The committee recommends \$16,047.8 million, a decrease of \$298.6 million to the budget request.

**Title II - RESEARCH, DEVELOPMENT, TEST AND EVALUATION**  
(Dollars in Thousands)

| PE Name   | Line | PROGRAM TITLE   | FY 2005                  |                     |                       |                       | FY 2005<br>Committee<br>Authorization |
|---|------|---|--------------------------|---------------------|-----------------------|-----------------------|---------------------------------------|
|   |      |   | Authorization<br>Request | Committee<br>Change | Committee<br>Increase | Committee<br>Decrease |                                       |
| <b>RESEARCH, DEVELOPMENT, TEST &amp; EVALUATION, NAVY</b> |      |   |                          |                     |                       |                       |                                       |
| <b>BASIC RESEARCH</b>                                     |      |   |                          |                     |                       |                       |                                       |
| 0601103N  | 1    | University Research Initiatives                             | 83,508                   |                     |                       |                       | 83,508                                |
| 0601152N  | 2    | In-House Laboratory Independent Research                    | 17,664                   |                     |                       |                       | 17,664                                |
| 0601153N  | 3    | Defense Research Sciences                                   | 375,812                  | 3,000               |                       |                       | 378,812                               |
| 0601153N  |      | Nanoscience and Nanomaterials                               |                          |                     | 3,000                 |                       |                                       |
| <b>TOTAL, BASIC RESEARCH</b>                              |      |   | <b>476,984</b>           | <b>3,000</b>        | <b>3,000</b>          |                       | <b>479,984</b>                        |
| <b>APPLIED RESEARCH</b>                                   |      |   |                          |                     |                       |                       |                                       |
| 0602114N  | 4    | Power Projection Applied Research                           | 98,831                   | 8,000               |                       |                       | 106,831                               |
| 0602114N  |      | Integrated Personnel Protection System                      |                          |                     | 3,000                 |                       |                                       |
| 0602114N  |      | Interrogator for High-Speed Retro-Reflective Communications |                          |                     | 3,000                 |                       |                                       |
| 0602114N  |      | Terahertz for Photonics for Imaging                         |                          |                     | 2,000                 |                       |                                       |
| 0602123N  | 5    | Force Protection Applied Research                           | 96,269                   | 7,000               |                       |                       | 103,269                               |
| 0602123N  |      | Hybrid POSS Composites                                      |                          |                     | 2,000                 |                       |                                       |
| 0602123N  |      | Center for Critical Infrastructure Protection               |                          |                     | 5,000                 |                       |                                       |
| 0602131M  | 6    | Marine Corps Landing Force Technology                       | 35,398                   |                     |                       |                       | 35,398                                |
| 0602232N  | 7    | Communications, Command and Control, Intel, Surveillance    |                          |                     |                       |                       |                                       |
| 0602233N  | 8    | Human Systems Technology                                    |                          | 2,000               |                       |                       | 2,000                                 |
| 0602233N  |      | Human Systems Integration                                   |                          |                     |                       |                       |                                       |
| 0602234N  | 9    | Materials, Electronics and Computer Technology              |                          |                     |                       |                       |                                       |
| 0602235N  | 10   | Common Picture Applied Research                             | 60,134                   | 6,000               |                       |                       | 66,134                                |
| 0602235N  |      | Theater Undersea Warfare Initiative                         |                          |                     |                       |                       |                                       |
| 0602236N  | 11   | Warfighter Sustainment Applied Research                     | 63,726                   | 17,200              |                       |                       | 80,926                                |
| 0602236N  |      | Formable Aligned Carbon Thermosets                          |                          |                     | 2,000                 |                       |                                       |
| 0602236N  |      | Marine Mammal Research Program                              |                          |                     | 2,200                 |                       |                                       |
| 0602236N  |      | Composite Ceramic UUV                                       |                          |                     | 8,000                 |                       |                                       |
| 0602236N  |      | Composite Ceramic Materials for Aerospace Fabrication       |                          |                     | 5,000                 |                       |                                       |
| 0602271N  | 12   | RF Systems Applied Research                                 | 49,151                   | 17,000              |                       |                       | 66,151                                |
| 0602271N  |      | Vacuum Technology   |                          |                     | 10,000                |                       |                                       |

**Title II - RESEARCH, DEVELOPMENT, TEST AND EVALUATION**  
(Dollars in Thousands)

| PE Name  | Line | PROGRAM TITLE   | FY 2005<br>Authorization<br>Request | Committee<br>Change | Committee<br>Increase | Committee<br>Decrease | FY 2005<br>Committee<br>Authorization |
|----------|------|---|-------------------------------------|---------------------|-----------------------|-----------------------|---------------------------------------|
| 0602271N |      | Gallium Nitride RF Power Technology                                   |                                     |                     | 3,000                 |                       |                                       |
| 0602271N |      | Wide Band Gap Semiconductor Technology                                |                                     |                     | 4,000                 |                       |                                       |
| 0602435N | 13   | Ocean Warfighting Environment Applied Research                        | 48,482                              |                     |                       |                       | 48,482                                |
| 0602747N | 14   | Undersea Warfare Applied Research                                     | 64,060                              | 1,000               |                       |                       | 65,060                                |
| 0602747N |      | Low Acoustic Signature Motor/Propulsor                                |                                     |                     | 1,000                 |                       |                                       |
| 0602782N | 15   | Mine and Expeditionary Warfare Applied Research                       | 48,016                              |                     |                       |                       | 48,016                                |
|          |      | <b>TOTAL, APPLIED RESEARCH</b>  | <b>564,067</b>                      | <b>58,200</b>       | <b>58,200</b>         |                       | <b>622,267</b>                        |
|          |      | <b>ADVANCED TECHNOLOGY DEVELOPMENT</b>                                |                                     |                     |                       |                       |                                       |
| 0603114N | 16   | Power Projection Advanced Technology                                  | 92,359                              | 25,000              |                       |                       | 117,359                               |
| 0603114N |      | DP-2 Thrust Vectoring System  |                                     |                     | 10,000                |                       |                                       |
| 0603114N |      | Laser Radar Data Exploitation   |                                     |                     | 3,000                 |                       |                                       |
| 0603114N |      | Low-Cost Terminal Imaging Seeker                                      |                                     |                     | 5,000                 |                       |                                       |
| 0603114N |      | Low Power Mega Performance UAV Processing Engine                      |                                     |                     | 7,000                 |                       |                                       |
| 0603123N | 17   | Force Protection Advanced Technology/LSC-X                            | 82,130                              | 59,500              |                       |                       | 141,630                               |
| 0603123N |      | Littoral Support Craft Experimental                                   |                                     |                     | 25,800                |                       |                                       |
| 0603123N |      | Superconducting DC Homopolar Motor                                    |                                     |                     | 9,200                 |                       |                                       |
| 0603123N |      | Project M   |                                     |                     | 4,000                 |                       |                                       |
| 0603123N |      | High Temperature Superconducting AC Synchronous Ship Propulsion Motor |                                     |                     | 8,000                 |                       |                                       |
| 0603123N |      | Technologies for Future Naval Capabilities                            |                                     |                     | 2,000                 |                       |                                       |
| 0603123N |      | Electromagnetic Gun Program   |                                     |                     | 9,500                 |                       |                                       |
| 0603123N |      | High-Speed Power Node Switching Center                                |                                     |                     | 1,000                 |                       |                                       |
| 0603235N | 18   | Common Picture Advanced Technology                                    | 79,521                              | 4,000               |                       |                       | 83,521                                |
| 0603235N |      | Consolidated Undersea Situational Awareness                           |                                     |                     | 4,000                 |                       |                                       |
| 0603236N | 19   | Warfighter Sustainment Advanced Technology                            | 61,103                              | 15,000              |                       |                       | 76,103                                |
| 0603236N |      | Intermediate Modulus COTS Carbon Fiber Qualification                  |                                     |                     | 4,000                 |                       |                                       |
| 0603236N |      | Emerging/Critical Interconnection Technology                          |                                     |                     | 4,000                 |                       |                                       |
| 0603236N |      | Virtual, At Sea Training Initiative                                   |                                     |                     | 4,000                 |                       |                                       |
| 0603236N |      | Human Systems Integration   |                                     |                     | 3,000                 |                       |                                       |
| 0603271N | 20   | RF Systems Advanced Technology  | 44,046                              | 21,500              |                       |                       | 65,546                                |

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| PE Name  | Line | PROGRAM TITLE   | FY 2005<br>Authorization<br>Request | Committee<br>Change | Committee<br>Increase | Committee<br>Decrease | FY 2005<br>Committee<br>Authorization |
|----------|------|---|-------------------------------------|---------------------|-----------------------|-----------------------|---------------------------------------|
| 0603271N |      | Vacuum Technology                                       |                                     |                     | 5,000                 |                       |                                       |
| 0603271N |      | APY-6 Realtime Precision Targeting Radar                |                                     |                     | 10,000                |                       |                                       |
| 0603271N |      | Remote Ocean Surveillance System                        |                                     |                     | 3,000                 |                       |                                       |
| 0603271N |      | SCOUT Radar   |                                     |                     | 2,000                 |                       |                                       |
| 0603271N |      | Spectral Beam Combining Fiber Lasers                    |                                     |                     | 1,500                 |                       |                                       |
| 0603640M | 21   | Marine Corps Advanced Technology Demonstration (ATD)    | 58,222                              | 4,500               |                       |                       | 62,722                                |
| 0603640M |      | Advanced Mine Detection Program                         |                                     |                     | 3,000                 |                       |                                       |
| 0603640M |      | Rapid Deployment Fortification Wall                     |                                     |                     | 1,500                 |                       |                                       |
| 0603712N | 22   | Environmental Quality and Logistics Advanced Technology | 167,626                             | (167,626)           |                       |                       |                                       |
| 0603727N | 23   | Joint Experimentation                                   |                                     |                     |                       |                       |                                       |
| 0603727N |      | Transfer PDW 81a  | 16,719                              | 11,000              |                       |                       | 27,719                                |
| 0603729N | 24   | Warfighter Protection Advanced Technology               |                                     |                     | 4,000                 |                       |                                       |
| 0603729N |      | Organ Transplant Technology                             |                                     |                     | 5,000                 |                       |                                       |
| 0603729N |      | Biomedical Research Imaging                             |                                     |                     | 2,000                 |                       |                                       |
| 0603729N |      | Oxygen Dressing   |                                     |                     |                       |                       |                                       |
| 0603747N | 25   | Undersea Warfare Advanced Technology                    | 26,515                              |                     |                       |                       | 26,515                                |
| 0603757N | 26   | Joint Warfare Experiments                               | 26                                  | (26)                |                       |                       |                                       |
| 0603757N |      | Transfer PDW 81b  |                                     |                     |                       |                       |                                       |
| 0603758N | 27   | Navy Warfighting Experiments and Demonstrations         | 16,006                              |                     |                       |                       | 16,006                                |
| 0603782N | 28   | Mine and Expeditionary Warfare Advanced Technology      | 32,899                              |                     |                       |                       | 32,899                                |
| 0603792N | 29   | Advanced Technology Transition                          |                                     |                     |                       |                       |                                       |
|          |      | <b>TOTAL, ADVANCED TECHNOLOGY DEVELOPMENT</b>           | <b>677,172</b>                      | <b>(27,152)</b>     | <b>140,500</b>        | <b>(167,652)</b>      | <b>650,020</b>                        |
|          |      | <b>ADVANCED COMPONENT DEVELOPMENT &amp; PROTOTYPES</b>  |                                     |                     |                       |                       |                                       |
| 0603207N | 30   | Air/Ocean Tactical Applications                         | 24,431                              |                     |                       |                       | 24,431                                |
| 0603216N | 31   | Aviation Survivability                                  | 10,820                              | 3,000               |                       |                       | 13,820                                |
| 0603237N | 32   | Reduced Risk Ordnance                                   |                                     |                     | 3,000                 |                       |                                       |
| 0603254N | 33   | Deployable Joint Command and Control                    | 42,394                              |                     |                       |                       | 42,394                                |
| 0603254N |      | ASW Systems Development                                 | 4,541                               | 11,000              |                       |                       | 15,541                                |
|          |      | Claymore Marine   |                                     |                     | 7,000                 |                       |                                       |

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| PE Name  | Line | PROGRAM TITLE   | FY 2005               |                  | FY 2005            |                         |
|----------|------|---|-----------------------|------------------|--------------------|-------------------------|
|          |      |   | Authorization Request | Committee Change | Committee Increase | Committee Authorization |
| 0603254N |      | Tactical E Field Buoy Development                     |                       |                  | 4,000              |                         |
| 0603261N | 34   | Tactical Airborne Reconnaissance / UAV CONOPS         | 6,448                 | (4,548)          |                    | 1,900                   |
| 0603261N |      | UAV Concept of Operations                             |                       |                  |                    | (4,548)                 |
| 0603382N | 35   | Advanced Combat Systems Technology                    | 67,605                |                  |                    | 67,605                  |
| 0603502N | 36   | Surface and Shallow Water Mine Countermeasures<br>UUV | 103,308               | 20,000           |                    | 123,308                 |
| 0603502N |      |   |                       |                  | 20,000             |                         |
| 0603506N | 37   | Surface Ship Torpedo Defense                          | 46,896                | 7,000            |                    | 53,896                  |
| 0603506N |      | Anti Torpedo Torpedo                                  |                       |                  | 7,000              |                         |
| 0603512N | 38   | Carrier Systems Development (CVN-21)                  | 157,479               | 10,000           |                    | 167,479                 |
| 0603512N |      | Aviation Ship Integration Center                      |                       |                  | 10,000             |                         |
| 0603513N | 39   | Shipboard System Component Development                | 18,993                | 6,500            |                    | 25,493                  |
| 0603513N |      | DD(X) Ship System Component Development               |                       |                  | 2,000              |                         |
| 0603513N |      | Integrated-fight-through-power                        |                       |                  | 2,000              |                         |
| 0603513N |      | Ultrasound Detection Equipment                        |                       |                  | 2,500              |                         |
| 0603525N | 40   | PILOT FISH  | 78,223                |                  |                    | 78,223                  |
| 0603527N | 41   | RETRACT LARCH   | 82,532                |                  |                    | 82,532                  |
| 0603536N | 42   | RETRACT JUNIPER                                       | 36,915                |                  |                    | 36,915                  |
| 0603542N | 43   | Radiological Controls                                 | 946                   |                  |                    | 946                     |
| 0603553N | 44   | Surface ASW   | 17,633                | 16,600           |                    | 34,233                  |
| 0603553N |      | Task Force Anti-Submarine Warfare                     |                       |                  | 16,600             |                         |
| 0603559N | 45   | SSGN Design   | 19,970                |                  |                    | 19,970                  |
| 0603561N | 46   | Advanced Submarine System Development                 | 81,160                | 17,000           |                    | 98,160                  |
| 0603561N |      | Composite Structures                                  |                       |                  | 7,000              |                         |
| 0603561N |      | Payloads and Sensors                                  |                       |                  | 10,000             |                         |
| 0603562N | 47   | Submarine Tactical Warfare Systems                    | 5,957                 |                  |                    | 5,957                   |
| 0603563N | 48   | Ship Concept Advanced Design                          | 3,723                 |                  |                    | 3,723                   |
| 0603564N | 49   | Ship Preliminary Design & Feasibility Studies         |                       |                  |                    |                         |
| 0603570N | 50   | Advanced Nuclear Power Systems (CVN-21)               | 169,733               |                  |                    | 169,733                 |
| 0603573N | 51   | Advanced Surface Machinery Systems                    |                       |                  |                    |                         |

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| PE Name  | Line | PROGRAM TITLE  | FY 2005               |                  |                    | FY 2005            |                         |  |
|----------|------|--|-----------------------|------------------|--------------------|--------------------|-------------------------|--|
|          |      |  | Authorization Request | Committee Change | Committee Increase | Committee Decrease | Committee Authorization |  |
| 0603576N | 52   | CHALK EAGLE  | 47,786                |                  |                    |                    | 47,786                  |  |
| 0603581N | 53   | Littoral Combat Ship (LCS)   | 352,089               | (107,700)        |                    | (107,700)          | 244,389                 |  |
| 0603582N | 54   | Combat Systems Integration<br>Laser Diode Arrays                   | 80,840                | 6,000            | 6,000              |                    | 86,840                  |  |
| 0603609N | 55   | Conventional Munitions   | 34,151                |                  |                    |                    | 34,151                  |  |
| 0603611M | 56   | Expeditionary Fighting Vehicle (EFV/AAAV)                          | 236,969               |                  |                    |                    | 236,969                 |  |
| 0603612M | 57   | Marine Corps Mine/Countermeasures Systems - Adv Dev. Mine Detector | 4,522                 |                  |                    |                    | 4,522                   |  |
| 0603635M | 58   | Marine Corps Ground Combat/Support System<br>NLW                   | 22,440                |                  |                    |                    | 22,440                  |  |
| 0603654N | 59   | Joint Service Explosive Ordnance Development                       | 18,047                |                  |                    |                    | 18,047                  |  |
| 0603658N | 60   | Cooperative Engagement   | 103,452               |                  |                    |                    | 103,452                 |  |
| 0603713N | 61   | Ocean Engineering Technology Development                           | 26,232                |                  |                    |                    | 26,232                  |  |
| 0603721N | 62   | Environmental Protection   | 24,641                |                  |                    |                    | 24,641                  |  |
| 0603724N | 63   | Navy Energy Program<br>One Megawatt Molten Carbonate Fuel Cell     | 1,494                 | 6,000            | 6,000              |                    | 7,494                   |  |
| 0603725N | 64   | Facilities Improvement   | 1,621                 |                  |                    |                    | 1,621                   |  |
| 0603734N | 65   | CHALK CORAL  | 58,467                |                  |                    |                    | 58,467                  |  |
| 0603739N | 66   | Navy Logistic Productivity   | 7,421                 |                  |                    |                    | 7,421                   |  |
| 0603746N | 67   | RETRACT MAPLE  | 275,407               |                  |                    |                    | 275,407                 |  |
| 0603748N | 68   | LINK PLUMERIA  | 112,997               |                  |                    |                    | 112,997                 |  |
| 0603751N | 69   | RETRACT ELIM   | 48,130                |                  |                    |                    | 48,130                  |  |
| 0603755N | 70   | Ship Self Defense  | 9,493                 |                  |                    |                    | 9,493                   |  |
| 0603764N | 71   | LINK EVERGREEN   | 63,346                |                  |                    |                    | 63,346                  |  |
| 0603787N | 72   | Special Processes  | 44,232                |                  |                    |                    | 44,232                  |  |
| 0603790N | 73   | NATO Research and Development                                      | 10,151                |                  |                    |                    | 10,151                  |  |
| 0603795N | 74   | Land Attack Technology / AWS                                       | 82,049                | 23,000           | 23,000             |                    | 105,049                 |  |
| 0603795N | 75   | Affordable Weapon System   |                       |                  |                    |                    |                         |  |
| 0603851M | 75   | Nonlethal Weapons  | 43,321                |                  |                    |                    | 43,321                  |  |
| 0603857N | 76   | Joint Combat ID Evaluation Team                                    | 13,626                |                  |                    |                    | 13,626                  |  |

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| PE Name  | Line | PROGRAM TITLE   | FY 2005<br>Authorization<br>Request | Committee<br>Change | Committee<br>Increase | Committee<br>Decrease | FY 2005<br>Committee<br>Authorization |
|----------|------|---|-------------------------------------|---------------------|-----------------------|-----------------------|---------------------------------------|
| 0603860N | 77   | Joint Precision Approach and Landing Systems                        | 32,391                              |                     |                       |                       | 32,391                                |
| 0603879N | 78   | Single Integrated Air Picture (SIAP) System Engineer (SE)           | 20,252                              |                     |                       |                       | 20,252                                |
| 0603889N | 79   | Counterdrug RDT&E Projects  |                                     |                     |                       |                       |                                       |
| 0604272N | 80   | Tactical Air Directional Infrared Countermeasures (TADIRCM)         | 25,943                              |                     |                       |                       | 25,943                                |
| 0604707N | 81   | Space and Electronic Warfare (SEW) Architecture/Engineering Support | 22,450                              | (22,450)            |                       |                       |                                       |
| 0604787N | 82   | Joint Warfare Transformation Programs                               |                                     |                     |                       |                       |                                       |
| 0604787N |      | Transfer PDW 81c  |                                     |                     |                       | (22,450)              |                                       |
|          |      | <b>TOTAL, ADVANCED COMPONENT DEVELOPMENT &amp; PROTOTYPES</b>       | <b>2,803,667</b>                    | <b>(8,598)</b>      | <b>126,100</b>        | <b>(134,698)</b>      | <b>2,795,069</b>                      |
|          |      | <b>SYSTEM DEVELOPMENT &amp; DEMONSTRATION</b>                       |                                     |                     |                       |                       |                                       |
| 0604212N | 83   | Other Helo Development  | 186,970                             |                     |                       |                       | 186,970                               |
| 0604214N | 84   | AV-8B Aircraft - Eng Dev  | 12,284                              |                     |                       |                       | 12,284                                |
| 0604215N | 85   | Standards Development   | 57,675                              |                     |                       |                       | 57,675                                |
| 0604216N | 86   | Multi-Mission Helicopter Upgrade Development                        | 78,757                              |                     |                       |                       | 78,757                                |
| 0604217N | 87   | S-3 Weapon System Improvement                                       |                                     |                     |                       |                       |                                       |
| 0604218N | 88   | Air/Ocean Equipment Engineering                                     | 4,506                               |                     |                       |                       | 4,506                                 |
| 0604221N | 89   | P-3 Modernization Program   | 9,554                               |                     |                       |                       | 9,554                                 |
| 0604230N | 90   | Naval Coastal Warfare   | 5,201                               |                     |                       |                       | 5,201                                 |
| 0604231N | 91   | Tactical Command System   | 49,180                              |                     |                       |                       | 49,180                                |
| 0604234N | 92   | Advanced Hawkeye  | 597,015                             |                     |                       |                       | 597,015                               |
| 0604245N | 93   | H-1 Upgrades  | 90,389                              |                     |                       |                       | 90,389                                |
| 0604261N | 94   | Acoustic Search Sensors   | 13,363                              |                     |                       |                       | 13,363                                |
| 0604262N |      | Automatic Radar Periscope Detection Discrimination                  |                                     |                     |                       |                       |                                       |
| 0604262N | 95   | V-22A   |                                     |                     | 15,000                |                       |                                       |
| 0604264N | 96   | Air Crew Systems Development  | 304,164                             |                     |                       |                       | 304,164                               |
| 0604269N | 97   | EA-18G  | 8,838                               |                     |                       |                       | 8,838                                 |
| 0604270N | 98   | EW Development  | 357,502                             |                     |                       |                       | 357,502                               |
| 0604273N | 99   | VHXX Executive Helo Development                                     | 48,956                              |                     |                       |                       | 48,956                                |
| 0604280N | 100  | Joint Tactical Radio System - Navy (JTRS-Navy)                      | 777,398                             | (220,000)           |                       |                       | 557,398                               |
| 0604280N |      | Digital Modular Radio   | 78,624                              | 15,000              |                       |                       | 93,624                                |

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| PE Name  | Line | PROGRAM TITLE  | FY 2005                  |                     |                       | FY 2005<br>Committee<br>Authorization |
|----------|------|--|--------------------------|---------------------|-----------------------|---------------------------------------|
|          |      |  | Authorization<br>Request | Committee<br>Change | Committee<br>Increase |                                       |
| 0604300N | 101  | DD(X) Systems Engineering                            | 1,431,585                | (211,100)           | 10,000                | 1,220,485                             |
| 0604300N |      | Advanced Gun System for DD(X)                        |                          |                     |                       |                                       |
| 0604307N | 102  | Aegis Combat System Engineering                      | 146,463                  | 21,800              | 10,000                | 168,263                               |
| 0604307N |      | Open Architecture                                    |                          |                     | 21,800                |                                       |
| 0604311N | 103  | LPD-17 Class System Integration                      | 8,988                    |                     |                       | 8,988                                 |
| 0604312N | 104  | JASSM  | 27,047                   |                     |                       | 27,047                                |
| 0604329N | 105  | Small Diameter Bomb (SDB)                            | 9,961                    |                     |                       | 9,961                                 |
| 0604366N | 106  | Standard Missile Improvements                        | 99,022                   |                     |                       | 99,022                                |
| 0604373N | 107  | Airborne MCM   | 50,514                   |                     |                       | 50,514                                |
| 0604503N | 108  | Submarine Systems Development                        | 75,359                   | 29,000              | 20,000                | 104,359                               |
| 0604503N |      | Advanced Processor Build Integration                 |                          |                     | 6,000                 |                                       |
| 0604503N |      | Affordable Towed Array Construction                  |                          |                     | 3,000                 |                                       |
| 0604504N |      | AN/BLQ-10 Test and Support                           |                          |                     |                       |                                       |
| 0604507N | 109  | Air Control  | 13,102                   |                     |                       | 13,102                                |
| 0604512N | 110  | Enhanced Modular Signal Processor                    | 1,075                    |                     |                       | 1,075                                 |
| 0604512N | 111  | CV Launch / Recovery System                          | 28,631                   | 4,000               | 4,000                 | 32,631                                |
| 0604518N |      | Aviation Shipboard Information Technology Initiative |                          |                     |                       |                                       |
| 0604518N | 112  | Combat Information Center Conversion                 | 8,228                    |                     |                       | 8,228                                 |
| 0604558N | 113  | Virginia Class Design Development                    | 143,270                  | 10,000              |                       | 153,270                               |
| 0604558N |      | Multi Mission Modules                                |                          |                     | 10,000                |                                       |
| 0604561N | 114  | SSN-21 Developments                                  | 3,020                    |                     |                       | 3,020                                 |
| 0604562N | 115  | Submarine Tactical Warfare System                    | 43,404                   |                     |                       | 43,404                                |
| 0604567N | 116  | Ship Contract Design/ Live Fire T&E                  | 130,908                  |                     |                       | 130,908                               |
| 0604574N | 117  | Navy Tactical Computer Resources                     | 2,381                    |                     |                       | 2,381                                 |
| 0604601N | 118  | Mine Development                                     | 6,123                    |                     |                       | 6,123                                 |
| 0604603N | 119  | SLAM-ER  |                          |                     |                       |                                       |
| 0604610N | 120  | Lightweight Torpedo Development                      | 9,965                    |                     |                       | 9,965                                 |
| 0604610N |      | MK-54 System PIP                                     |                          |                     |                       |                                       |
| 0604618N | 121  | Joint Direct Attack Munition                         |                          | 12,000              |                       | 12,000                                |

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|--|------|---|-----------------------|------------------|--------------------|--------------------|-------------------------|
|  |      |   | Authorization Request | Committee Change | Committee Increase | Committee Decrease | Committee Authorization |
| 0604654N   | 122  | Joint Service Explosive Ordnance Development                | 8,081                 |                  |                    |                    | 8,081                   |
| 0604703N   | 123  | Personnel, Training, Simulation, and Human Factors          | 3,005                 |                  |                    |                    | 3,005                   |
| 0604710N   | 124  | Navy Energy Program   |                       |                  |                    |                    |                         |
| 0604721N   | 125  | Shipboard IW  | 17,981                |                  |                    |                    | 17,981                  |
| 0604727N   | 126  | Joint Standoff Weapon Systems                               | 9,531                 |                  |                    |                    | 9,531                   |
| 0604755N   | 127  | Ship Self Defense (Detect & Control)                        | 48,154                | 40,600           |                    |                    | 88,754                  |
| 0604755N   | 127  | Integrated Radar Optical Surveillance and Sighting System   |                       |                  | 3,500              |                    |                         |
| 0604755N   |      | Evolved Sea Sparrow   |                       |                  | 15,300             |                    |                         |
| 0604755N   |      | Open Architecture Warfare Systems                           |                       |                  | 21,800             |                    |                         |
| 0604756N   | 128  | Ship Self Defense (Engage: Hard Kill)                       | 51,213                |                  |                    |                    | 51,213                  |
| 0604757N   | 129  | Ship Self Defense (Engage: Soft Kill/EW)                    | 28,233                |                  |                    |                    | 28,233                  |
| 0604771N   | 130  | Medical Development   | 6,942                 | 15,000           |                    |                    | 21,942                  |
| 0604771N   |      | Hemoglobin-based Oxygen Carrier                             |                       |                  | 13,000             |                    |                         |
| 0604771N   |      | Pseudotulococcus Barbae Research                            |                       |                  | 2,000              |                    |                         |
| 0604777N   | 131  | Navigation/ID System  | 28,104                |                  |                    |                    | 28,104                  |
| 0604784N   | 132  | Distributed Surveillance System                             | 7,776                 |                  |                    |                    | 7,776                   |
| 0604800N   | 133  | Joint Strike Fighter (JSF)                                  | 2,264,507             |                  |                    |                    | 2,264,507               |
| 0604910N   | 134  | Smart Card Program  | 695                   |                  |                    |                    | 695                     |
| 0605013M   | 135  | USMC Information Technology Development                     | 9,301                 |                  |                    |                    | 9,301                   |
| 0605013N   | 136  | Information Technology Development                          | 109,543               | (80,000)         |                    |                    | 29,543                  |
| 0605013N   |      | Enterprise Resource Planning                                |                       |                  |                    | (83,000)           |                         |
| 0605013N   |      | Open Architecture Wireless Sensors                          |                       |                  | 3,000              |                    |                         |
| 0605014N   | 137  | Defense Integrated Military Human Resources System (DIMHRS) |                       |                  |                    |                    |                         |
| 0605500N   | 138  | Multi-mission Maritime Aircraft (MMA)                       | 496,029               |                  |                    |                    | 496,029                 |
| 0508713N   | 139  | Navy Standard Integrated Personnel System (NSIPS)           |                       |                  |                    |                    |                         |
| <b>TOTAL, SYSTEM DEVELOPMENT &amp; DEMONSTRATION</b> |      |   | <b>8,008,517</b>      | <b>(360,700)</b> | <b>163,400</b>     | <b>(524,100)</b>   | <b>7,647,817</b>        |

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|--|------|---|--------------------------|---------------------|-----------------------|---------------------------------------|
|  |      |   | Authorization<br>Request | Committee<br>Change | Committee<br>Increase |                                       |
| <b>RDT&amp;E MANAGEMENT SUPPORT</b>        |      |   |                          |                     |                       |                                       |
| 0604256N                                   | 140  | Threat Simulator Development                    | 23,866                   |                     |                       | 23,866                                |
| 0604258N                                   | 141  | Target Systems Development                      | 35,677                   |                     |                       | 35,677                                |
| 0604759N                                   | 142  | Major T&E Investment                            | 39,787                   |                     |                       | 39,787                                |
| 0605152N                                   | 143  | Studies and Analysis Support - Navy             | 2,183                    |                     |                       | 2,183                                 |
| 0605154N                                   | 144  | Center for Naval Analyses                       | 43,982                   |                     |                       | 43,982                                |
| 0605155N                                   | 145  | Fleet Tactical Development                      | 2,338                    |                     |                       | 2,338                                 |
| 0605502N                                   | 146  | Small Business Innovative Research              |                          | 696                 |                       | 696                                   |
| 0605804N                                   | 147  | Technical Information Services                  | 31,407                   |                     |                       | 31,407                                |
| 0605853N                                   | 148  | Management, Technical & International Support   | 3,493                    |                     |                       | 3,493                                 |
| 0605856N                                   | 149  | Strategic Technical Support                     | 66,117                   |                     |                       | 66,117                                |
| 0605861N                                   | 150  | RDT&E Science and Technology Management         | 19,370                   |                     |                       | 19,370                                |
| 0605862N                                   | 151  | RDT&E Instrumentation Modernization             | 81,308                   |                     |                       | 81,308                                |
| 0605863N                                   | 152  | RDT&E Ship and Aircraft Support                 | 255,926                  |                     |                       | 255,926                               |
| 0605864N                                   | 153  | Test and Evaluation Support                     | 13,044                   |                     |                       | 13,044                                |
| 0605865N                                   | 154  | Operational Test and Evaluation Capability      | 2,941                    |                     |                       | 2,941                                 |
| 0605866N                                   | 155  | Navy Space and Electronic Warfare (SEW) Support | 12,160                   |                     |                       | 12,160                                |
| 0605867N                                   | 156  | SEW Surveillance/Reconnaissance Support         | 19,701                   |                     |                       | 19,701                                |
| 0605873M                                   | 157  | Marine Corps Program Wide Support               |                          |                     |                       |                                       |
| 0909999N                                   | 158  | Financing for Cancelled Account Adjustments     |                          |                     |                       |                                       |
| <b>TOTAL, RDT&amp;E MANAGEMENT SUPPORT</b> |      |   | <b>653,996</b>           |                     |                       | <b>653,996</b>                        |
| <b>OPERATIONAL SYSTEMS DEVELOPMENT</b>     |      |   |                          |                     |                       |                                       |
| 0603660N                                   | 159  | Advanced Development Projects                   |                          |                     |                       |                                       |
| 0603661N                                   | 160  | Retract Violet                                  |                          |                     |                       |                                       |
| 0101221N                                   | 161  | Strategic Sub & Weapons System Support          | 108,782                  |                     |                       | 108,782                               |
| 0101224N                                   | 162  | SSBN Security Technology Program                | 43,408                   |                     |                       | 43,408                                |
| 0101226N                                   | 163  | Submarine Defensive Warfare Systems             | 8,453                    |                     |                       | 8,453                                 |
| 0101402N                                   | 164  | Navy Strategic Communications/E-6B              | 31,391                   |                     |                       | 31,391                                |

Title II - RESEARCH, DEVELOPMENT, TEST AND EVALUATION  
(Dollars in Thousands)

| PE Name  | Line | PROGRAM TITLE   | FY 2005                  |                     |                       | FY 2005<br>Committee<br>Authorization |
|----------|------|---|--------------------------|---------------------|-----------------------|---------------------------------------|
|          |      |   | Authorization<br>Request | Committee<br>Change | Committee<br>Increase |                                       |
|          | 165  | Rapid Technology Transition (RTT)                                       | 14,630                   |                     |                       | 14,630                                |
| 0203761N | 166  | F/A-18 Squadrons  | 134,580                  |                     |                       | 134,580                               |
| 0204136N | 167  | E-2 Squadrons   | 6,055                    |                     |                       | 6,055                                 |
| 0204152N | 168  | Fleet Telecommunications (Tactical)                                     | 19,784                   |                     |                       | 19,784                                |
| 0204229N | 169  | Tomahawk Weapons System   | 28,776                   |                     |                       | 28,776                                |
| 0204311N | 170  | Integrated Surveillance System  | 16,965                   |                     |                       | 16,965                                |
| 0204413N | 171  | Amphibious Tactical Support Units                                       | 2,604                    |                     |                       | 2,604                                 |
| 0204571N | 172  | Consolidated Training Systems Development                               | 21,644                   |                     |                       | 21,644                                |
| 0204574N | 173  | Cryptologic Direct Support  | 1,460                    |                     |                       | 1,460                                 |
| 0204575N | 174  | Electronic Warfare (EW) Readiness Support                               | 12,139                   |                     |                       | 12,139                                |
| 0205601N | 175  | HARM Improvement / AARGM<br>Embedded National Tactical Receiver - AARGM | 163,371                  | 2,000               | 2,000                 | 165,371                               |
| 0205604N | 176  | Tactical Data Links   | 18,977                   |                     |                       | 18,977                                |
| 0205620N | 177  | Surface ASW Combat System Integration                                   | 10,612                   |                     |                       | 10,612                                |
| 0205632N | 178  | MK-48 ADCAP   | 21,620                   |                     |                       | 21,620                                |
| 0205633N | 179  | Aviation Improvements   | 62,635                   |                     |                       | 62,635                                |
| 0205658N | 180  | Navy Science Assistance Program   | 3,821                    |                     |                       | 3,821                                 |
| 0205675N | 181  | Operational Nuclear Power Systems                                       | 64,554                   |                     |                       | 64,554                                |
| 0206313M | 182  | Marine Corps Communications Systems                                     | 268,638                  |                     |                       | 268,638                               |
| 0206623M | 183  | Marine Corps Ground Combat/Supporting Arms Systems                      | 44,828                   |                     |                       | 44,828                                |
| 0206624M | 184  | Marine Corps Combat Services Support                                    | 10,731                   |                     |                       | 10,731                                |
| 0207161N | 185  | Tactical Air Intercept Missiles   | 4,061                    |                     |                       | 4,061                                 |
| 0207163N | 186  | Advanced Medium Range Air-to-Air Missile (AMRAAM)                       | 9,085                    |                     |                       | 9,085                                 |
| 0301303N | 187  | Maritime Intelligence   |                          |                     |                       |                                       |
| 0301323N | 188  | Collection Management   |                          |                     |                       |                                       |
| 0301327N | 189  | Technical Reconnaissance and Surveillance                               |                          |                     |                       |                                       |
| 0303109N | 190  | Satellite Communications (SPACE)  | 573,092                  | 8,000               | 8,000                 | 581,092                               |
| 0303109N | 191  | Joint Integrated Systems Technology for Digital Networking              |                          |                     |                       |                                       |
| 0303140N |      | Information Systems Security Program                                    | 18,676                   | 17,700              | 8,000                 | 36,376                                |

Title II - RESEARCH, DEVELOPMENT, TEST AND EVALUATION  
(Dollars in Thousands)

| PE Name  | Line | PROGRAM TITLE  | FY 2005               |                  | FY 2005            |                    |
|----------|------|--|-----------------------|------------------|--------------------|--------------------|
|          |      |  | Authorization Request | Committee Change | Committee Increase | Committee Decrease |
| 0303140N |      | Common Submarine Radio Room                                      |                       |                  | 17,700             |                    |
| 0304111N | 192  | Special Activities   |                       |                  |                    | 80,694             |
| 0305149N | 193  | COBRA JUDY   | 80,694                |                  |                    | 4,215              |
| 0305160N | 194  | Defense Meteorological Satellite Program                         | 4,215                 |                  |                    | 43,569             |
| 0305188N | 195  | Joint C4ISR Battle Center (JBC)                                  | 43,569                |                  |                    | 4,746              |
| 0305192N | 196  | Joint Military Intelligence Programs                             | 4,746                 |                  |                    | 53,439             |
| 0305204N | 197  | Tactical Unmanned Aerial Vehicles                                | 53,439                |                  |                    | 113,438            |
| 0305205N | 198  | Endurance Unmanned Aerial Vehicles                               | 113,438               |                  |                    | 13,191             |
| 0305206N | 199  | Airborne Reconnaissance Systems                                  | 10,191                | 3,000            |                    |                    |
| 0305206N |      | Passive Collision Avoidance and Reconnaissance                   |                       |                  | 3,000              |                    |
| 0305207N | 200  | Manned Reconnaissance Systems                                    | 20,203                |                  |                    | 20,203             |
| 0305208N | 201  | Distributed Common Ground Systems                                | 3,635                 | 6,000            |                    | 9,635              |
| 0305208N |      | Enterprise Targeting and Strike System                           |                       |                  | 6,000              |                    |
| 0305927N | 202  | Naval Space Surveillance   |                       |                  |                    | 24,909             |
| 0307207N | 203  | Aerial Common Sensor (ACS) (JMIP)                                | 24,909                |                  |                    | 7,262              |
| 0308601N | 204  | Modeling and Simulation Support                                  | 7,262                 |                  |                    | 56,565             |
| 0702207N | 205  | Depot Maintenance (Non-IF)                                       |                       |                  |                    | 10,265             |
| 0708011N | 206  | Industrial Preparedness  | 56,565                |                  |                    | 1,003,485          |
| 0708730N | 207  | National Shipbuilding Research Program                           | 10,265                |                  |                    |                    |
| XXXXXX   | 999  | Classified Programs  | 1,003,485             |                  |                    |                    |
|          |      | <b>TOTAL, OPERATIONAL SYSTEMS DEVELOPMENT</b>                    | <b>3,161,988</b>      | <b>36,700</b>    | <b>36,700</b>      | <b>3,198,688</b>   |
|          |      | <b>TOTAL, RESEARCH, DEVELOPMENT, TEST &amp; EVALUATION, NAVY</b> | <b>16,346,391</b>     | <b>(298,550)</b> | <b>527,900</b>     | <b>16,047,841</b>  |

(826,450)

## Items of Special Interest

*Advanced composite structures program*

The budget request contained \$81.2 million in PE 63561N, for advanced submarine systems development.

The committee notes that the success of the Navy's Phase I Large Scale Vessel (LSV) advanced composite sail program suggests that the use of composite materials can impart improved performance, significant increases in load carrying capacity and stealth characteristics to submarine sails and to surface combatant superstructures and hulls. Therefore, the committee recommends that the Secretary of the Navy expand the program to include the fabrication and test of full-scale composite structures.

The committee recommends an increase of \$7.0 million in PE 63561N to continue the program for development and evaluation of advanced composite structures for submarine and surface combatant applications.

*Advanced gun system for DD(X) multi-mission destroyer*

The budget request contained \$1,431.6 million in PE 64300N for DD(X) total ship systems engineering development and demonstration, including \$46.5 million for the advanced gun system (AGS), \$20.3 million of which is for continued development and testing of the engineering development model of the long-range land attack projectile.

The committee notes that the acquisition strategy for the DD(X) multi-mission destroyer includes the development and testing of engineering development models of the major component systems of the DD(X), including AGS, to ensure that these systems are ready for fielding with the first ship of the DD(X) class. The AGS system consists of a major caliber gun, automated ammunition handling systems, and the long-range land attack projectile family of munitions.

The committee recommends an increase of \$10.0 million in PE 64300N to continue development, integration, and testing of the long-range, land-attack projectile family of munitions with the AGS.

*Advanced laser diode arrays*

The budget request contained \$80.8 million in PE 63582N for combat systems integration advanced development and prototyping. The budget included no funds for continued development of advanced laser diode arrays.

The committee notes that the Navy is developing electrically driven high energy lasers for potential use in ship self defense against a variety of surface and air threats. High reliability and high power continuous wave diode arrays, efficient laser optical configurations, and advanced solid-state laser gain materials will be among the key technologies needed to reach the power levels required in a solid-state laser weapon system.

The committee recommends an increase of \$6.0 million in PE 63582N to continue the development of advanced laser diode arrays.

*Advanced mine detection program*

The budget request contained \$58.2 million in PE 63640M for the Marine Corps advanced technology demonstration, but included no funding for the advanced mine detection program.

The committee is aware that the Marine Corps urgently needs a backpack advanced mine detection capability with minimal false alarm rates. The committee notes that the Office of Naval Research has been working to develop an advanced mine detection system based on quadrupole resonance technology that has the potential to meet Marine Corps requirements.

The committee recommends an increase of \$3.0 million in PE 63640M to complete development of a quadrupole resonance technology advanced backpack mine detection system.

*Advanced processor build integration*

The budget request contained \$75.3 million in PE 64503N for system development and demonstration for SSN-688 and Trident submarine modernization.

The committee has strongly supported the use of the acoustic rapid commercial-off-the-shelf technology insertion (ARCI) program and use of advanced processor software builds (APB) to upgrade sonar systems on submarines, surface combatants, and other platforms. Use of the ARCI/APB process has enabled the United States Navy to regain the advantage in sonar systems that it lost in the 1980s.

The committee notes that the fiscal year 2005 budget request includes sufficient funds for APB integration to provide the fiscal year 2004 advanced processor build (APB-04) software update for 668I and SSGN submarine sonar systems. However, additional funding is needed to integrate APB-04 into the 688, SEAWOLF, and SSBN class ARCI systems and ensure that thirteen ships, for which the update is not presently funded, receive the updates before their planned deployments in fiscal year 2006.

The committee recommends an increase of \$20.0 million in PE 64503N for the Navy's unfunded requirement for integration of APB-04 update into the 688, SEAWOLF, and SSBN class ARCI systems.

*Aegis open architecture*

The budget request contained \$146.5 million in PE 64307N for Aegis combat system engineering systems development and demonstration.

The Aegis combat system engineering program includes the development of upgrades for cruiser and destroyer Aegis combat systems and the integration of new equipment and systems to keep pace with the threat and capture advances in technology. The committee notes that experiences aboard Aegis-equipped ships and shore sites have shown that the use of currently available commercial-off-the-shelf equipment requires periodic refreshment and additional development effort as new technologies become available and computer operating systems, device drivers, and interfaces are updated. To overcome these problems, the Navy is developing an open architecture computing environment for Aegis-equipped cruisers and destroyers as a part of the Navy's overall open architecture program. The goal of the program is to evolve combat systems into

a “system of systems” that resides on a common computing environment which will be less complex, more easily upgraded, and have lower total ownership costs.

The committee recommends \$168.3 million in PE 64307N, an increase of \$21.8 million to accelerate the development and introduction of an open architecture computing environment for the Aegis combat system.

#### *Affordable towed array construction*

The budget request contained \$75.6 million in PE 64503N for submarine system equipment development, including \$5.2 million to continue the development of affordable towed array technology initiatives for the development of fiber optic thin line towed arrays technology initiatives. The affordable towed array construction (ATAC) program employs fiber optic thinline arrays to provide reliability improvements by reducing system complexity, eliminating wet end electronics, enhancing littoral capability and incorporating robust array construction methods.

The committee believes that accelerating the development and fielding of fiber optic towed array technology using improved construction methods and processes would provide increased performance, reliability and operational capabilities at reduced costs.

Accordingly, the committee recommends an increase of \$6.0 million in PE 64503N to accelerate the development and introduction into the fleet of fiber optic thinline arrays.

#### *Affordable weapon system*

The budget request contained \$82.0 million in PE 63795N for land attack technology advanced component development and prototypes, and included \$28.9 million for development and demonstration of the affordable weapon system (AWS).

The AWS program began as an Office of Naval Research (ONR) advanced technology initiative to demonstrate the ability to design, develop, and build a capable and affordable precision guided weapon system at a cost that would be an order of magnitude cheaper than comparable weapons systems and in production would achieve a stable unit production cost very early in the production cycle.

The committee notes that the ONR program has been successful in all respects. In less than four years, the AWS program demonstrated the use of commercial-off-the-shelf (COTS) components to construct a 400–600 mile range, subsonic (180–220 knot), loitering, 200 pound payload, precision strike missile with global positioning inertial navigation system guidance; a control unit; and a data link. The missile has both line-of-sight and satellite data links for interaction with ground stations and forward observers and is reprogrammable in flight. In operational use the missile would be launched from CONEX-type containers that hold between six and twenty missiles and could be carried on land, sea, or air platforms. The initiative has demonstrated that the COTS approach can reduce costs by an order of magnitude from traditional cruise missiles. The current missile cost in large scale production, exclusive of warhead, is estimated to be approximately \$60,000.

Based on the results of the AWS advanced technology demonstration, the Department of Defense and the Navy decided to transition the AWS from the technology base to an accelerated advanced com-

ponent development and prototype program that demonstrates the ability to produce the missile at the projected cost; provides up to 100 missiles and launch and fire control equipment for developmental and operational testing; and supports user evaluation of the AWS for potential use by the fleet. Congress provided \$28.0 million to support the program in fiscal year 2004. The committee notes that shortfalls in science and technology funding for the AWS transition and delays in award of the development and production contract have delayed the program and completion of operational test and evaluation until the spring of 2005 and resulted in increased costs to complete the initial missile production buy.

The committee recommends an increase of \$23.0 million in PE 63795N to complete a 100-missile build of the AWS and support developmental and operational testing and fleet evaluation of the system.

#### *Airborne mine neutralization system*

The budget request contained \$50.5 million in PE 64373N for airborne mine countermeasures system development and demonstration, including \$15.6 million for continued development of the Airborne Mine Neutralization System (AMNS)

The AMNS is an expendable, remotely operated mine neutralization device that is deployed in shallow and deep water from the MH-53E and MH-60S mine countermeasures helicopters to explode unburied bottom and anchored sea mines, which are impractical or unsafe to counter using existing minesweeping techniques.

In an audit of the AMNS program completed in February 2004, the Department of Defense Inspector General (DOD IG) concluded that the program is well-managed overall. However, the DOD IG cited the decision to transition the MH-53E to a Rapid Deployment Capability as premature and recommended that the ASN(RDA) rescind approval and require full operational test and evaluation of the system to assure that it is operationally effective and capable of supporting real-world contingency operations. The DOD IG also found that the Navy did not perform an adequate analysis of alternatives to evaluate the cost- and operational- effectiveness of alternative courses of action and that the Program Executive Officer (Littoral and Mine Warfare) should not proceed further with the development and acquisition of the AMNS unless a comprehensive, independent analysis of alternatives justifies proceeding.

The committee recognizes that operational necessity may require the rapid deployment of interim or developmental capabilities in times of emergency, but also recognizes and supports the requirement that such systems be operationally capable and effective. The committee directs the Secretary of the Navy to report to the congressional defense committees by September 30, 2004, the actions that will be taken by the Department of the Navy to respond to the DOD IG's findings.

#### *Airborne reconnaissance systems*

The budget request contained \$10.2 million in PE 35206N for airborne reconnaissance systems, but included no funding for passive collision avoidance and reconnaissance (PCAR).

The committee is aware that unmanned aerial vehicles (UAV) must fly in regions that make them a potential hazard to commer-

cial and other manned aircraft. The committee notes that PCAR will sense an impending collision and allow the UAV to safely avoid approaching aircraft.

Therefore, to improve safety of UAV operations, the committee recommends \$13.2 million in PE 35206N, an increase of \$3.0 million for PCAR.

#### *AN/BLQ-10 test and support*

The budget request contained \$75.3 million in PE 64503N for system development and demonstration for SSN-688 and Trident submarine modernization, including \$1.4 million for submarine support equipment.

The submarine support equipment program develops and evaluates improvements in submarine electronic warfare support measures, including implementation of state-of-the-art technologies for periscope, mast, and engineering improvements in the AN/BLQ-10 tactical electronic support system.

The committee notes proposals for adaptation and evaluation of a commercial-off-the-shelf tester for electronic circuit card assemblies that could be used aboard submarines.

The committee recommends an increase of \$3.0 million in PE 64503N for adaptation and evaluation of a commercial-off-the-shelf tester for electronic circuit card assemblies for the AN/BLQ-10 tactical electronic support system.

#### *Anti-torpedo torpedo*

The budget request contained \$46.9 million in PE 63506N for surface ship torpedo defense advanced component development and prototyping.

The surface ship torpedo defense program develops the Tripwire AN/WSQ-11 torpedo defense system, which includes the Tripwire towed sensor and processor to detect a threat torpedo and provide launch orders for the associated anti-torpedo torpedo countermeasure. The committee notes that the anti-torpedo torpedo as the "offensive" response to the Tripwire launch detection is a critical part of the surface ship torpedo defense.

The committee recommends an increase of \$7.0 million in PE 63506N to accelerate development of the anti-torpedo torpedo as a part of the surface ship torpedo defense system.

#### *Automatic radar periscope detection and discrimination*

The budget request contained \$13.4 million in PE 64261N for acoustic search sensors system development and demonstration, including \$2.9 million to continue development of the automatic radar periscope detection and discrimination (ARPDD) project.

The ARPDD project provides fully automated periscope detection, classification and tracking capability to reliably detect periscopes and masts of submerged submarines and to discriminate periscopes from other targets. The committee notes that the Navy regards this capability as essential for effective detection of submarines in congested littoral waters. The current program of record provides for a four-year development cycle, followed by developmental and operational testing and a low rate initial production decision in fiscal year 2011. The budget request would be used for project planning and acquisition program documentation in preparation for award-

ing a contract for development of an airborne ARPDD capability. The committee notes that acceleration of the program is a priority for the Navy.

Accordingly, the committee recommends an increase of \$15.0 million in PE 64261N to accelerate ARPDD system development and demonstration and rapid introduction of the capability into the fleet.

*Aviation ship integration center*

The budget request contained \$157.5 million in PE 63512N for carrier systems advanced technology development and prototyping. No funds were included for the Aviation Ship Integration Center.

The Aviation Ship Integration Center supports the development and conceptualization of fully integrated advanced technology designs for future aircraft carriers. The center identifies, tests, and integrates transformational design changes and products for aviation capable ships and component systems, and permits the identification and resolution of potential problems early in the development cycle, thereby reducing overall engineering costs and facilitating the introduction of transformational initiatives in the CVN-21 carrier.

The committee notes that additional funding is required to expand and complete several key initiatives by the shipbuilder and appropriate government sponsors.

Congress appropriated \$9.8 million for the Aviation Ship Integration Center in fiscal year 2004. The Chief of Naval Operations has indicated the center is a critical unfunded requirement for fiscal year 2005.

The committee recommends an increase of \$10.0 million in PE 63512N for the Aviation Ship Integration Center.

*Aviation shipboard information technology initiative*

The budget request contained \$28.6 million in PE 64512N for system development and demonstration for shipboard aviation systems, but included no funds for continuation of the integrated aviation shipboard information technology initiative.

The aviation shipboard information technology initiative seeks to use state-of-the-art information technology and decision support systems to automate the current manually intensive process for collecting and distributing the information required to manage aviation operations on board aircraft carriers more efficiently and effectively. The committee notes continued progress in the initiative, now renamed the Aviation Data Management and Control Systems (ADMACS). The development of a common operating picture for carrier aviation operations and the ability through process automation and integration of key operational systems to provide an accurate status of weapons, aircraft, personnel, launch, and recovery systems throughout the ship should result in significant workload reductions, reduced mission planning and execution time, and an increased sortie generation rate. In addition to the operational impact of ADMACS, the committee notes estimates of operations and support cost savings of \$2.0 million per year per ship and workload savings of 45 man-years per year per ship. Congress has provided a total of \$7.8 million for the program since fiscal year 2002.

The committee recommends an increase of \$4.0 million in PE 64512N to continue the development of ADMACS. The committee expects the Navy to include funding for any further development of ADMACS in the Navy's core aviation program beginning with the fiscal year 2006 budget request.

*Biomedical research imaging*

The budget request contained \$16.7 million in PE 63729N for warfighter protection advanced technology development.

The committee continues to note the progress being made in the use of advanced imaging technology in biomedical research. The program develops new tools and diagnostic procedures that improve the efficiency and accuracy of biomedical research in bone marrow transplantation and breast and prostate cancer, and the potential for new collaboration between previous unconnected medical specialties. The committee believes that these findings have important implications for advances in real-time medical diagnosis and treatment and for the application of advanced data fusion technologies in other areas.

The committee recommends an increase of \$5.0 million in PE 63729N to continue research in the applications of advanced imaging technology to biomedical research.

*Center for critical infrastructure protection*

The budget request contained \$96.3 million for force protection applied research, but included no funding for the Center for Critical Infrastructure Protection (CCIP).

The committee believes that the Department of Defense should place a greater emphasis on its acknowledged mission of protecting critical defense infrastructure, such as ports, railroads, and pipelines. Sustained force protection of fixed defense-critical national assets requires additional research on sustained and integrated surveillance and sensing capabilities. The CCIP is an innovative program that will explore such technologies on a continuing basis, helping to develop the most comprehensive security systems for the nation's critical defense infrastructure.

The committee recommends an increase of \$5.0 million in PE 62123N for this important research.

*Claymore marine*

The budget request contained \$4.5 million in PE 63254N for anti-submarine warfare (ASW) systems development.

The committee notes that the Navy established the Claymore Marine program to investigate and demonstrate a new littoral anti-submarine warfare (ASW) system that integrates the previously developed ATD-111 airborne ASW and mine hunting system with new signal processing algorithms to achieve a significant increase in performance.

The committee recommends an increase of \$7.0 million in PE 63254N for the Claymore Marine program.

*Common submarine radio room*

The budget request contained \$18.7 million in PE 33140N for information systems security program operational systems development.

The committee notes that the radio room on many of today's ships uses outdated, and in some cases, obsolete technologies. As a result, the systems that support ship communications in the radio room are labor intensive, require heavy and costly maintenance, suffer from operator overload and require large numbers of highly skilled operators. The Navy developed the Common Submarine Radio Room (CSRR) in the Virginia Class submarine program and now plans to standardize radio rooms across all submarine classes using the CSRR model. CSRR will reduce the cost, training, and maintenance of submarine radio rooms and, through increased use of automation, will permit the reduction of personnel required to stand watch in the radio room. In the future the CSRR concept may be extended to the surface fleet.

The committee recommends \$36.4 million in PE 33140N, an increase of \$17.7 million for the Navy's unfunded requirement for the CSRR.

*Composite ceramic unmanned underwater vehicle*

The budget request contained \$63.7 million in PE 62236N for warfighter sustainment advanced technology development, but included no funding for development of a composite ceramic unmanned underwater vehicle.

The committee notes that the high cost of development and manufacture of advanced underwater vehicles (UUV) and that the long design and development lifecycle have significantly limited introduction of innovative UUV capabilities. The committee is aware that the composite ceramic unmanned underwater vehicle program plans to use advanced ceramic material research for the rapid development of high-performance, low cost, modular UUVs. The committee supports the development of high-performance UUVs, using advanced composite technology, ceramic component technology and water-soluble tooling, and integration of next-generation sensors, guidance and control, propulsion and payloads. The committee expects that this technology could replace steel construction with light-weight, high strength, corrosion resistant ceramics and polymers.

The committee recommends an increase of \$8.0 million in PE 62236N for composite ceramic unmanned underwater vehicle applied research.

*Consolidated undersea situational awareness*

The budget request contained \$79.5 million in PE 63235N for common picture advanced technology development, but included no funds to continue development of the consolidated undersea situational awareness system (CUSAS).

The committee notes that CUSAS is a decision-support system that would provide knowledge superiority to undersea warfare (USW) forces through the use of advanced, interactive, decision support software. Developed initially under the Defense Advanced Research Projects Agency, CUSAS would offer significant improvements in situational awareness for fleet operators through the use of high fidelity, two- and three-dimensional presentations, augmented with real-time, intelligent agent-based, tactical recommendations.

The committee notes the progress in the development of CUSAS. The system has demonstrated the capability to interface with, process, and display all sources of sensor and intelligence data onboard a U.S. submarine. The core technology has been installed and successfully demonstrated in an operational tactical submarine trainer and a follow-on at-sea demonstration is scheduled later in 2004. The committee believes that successful development of the CUSAS decision support system would provide a capability that would significantly assist submarine commanders to make rapid and informed decisions in critical combat operations.

The committee recommends an increase of \$4.0 million in PE 63235N to continue development of CUSAS.

*DD(X) multi-mission destroyer*

The fiscal year 2005 budget request included \$1,450.6 million for the DD(X) multi-mission destroyer, including \$1,431.5 million in PE 64300N and \$19.0 million in PE 63513N, to continue detailed design and, using RDT&E funding, to begin construction of the first ship of the DD(X) class. Of the amount requested, \$221.1 million is for construction.

DD(X) is a multi-mission surface combatant tailored for land attack in support of the ground campaign and maritime dominance. In addition, the DD(X) program will provide a baseline for development of technology and engineering to support a range of future surface ships such as the CG(X) future cruiser and the Littoral Combat Ship. A Milestone B acquisition decision is scheduled for mid-fiscal year 2005. Delivery of the first ship of the class to the fleet is currently planned for fiscal year 2011. The Navy wants to procure a total of 24 DD(X)s at a unit procurement cost of \$1,200 million to \$1,400 million.

The committee has strongly supported the DD(X) program since its inception. DD(X) will be the advanced technology platform for transformational technologies including an integrated power system and electric drive; an advanced gun system; a new multi-function radar/volume search radar suite; optimal manning through advanced system automation; stealth through reduced acoustic, magnetic, infrared, and radar cross-section signatures; and enhanced survivability through automated damage control and fire protection systems. The committee report on H.R. 1588 (H. Rept. 108–106) noted that the ship's operational requirements and key performance parameters, which affect the mission capabilities, design, and size of the ship, were under review. Subsequently, the Navy decided to reduce the size of the DD(X) from a full load displacement of approximately 18,000 tons to 14,000 tons.

In its report, "Defense Acquisitions—Assessments of Major Weapons Programs," dated March 2004, the General Accounting Office (GAO) assessed the DD(X) as entering system development with none of its 12 critical technologies fully mature (and thereby subject to a higher risk of completing development at the planned cost and schedule). The program manager is pursuing risk mitigation by constructing and testing engineering development models for the critical technologies; however, the acquisition strategy calls for engineering development model construction and testing to be done concurrently with system design. The decision to reduce the weight of the ship prompted redesign of the advanced gun system

and hull form engineering development models. Because of schedule slippage, only two engineering development models (the hull form and the integrated power system) would be mature by the award of the lead ship construction contract, currently planned for September 2005. Current testing schedules call for the integrated power system, dual band radar suite, total ship computing environment, and peripheral vertical launching system to continue development beyond the lead ship production decision. In the GAO's view, should any of these innovative technologies encounter challenges that cannot be accommodated within the current design margins, redesign of other technologies and of the integrated ship system may be needed. Redesign would likely result in additional costs and schedule delays and affect the planned installation schedule. In addition, because the DD(X) acquisition strategy focuses on developing and maturing technologies that could be leveraged across multiple ship classes, delay in the maturation of critical technologies would increase the risk for other development programs.

The committee notes that the engineering development models of the integrated power system and the advanced gun system are scheduled to complete land-based testing by the end of fiscal year 2005 and the multi-function radar will have completed two-thirds of its land-based and at-sea testing by that date. The committee believes that it would be prudent to delay the award of the contract for construction of the first ship of the class from fiscal year 2005 to fiscal year 2006 in order to accommodate any results from the testing of these critical systems in the design of the ship prior to beginning construction. The committee recommends that the DD(X) program be restructured to reduce concurrency and develop technology "off-ramps" for technologies that do not mature.

Accordingly, the committee recommends a decrease of \$221.1 million in PE 64300N and deferring the initiation of construction of the lead ship from fiscal year 2005 to fiscal year 2006.

#### *Deployable joint command and control*

The budget request contained \$42.4 million in PE 63237N for research and development of the Deployable Joint Command and Control System (DJC2) and \$32.5 million for procurement of two DJC2 cores (120 seats total) for the European Command.

The committee supports the concept of establishing a standing joint force headquarters within each of the regional combatant commands (RCCs) and of providing standardized joint command and control capabilities for the commands. However, the committee questions the acquisition strategy to procure, equip, and provide technology updates for this program. The committee is concerned that the schedule to procure and equip the first set of two cores per RCC is too aggressive and may not accomplish its schedule due to lack of technology integration for the information systems and applications that are required for this program.

While the committee understands that each combatant commander would like four core systems, for a potential of up to 240 seats per RCC, the committee notes the Department has not devised a capital planning strategy to pay for the second set of two cores per RCC. Furthermore, there is no justification to show how the Department plans to pay for updating hardware and software

systems to prevent them from becoming obsolete by fiscal year 2008.

Accordingly, the committee directs the Secretary of the Navy, in coordination with the commander, Joint Forces Command, to provide a report to the congressional defense committees by March 31, 2005, detailing a systems architecture, performance metrics, management plan for the development of DJC2, and a capital planning investment strategy as to how the Department plans to fund the second set of two cores per combatant command.

*Digital modular radio*

The budget request contained \$78.6 million in PE 64280N for system development and demonstration for the Joint Tactical Radio System-Navy (JTRS-Navy). No funds were requested to continue system development and demonstration for the digital modular radio (DMR).

DMR is a digital, modular, software programmable, multi-channel, multi-function and multi-band (2 megahertz—2 gigahertz) radio system that would provide improved fleet radio communications in the high, very-high, and ultra-high frequency radio bands. DMR would replace and be interoperable and backwards compatible with currently deployed Navy radio systems.

The committee notes that the Department of Defense has mandated that all future tactical radio procurements must be compliant with the Joint Tactical Radio System (JTRS). The committee also notes that the contract for a commercial-off-the-shelf, non-development initiative DMR was awarded before the JTRS architecture and acquisition strategy was established.

The committee recommends an increase of \$15.0 million in PE 64280N to continue development of the DMR and bring the DMR operating environment software to full compliance with the JTRS common architecture (version 2.2).

*DP-2 thrust vectoring system*

The budget request contained \$92.4 million in PE 63114N for power projection advanced technology development, but included no funding for continuation of the DP-2 thrust vectoring system demonstration.

DP-2 is a proof-of-concept program to demonstrate the use of jet-powered, thrust vector control in a light weight composite airframe to achieve vertical takeoff and short takeoff and landing in a one-half scale flight test vehicle. The committee notes the progress to date in the program and believes that the potential for a successful proof-of-concept demonstration justifies continuation of the program.

The committee recommends an increase of \$10.0 million in PE 63114N to continue development and demonstration of the DP-2 thrust vector system concept, leading to potential flight test of the one-half scale airframe.

*Electromagnetic gun program*

The budget request contained \$82.1 million in PE 63123N for force protection advanced technology development.

In section 211 of the National Defense Authorization Act for Fiscal Year 2004 (Public Law 108-136), Congress directs the Secretary

of Defense to establish and carry out a collaborative program among the Director of Defense Research and Engineering, Defense Advanced Research Projects Agency, the Army, the Navy, and other appropriate Department of Defense activities, for evaluation and demonstration of advanced technologies and concepts for advanced gun systems that use electromagnetic propulsion for direct and indirect fire applications. The committee believes that the development of electromagnetic gun technology would have potentially high payoff for U.S. armed forces in both direct and indirect fire weapons systems, and that the major investment made by the Department of Defense (principally by the Army) in this technology over the last 20 years is beginning to provide significant returns. In the fiscal year 2005 budget request, the committee notes significant shortfalls in Department of the Navy funding for the program.

Accordingly, the committee recommends an increase of \$9.5 million in PE 63123N for electromagnetic gun technology advanced development.

*Embedded national tactical receiver integration with advanced anti-radiation guided missile*

The budget request included \$163.4 million in PE 25601N for operational systems development for high-speed anti-radiation missile (HARM) improvement, including \$53.5 million for the advanced anti-radiation guided missile (AARGM).

The embedded national tactical receiver (ENTR) is a circuit card capable of receiving global surveillance information. Integrating the ENTR in the AARGM would facilitate the engagement of time sensitive and critical targets by adding the ability for the missile to receive threat data from national assets, thereby enlarging the target set and increasing aircrew situational awareness. The capability of such a system to receive near real time intelligence data will enhance the suppression of enemy air defense by increasing the ability to engage the most current surface-to-air missile threats in denied access area.

The committee recommends \$165.4 million in PE 25601N, an increase of \$2.0 million to integrate the ENTR in the AARGM.

*Emerging/critical interconnection technology*

The budget request contained \$61.1 million in PE 63236N for warfighter sustainment advanced technology development but no funds were requested for continuation of the electronic interconnection research and development program.

The committee notes that printed circuit boards are fundamental components of military navigation, guidance and control, electronic warfare, missile, and surveillance and communications equipment. The committee notes that printed circuit boards for military systems have unique design requirements for high performance, high reliability, and the ability to operate under extreme environmental conditions that require the use of high density, highly rugged, and highly reliable interconnection technology. The committee also notes that the commercial printed circuit board industry focuses on the design and high-volume production of low-cost boards and the United States has lost much of its printed circuit board manufacturing capability to overseas sources. The committee recognizes the need to enhance the U.S. capability for development and production

of high density, highly reliable printed circuit boards for use in U.S. military systems. Congress appropriated \$3.5 million in fiscal year 2004 for this program.

The committee recommends an increase of \$4.0 million in PE 63236N to continue the program for development of emerging and critical printed circuit interconnection technology. The committee expects that the electronic interconnection research and development program will be included in the Navy's core research and development program in the fiscal year 2006 budget request.

#### *Enterprise resource planning*

The budget request contained \$109.5 million in PE 65013N for information technology (IT) development, including the Enterprise Resource Planning (ERP) program.

The Navy ERP program is intended to provide a standard set of tools to Navy organizations to facilitate business process re-engineering and provide interoperable data for acquisition, financial, and logistics operations. The committee understands that this new program would converge the four existing ERP pilot programs in various Navy commands into one larger ERP.

The committee believes the Navy should select the most comprehensive ERP pilot for the entire Navy's use and terminate the other three pilots. Accordingly, the committee recommends \$26.5 million in PE 65013N for IT programs, a decrease of \$83.0 million for the ERP program.

#### *Enterprise targeting and strike system*

The budget request contained \$3.6 million in PE 35208N for the development of the Navy's enterprise targeting and strike system (eTSS). This program will employ web-enabled enterprise technologies across existing operational capabilities. By using commercial e-business technologies, eTSS transforms the Navy's targeting, strike and mission-planning systems by integrating combat platforms and their support components into a single hardware dispersed web-enabled enterprise. The committee supports this non-proprietary, open standards solution that is consistent with the Department of the Navy's other important information technology programs. The committee also supports the program's goal of supporting globally distributed, joint, collaborative, time critical, strike operations within the Global Information Grid (GIG) architecture.

Accordingly, the committee recommends \$9.6 million in PE 35208N, an increase of \$6.0 million, for the acceleration and deployment of eTSS.

#### *Evolved sea sparrow missile capability for large decks*

The budget request contained \$48.2 million in PE 64755N for ship self defense (detect and control) system development and demonstration.

The committee notes the requirement for large deck amphibious ships and aircraft carriers to be capable of countering the anti-ship cruise missile (ASCM) threat.

The committee notes that the Navy has identified the Evolved Sea Sparrow Missile (ESSM) capability for large deck amphibious ships as a critical unfunded requirement in the fiscal year 2005 budget request. Additional funds are required to develop the com-

plete SSDS Mk 2 software configuration modification for LHD 1 class ships; initiate integration of the ESSM into the SSDS Mk 2 computer program; and procure the Reconfigured NATO Sea Sparrow Missile System (RNSSMS), a Mk 29 missile launching system, an AN/SPQ-9B radar system, and a cooperative engagement capability (CEC) system for the LHD 1.

The committee recommends the following to address the Navy's unfunded requirement for providing the ESSM capability on large deck amphibious ships:

- (1) An increase of \$15.3 million in PE 64755N for SSDS Mk 2 system development and demonstration;
- (2) An increase of \$8.7 million for one Reconfigured NATO Sea Sparrow Missile System (RNSSMS);
- (3) An increase of \$6.0 million for one AN/SPQ-9B radar system; and
- (4) An increase of \$4.2 million for one cooperative engagement capability system.

#### *Formable aligned carbon thermosets*

The budget request contained \$63.7 million in PE 62236N for warfighter sustainment applied research, but included no funds for formable aligned carbon thermosets (FACTS).

The committee continues to support the development and demonstration of FACTS, which employ stretch broken fibers to give the composite material plasticity akin to metals. FACTS also significantly eases the formation of composite parts for use in aircraft and other construction where weight savings and reduced operation and maintenance costs are desired. The use of FACTS is expected to increase significantly the percentage of airframes that can be fabricated from composites, reduce the cost of the composite structure, permit the use of more efficient designs, and significantly lower the weight of the airframes.

The committee recommends an increase of \$2.0 million in PE 62236N to continue the program for development and demonstration of FACTS product technology.

#### *Gallium nitride radio-frequency power technology*

The budget request contained \$49.2 million in PE 62271N for radio frequency systems applied research.

Gallium nitride (GaN) radio frequency power microelectronics is a wide band gap power semiconductor technology that has several key advantages over radio frequency component technologies now in use, including higher power density, better heat dissipation, and increased bandwidth. This new technology could lead to dramatic improvements in system performance, such as significant increases in the range of radar systems and enabling such systems to more effectively identify threat signatures in the presence of terrain background clutter. Congress authorized \$3.0 million for GaN microelectronics and materials development in fiscal year 2004.

The committee recommends an increase of \$3.0 million in PE 62271N to continue the program for applied research in GaN wide band gap semiconductor materials and power microelectronics.

*Hemoglobin-based oxygen carrier*

The budget request contained \$6.9 million in PE 64771N for medical system development and demonstration. No funds were specifically requested to continue the development of hemoglobin-based oxygen carrier technology.

The committee notes that there is currently no effective method of providing front-line resuscitative treatment (i.e. immediate oxygen-carrying support) for acute blood loss to wounded soldiers on the battlefield and civilian trauma victims in an out-of-hospital setting. The single major cause of death in potentially salvageable battlefield casualties is hemorrhage and blood loss, and early intervention to treat hemorrhage provides the greatest opportunity for reducing mortality and morbidity. Although blood transfusion is not practical in far forward or out-of-hospital settings, hemoglobin-based oxygen carriers have the characteristics of stability at room temperature that overcome many of the medical and logistical problems associated with red blood cell transfusion.

In fiscal year 2002 Congress initiated a program for evaluation of hemoglobin-based oxygen carriers for the treatment of trauma casualties. Based on the progress in the program the U.S. Naval Medical Research Center is directing a clinical development and trials program to evaluate the safety and efficacy of a particular hemoglobin-based oxygen carrier. The program is designed to serve as the basis for U.S. Food and Drug Administration approval and subsequent licensing of the product for military and civilian trauma applications.

The committee recommends an increase of \$13.0 million in PE 64771N to continue the program for development and clinical trials of hemoglobin-based oxygen carriers for treatment of trauma casualties.

*High temperature superconducting AC synchronous ship propulsion motor*

The budget request contained \$82.1 million in PE 63123N for force protection advanced technology development, including \$16.0 million to continue development of a 36.5 megawatt class, high temperature superconducting alternating current (AC) synchronous motor.

The committee notes that development of component technologies for the all electric warship is one of the major goals of the Navy's science and technology program. In fiscal year 2003, the Navy awarded a contract for development and demonstration of high temperature, superconducting AC synchronous motor technology in a 36.5 megawatt propulsion motor and drive system that would be designed to be compatible with Navy electric warship concepts and performance requirements, and would be available to begin Navy evaluation in fiscal year 2006. The committee is informed that the Navy's budget request is not sufficient to maintain the program schedule.

The committee recommends an increase of \$8.0 million in PE 63123N to maintain the schedule for development of the AC synchronous high temperature superconducting motor.

*Hybrid POSS composites development*

The budget request contained \$96.3 million in PE 62123N for force protection applied research.

The committee notes that the use of composite materials in naval aircraft continues to increase and the use of composites for ship and submarine applications is becoming more acceptable. Organic polymers are the main component of the composite resin technology that is currently in use; however, the limited capability of composites to survive the effects of a shipboard fire is the main obstacle to more extensive use and there are no resin systems which entirely meet military standards. The committee notes that hybrid (organic-inorganic) POSS polymers have been demonstrated that meet the fire retardance standard of Military Specification 2031, but have not yet been qualified for use on board ships. The committee is aware that in fiscal year 2004, the Navy has committed to conduct a 1/4-scale demonstration of the fire retardancy of hybrid POSS composite resins. The committee believes that it is important that the POSS resin technology be fully demonstrated in fiscal year 2005 in order to insure that the resin is qualified as a candidate for use in the DD(X) multi-mission destroyer and the Littoral Combat Ship.

The committee recommends an increase of \$2.0 million in PE 62123N to continue applied research in the design, fabrication, testing, and qualification of POSS composites for shipboard use by the Navy.

*Integrated personnel protection system*

The budget request contained \$98.8 million in PE 62114N for power protection applied research.

The committee notes Navy requirements for improving the protection of Navy ships and personnel from natural or combat hazards ashore and afloat. Although many advances have been made in personnel protection equipment for Navy personnel, many situations exist in which current personnel protective equipment is inadequate. The committee is aware of advances in technologies for protection of Navy personnel from fire, chemical, and biological hazards that, when combined with an integrated individual display system and interconnected through an ultra-wideband personnel communications network, would provide enhanced situational awareness and communications capabilities for the monitoring of personnel situations and coordination of crew response in critical situations.

The committee recommends an increase of \$3.0 million in PE 62114N for applied research in integrated personnel protection systems.

*Integrated radar optical surveillance and sighting system*

The budget request contained \$48.2 million in PE 64755N for ship self defense (detect and control) system development and demonstration.

The committee notes that, in view of the current world situation and the worldwide deployment of United States naval forces, protection of high value surface assets has become highly important.

The integrated radar optical surveillance and sighting system (IROS3) integrates commercial-off-the-shelf systems in a non-pro-

prietary, network architecture to provide a digital radar picture, electro-optical sensor, non-lethal deterrent, and remote engagement by small arms and minor caliber guns. In addition to providing a capability to detect and classify asymmetric surface threats, maintain 360-degree situational awareness around the ship, and effectively engage small close-in threats, IROS3 would also enhance the capability for surface warfare, navigation, maritime intercept operations and related naval missions. Congress provided \$4.2 million in fiscal year 2004 to continue development of the IROS3.

The committee recommends an increase of \$3.5 million in PE 64755N for demonstration and evaluation of the IROS3 system.

#### *Intermediate modulus carbon fiber qualification*

The budget request contained \$61.1 million in PE 63236N for warfighter sustainment advanced technology development. No funds were requested to continue the qualification of commercially available intermediate modulus carbon fibers.

The committee supports efforts to transition new materials and processes for use in present and future aircraft and missile systems. The committee is encouraged by the Navy's efforts to establish a second production source for intermediate modulus carbon fiber to ensure more competitive practices. In fiscal year 1997, the Navy initiated an effort to develop a protocol for the qualification of new materials, second source materials, and new processes for use on naval aircraft and missile systems. The Navy has developed a certification protocol for the qualification of commercially available intermediate modulus carbon fibers, which are used to strengthen aircraft and missile bodies. To date \$5.5 million has been provided for this qualification program.

The committee recommends an increase of \$4.0 million in PE 63236N to complete the qualification program for commercially available intermediate modulus carbon fibers.

#### *Interrogator for high-speed retro-reflective communications*

The budget request contained \$98.8 million in PE 62114N for power project applied research, but included no funding for a high-speed retro-reflectometer communications data link.

The committee notes that the Naval Research Laboratory (NRL) has been conducting extensive research into the use of modulated retro-reflectors, which would eliminate the need for an unmanned aerial vehicle (UAV) to carry a laser for downlink communications. NRL's progress to date is promising and includes the development of a prototype interrogator with fine steering optics and software, laser tracking algorithms, hardware and software, electronics, and return signal collection and demodulation to effectively test a ship-to-shore communications scenario. A second prototype will be demonstrated in an air-to-ground scenario.

The committee notes that additional funding in fiscal year 2005 would permit NRL to develop and demonstrate a miniaturized prototype high-speed data link with an interrogator designed for easy transport, setting the stage for demonstrations of further system applications.

The committee recommends an increase of \$3.0 million in PE 62114N to continue development of a laser interrogator for high-speed retro-reflectometer communications data link.

*Joint integrated systems technology*

The budget request contained \$573.1 million in PE 33109N for Satellite Communications (SATCOM) operational system development.

The Joint Integrated Satellite Communications (JIST) is a web-based satellite communications planning and management technology that utilizes the Department of Defense's existing internet protocol router to expand the flexibility and efficiency of military satellite communications across a broad spectrum of radio frequencies. The committee continues to believe that developmental systems like JIST, based on common standards, are key to increased satellite communications efficiency and maximizing the utilization of available spectrum resources across legacy and follow-on satellite communications systems.

The committee recommends \$581.1 million in PE 33109N, an increase of \$8.0 million to continue the JIST program for development of a uniform web-based architecture for SATCOM mission planning and resource allocation.

*Joint Strike Fighter*

The budget request included \$2,264.5 million in the Department of the Navy and \$2,307.4 million in the Department of the Air Force for the Joint Strike Fighter (JSF) program.

In order to maintain competition for the engine for the JSF, Congress has mandated the funding of an alternate engine program and the JSF Joint Program Office (JPO) is working with the contractor propulsion teams to provide for completely interchangeable engines.

The committee believes that the earliest possible engine production lot competition is beneficial to the JSF program. The committee directs the JSF JPO plan to compete, at the earliest possible date, engine common hardware as well as the turbomachinery, while maintaining PW F135 and GE F136 engine interchangeability.

*Laser radar data exploitation*

The budget request contained \$92.4 million in PE 63114N for power projection advanced technology development.

The committee notes that laser radar (LADAR) seekers provide high-quality, high-resolution, three-dimensional imagery of the target area that is used by the seeker for autonomous target recognition (ATR) and location. The committee also notes the development of LADAR imagery viewing software for engineering analysis of the ATR algorithms and believes that such technology can be exploited for intelligence, surveillance, and reconnaissance purposes. The imagery, if down-linked or otherwise made available to the user, could be used to support three-dimensional target area visualization, aim point analysis, mission planning, and attack plan rehearsal.

The committee recommends an increase of \$3.0 million in PE 63114N for the continued development of software tools for laser radar imagery analysis and the development of concepts of operations and procedures for exploiting LADAR imagery for mission planning, mapping, and three-dimensional target area visualization.

*Littoral combat ship*

The budget request contains \$352.1 million in PE 63581N for the Littoral Combat Ship (LCS), including \$244.4 million for LCS development and \$107.7 million for construction, using RDT&E funds for the first ship of the LCS class.

The LCS is a planned new Navy surface combatant for fighting in heavily contested littoral waters that would be the smallest member of the DD(X) family of next-generation surface combatants and has been identified in budget reviews as a key component of Navy transformation. A fast, agile, and stealthy surface combatant, LCS missions include mine countermeasures, littoral anti-submarine warfare, and countering fast attack craft (i.e. "swarm boats") in heavily contested littoral waters. Secondary missions include intelligence, surveillance, and reconnaissance; homeland defense/maritime intercept; special operations forces support; and logistics support for movement of personnel and supplies.

LCS would be the first Navy ship to separate capability from hull form. Modular mission payloads and open-system architecture are intended to be used to configure the LCS for particular missions. LCS would be much smaller and faster than the Navy's current major surface combatants (2,000–3,000 ton displacement and a maximum speed of 40 to 50 knots) and would have a reduced crew size of 15 to 50 core members. Three contractor teams are competing for the LCS prime contract and two will be selected later this year for the next phase of the competition. The Navy wants to procure 56 LCSs at an estimated unit cost of \$150.0 to \$220.0 million for the ship alone and \$250.0 million, including a representative mission payload package. The total acquisition cost for the program could exceed \$14,000 million. Congress provided \$166.0 million for LCS in fiscal year 2004. The Chief of Naval Operations has identified an unfunded requirement of \$74.7 million for LCS mission module development in fiscal year 2005.

Prior to announcing the LCS program, the Navy did not conduct a formal analysis of alternatives to demonstrate that a ship like the LCS would be more cost-effective for performing the stated missions than potential alternative approaches. In the statement of managers accompanying the conference report on H.R. 4546 (H. Rept. 107–772), the conferees raised a number of issues with respect to the development of LCS. The Secretary of the Navy's report on those issues was a brief, summary document that provided little detail with regard to the analysis performed by the Navy in developing the requirement and the concept for LCS. The Navy's March 2004 report on LCS requirements, concepts of operations, acquisition strategy, and systems that would be replaced by LCS was also a relatively brief summary document that provided little new information about the LCS program. Congress has directed the General Accounting Office to report by March 1, 2005, on the LCS program's analytical justification, concept of operations, technical maturity, and potential costs.

The committee continues to have concerns about the lack of a rigorous analysis of alternative concepts for performance of the LCS mission, the justification for the force structure sought by the Navy, and whether the program's acquisition strategy is necessary to meet an urgent operational need. In view of continued unfunded requirements for mission module development and experimentation

and what the committee believes is the need for more thorough evaluation program, the committee is concerned about the Navy's ability to resolve these issues before committing to the design for the LCS and beginning construction of the first ship. Finally, the committee is concerned about whether the program schedule provides sufficient time and capabilities for experimentation and evaluation of the operational concepts for LCS before committing to major serial production of the ship.

Consequently, the committee recommends \$244.4 million in PE 63581N for the LCS, a decrease of \$107.7 million for LCS construction. The committee also recommends that the construction of the first Flight 0 LCS be delayed until fiscal year 2006.

*Littoral support craft-experimental*

The budget request contained \$82.1 million in PE 63123N for force protection advanced technology development, including \$10.2 million to continue development and demonstration of the Littoral Surface Craft-Experimental (LSC-X).

The LSC-X or "X-Craft" is a science and technology platform designed for experimentation with lifting bodies, drag reduction and mission modularity. A high-speed, all-aluminum catamaran, the LSC-X displaces 1,400 tons at full load. Performance requirements are speeds of 50 knots at a combat load of about 1,200 tons and 40 knots in sea state four, and a range of 4,000 nautical miles without replenishment. The LSC-X will be capable of landing two helicopters up to the size of the SH-60R, transporting and operating autonomous vehicles, and carrying several reconfigurable mission modules in standard twenty-foot-equivalent unit boxes. The operating crew will be minimal and the vessel will be built to commercial American Bureau of Shipping standards. As expressed in the committee report on H.R. 4546 (H. Rept. 107-436), the committee continues to believe that an experimental vessel such as the LSC-X would be an effective experimental test bed for many of the technologies that might be chosen for use on the Littoral Combat Ship (LCS). The committee encourages the Secretary of the Navy to carry out such an experimentation program as a part of the process for developing the operational and design requirements for the LCS.

The committee recommends an increase of \$25.8 million in PE 63123N to complete construction of the LSC-X, high-speed performance testing at-sea, and mission module demonstrations.

*Low acoustic signature motor/propulsor*

The budget request contained \$64.1 million in PE 62747N for undersea warfare advanced technology development.

The committee notes that the low acoustic signature motor propulsor for electrically powered undersea vehicles (LAMPREY) will demonstrate an integrated motor-propulsor and power converter with extremely low acoustic signature for undersea vehicles. When integrated with an already developed, high power lithium-propulsion system, the LAMPREY program will represent a new propulsion system for an upgraded MK-48 Advanced Capability torpedo. The LAMPREY test vehicle will also represent a 1/20th-scale submarine and will provide valuable data for a larger scale version of the propulsion system that could ultimately be used in

Virginia class submarines. Congress provided \$2.1 million in fiscal year 2003 and \$1.8 million in fiscal year 2004 for the LAMPREY program.

The committee recommends an increase of \$1.0 million in PE 62747N to complete on-range testing of the LAMPREY test vehicle to verify acoustic performance of the propulsion system and maximum speed, range, and maneuvering characteristics.

*Low-cost terminal imaging seeker*

The budget request contained \$92.4 million in PE 63114N for power projection advanced technology development.

The committee notes that the Naval Air Warfare Center, Weapons Division, China Lake is demonstrating a low-cost precision guidance upgrade kit for a low-cost terminal imaging seeker (LCTIS) that is an out-growth of the low-cost guided imaging rocket (LOGIR) project. The committee believes that the technology which would be demonstrated in the LCTIS could have application to the advanced precision kill weapon system, the joint common missile, and the small diameter bomb and would be a risk reduction alternative for all three of these programs. The committee notes that the plan for use of additional fiscal year 2005 funding for the LCTIS project would include development and test of seeker guidance and control alternatives and seeker signal processing algorithms.

The committee recommends an increase of \$5.0 million in PE 63114N for LCTIS advanced technology development and demonstration.

*Low-power mega-performance unmanned aerial vehicle processing engines*

The budget request contained \$92.4 million in PE 63114N for power projection advanced technology, but included no funding for low-power mega-performance unmanned aerial vehicle processing engines.

The committee continues to support the development of improved signal processing capability for unmanned aerial vehicles for precision targeting and other missions. The committee notes that the massively parallel processing technology being developed under the low-power mega-performance unmanned aerial vehicle processing engines program should provide significantly enhanced on-board sensor processing capabilities that will address the difficult computational challenge of on-board sensor processing capabilities for unmanned aerial vehicles and will greatly enhance sensor performance and surveillance capabilities. Congress appropriated \$1.5 million for the program in fiscal year 2004.

The committee recommends an increase of \$7.0 million in PE 63114N to accelerate advanced technology development of low-power mega-performance unmanned aerial vehicle processing engines.

*Marine mammal research program*

The budget request contained \$63.7 million in PE 62236N for warfighter sustainment applied research, but included no funds for continuation of the marine mammal research program.

The committee notes continuing public concern about the effect of sound on the behavior and well-being of marine mammals and continues to support research in these areas. The marine mammal research program investigates the effects of noise on dolphin hearing and dolphin biosonar capabilities, conducts joint visual and acoustic surveys of the behavior of humpback whales, and supports research in bioacoustical oceanography.

The committee recommends an increase of \$2.2 million in PE 62236N to continue the program for research in marine mammal behavior, the effects of sound on marine mammals, and bioacoustical oceanography.

#### *Nanoscience and nanomaterials*

The budget request contained \$375.8 million in PE 61153N for defense research sciences, including \$65.8 million for basic research in advanced naval materials sciences.

The committee notes continuing progress in research in nanoscience and nanomaterials. The committee is also aware that the application of these new concepts and technologies in improved materials, novel structures, and integrated multifunctional composite materials and structures that address high priority Navy science and technology needs and future Navy capabilities.

The committee recommends an increase of \$3.0 million in PE 61153N for basic research in nanoscience and nanomaterials.

#### *One megawatt molten carbonate fuel cell demonstrator*

The budget request contained \$1.5 million in PE 63724N for advanced component development and prototyping for the Navy energy program. No funds were requested for the development and demonstration of a one megawatt molten carbonate fuel cell.

The committee notes that reliable, grid-independent and environmentally "clean" power plants would provide many advantages for Department of Defense use. The ability of such power plants to generate electricity independent from the local electrical utilities would enhance base security by satisfying the critical military need of providing uninterruptible electrical service.

The committee recommends \$7.5 million in PE 63724N, an increase of \$6.0 million for the development and demonstration of a one megawatt molten carbonate fuel cell.

#### *Open architecture warfare systems*

The budget request contained \$48.2 million in PE 64755N for ship self defense (detect and control) system development and demonstration.

The committee notes that open architecture warfare systems support the Navy's top priority of modernizing warfighting capabilities to meet the concepts described in Sea Power 21 and that open architecture is the technology enabler that supports the Navy's FORCEnet and joint interoperability. Established in a commercially based computing environment, open architecture provides the common internet protocol technology base that will be critical to the seamless interchange of information among elements of the Navy's battle management command and control systems and the operational and planning capabilities required to make network-centric warfare effective.

The Navy has identified a requirement for \$21.8 million in fiscal year 2005 to fully fund the implementation of open architecture and establish a single functional information architecture for Navy surface forces. The committee notes that providing these funds in fiscal year 2005 would complete the engineering effort to modernize and report the software for Ship Self Defense System Mark 2 (SSDS MK 2) combat system applications and comply with the required technical and functional system design standards that are the necessary precursors for implementing the single integrated operational picture.

The committee recommends an increase of \$21.8 million in PE 64755N for the Navy's unfunded requirement for open architecture systems development.

#### *Open architecture wireless sensors*

The budget request contained \$9.3 million in PE 65013N for information technology system development and demonstration.

The committee notes that the applications of wireless networking have achieved significant cost reductions and benefits to the U.S. Navy in ship building through the use of wearable computers, personal data assistants, and wireless communications devices that enable supervisors, engineers, technicians, and construction workers to coordinate their activities more efficiently. The committee believes that the future insertion of wireless network applications through the shipboard environment and the converging of multiple networks into a single ship-wide network could facilitate significant improvements in ship operations, damage control, maintenance, and other activities.

The committee recommends an increase of \$3.0 million in PE 65013N for development and demonstration of open architecture wireless sensors and their applications to improvements in ship operations, maintenance and monitoring of ship systems, damage control, and other activities.

#### *Organ transplant technology*

The budget request contained \$16.7 million in PE 63729N for warfighter protection advanced technology development. No funds were requested for continuation of the organ transfer technology program.

The committee continues to note progress in the development of immune therapies by investigators at the Naval Medical Research Center that have been shown to prevent the rejection of tissue and organ transplants without the need for continuous use of immunosuppressive drugs. In fiscal year 2001, the Chief of Naval Research initiated a program to capitalize on these newly developed methods of treatment. The committee notes the continuing progress in the clinical trials program. The committee believes that the ability to transplant massive tissue segments without rejection could revolutionize the treatment of combat casualties who suffer significant tissue loss or organ damage from blast, missile fragments, or burns.

The committee recommends an increase of \$4.0 million in PE 63729N to continue the organ transfer technology clinical trials program.

*Project M*

The budget request contained \$82.1 million in PE 63123N for force protection advanced technology development. No funds were included for continuation of Project M.

The committee notes the progress in the Office of Naval Research (ONR) program to evaluate the ability of Project M technology to mitigate the high shock and vibration experienced by the Navy SEALs Mark V patrol craft crew and passengers in high-speed special operations. The committee is aware that at-sea tests of the technology are scheduled for the summer of 2004.

The committee also notes the application of Project M technology to reduce the magnetic signature of electric propulsion motors. As the Navy places increased emphasis on the introduction of the "electric" ship and the use of electric motors for ship propulsion, reduction of the magnetic signature of the ship as a defense against magnetic-influence mines, particularly in littoral operations, will become increasingly important. The committee strongly recommends that the Navy consider the exploitation of the Project M technology for magnetic signature reduction in new construction ships such as the DD(X) destroyer and the Littoral Combat Ship.

The committee report on H.R. 1588 (H. Rept. 108–106) directed the Secretary of the Navy and the Commander, Special Operations Command, to report to the congressional defense committees on plans for transition of Project M shock reduction technology to potential operational use, and the Secretary to report Department of the Navy plans for further development, evaluation, and exploitation of Project M technology for magnetic signature reduction. The committee expects the results of the shock-mitigation at-sea trials to be included in the report.

The committee recommends an increase of \$4.0 million in PE 63123N to continue the development and demonstration of Project M technology.

*Rapid deployment fortification wall*

The budget request contained \$58.2 million in PE 63640M for Marine Corps advanced technology demonstration. No funds were requested to continue the development and evaluation of the rapid deployment fortification wall.

In the fiscal year 2004 budget the committee initiated a program for development and evaluation of a rapid deployment fortification wall (RDFW) which would provide a significantly faster means for force protection than the use of sand bags. The RDFW has been selected for force protection evaluation at Lackland Air Force Base, Texas. The committee is informed that additional funding for the evaluation would permit its evaluation as a vehicular barrier and a more comprehensive evaluation of the speed of installation, labor savings, construction, and structural integrity, and innovative uses of the RDFW.

The committee recommends an increase of \$1.5 million in PE 63640M to continue evaluation of the RDFW.

*Real-time precision targeting radar*

The budget request contained \$44.0 million in PE 63271N for radio frequency systems advanced technology development. No funds were requested for the AN/APY–6 radar.

The committee notes the Navy's operational requirement for reducing the targeting cycle for engaging time-critical mobile targets and enhancing the ability to detect, locate and strike these targets in all weather conditions. The committee also notes as a part of the future naval capabilities program that the Office of Naval Research is developing the AN/APY-6 multi-mode, high-resolution surveillance radar as a real-time precision targeting radar for all-weather surveillance, detection and location of such targets. The objective of the program is to provide the warfighter with a lightweight, low-cost, high-resolution radar, with synthetic aperture radar and ground moving target indicator capability for use in both manned and unmanned platforms for reconnaissance, surveillance, and targeting.

The committee recommends an increase of \$10.0 million in PE 63271N for continuation of the development and demonstration of the AN/APY-6 real-time precision targeting radar.

#### *Reduced risk ordnance*

The budget request contained \$10.8 million in PE 63216N for aviation survivability advanced component development and prototyping, including \$1.2 million for aircrew and ordnance safety.

The committee notes that current submunitions in naval weapon systems use fuzes that have reliabilities in the range of 90 to 94 percent. As a result, a significant number of deployed submunitions fail to detonate and become unexploded ordnance that pose a safety hazard to warfighters who might encounter the unexploded submunitions on the battlefield, to technicians who must clear the battlefield, and to civilians who might come upon them accidentally.

The committee notes that in the past, highly reliable fuzes have been too expensive for use in submunitions. However, new technologies are being developed for all-electronic fuzes that would have a much higher reliability (approximately 99 percent) and could be produced at a cost that would make such fuzes affordable for use in submunitions.

The committee recommends \$13.8 million in PE 63216N, an increase of \$3.0 million for development and demonstration of highly reliable, all-electronic fuzes for use in submunitions.

#### *Remote ocean surveillance system*

The budget request contained \$44.0 million in PE 63271N for radio frequency systems advanced technology development.

The committee notes continued progress in the development of high contrast, high resolution multi-spectral sensors and image processing technology that indicates potential capabilities for detection of objects in the ocean in real time, at various depths, and with relatively high search rates. Realization and employment of these technologies in littoral areas, estuaries, and ports would provide the capability for a remote ocean surveillance system to provide real-time capabilities for mine detection and avoidance, force protection, and identification and dissemination of information on the surface and sub-surface threat to ports and harbors.

The committee recommends an increase of \$3.0 million in PE 63271N to continue the proof-of-concept development and demonstration of multi-spectral sensor and image processing technology for a remote ocean surveillance system.

*Ship system component development*

The budget request contained \$19.0 million in PE 63513N for ship system component advanced technology development and prototyping.

The committee notes that with the integration of advanced power systems into future combat ships there is a need to address the manufacturing methods and process technology that will improve the manufacturability and affordability of advanced solid state power electronics systems early in the development cycle. This effort should begin with the manufacturing methods and processes for high density advanced motors, solid-state switches, distribution systems, and other power electronics systems that will be used in the DD(X) multi-mission destroyer.

The committee recommends an increase of \$2.0 million in PE 63513N for development and demonstration of improvements in manufacturing methods and process technology for high power switches and conversion equipment that will be used in the DD(X) program.

*Spectral beam combining fiber lasers*

The budget request contained \$44.0 million in PE 63271N for radio frequency systems advanced technology development.

The committee notes that high power lasers based on fiber laser technology might be capable of providing U.S. armed forces the same operational advantages as solid-state lasers, but could offer potential breakthroughs in reduced size, weight, complexity, and cooling requirements. The committee is informed that recently demonstrated technology for spectral beam combining fiber lasers, in which the outputs of a number of low power fiber optic lasers are combined into a single, high quality laser beam, could permit the construction of high power lasers from an array of lower power fiber laser elements at a significantly lower cost than conventional high power lasers.

The committee recommends an increase of \$1.5 million in PE 63271N for advanced development and evaluation of the technology for spectral beam combining fiber lasers.

*Submarine payloads and sensors program*

The budget request contained \$81.2 million in PE 63561N, for advanced submarine systems development.

The committee notes that the Defense Advanced Research Project Agency/Navy submarine payloads and sensors program resulted in the development of a number of innovative, but realistic payload, sensor, and platform concepts that would enable a revolutionary expansion of capabilities and allow the submarine (Virginia Class and SSGN) to play a more decisive role in joint force operations, especially in the ability to exert greater influence over events on shore.

The committee recommends and increase of \$10.0 million in PE 63561N to continue the program for continued development and demonstration of advanced submarine payloads and sensor capabilities.

*Superconducting direct current homopolar motor*

The budget request contained \$82.1 million in PE 63123N for force protection advanced technology development, including \$42.7 million for advanced development of surface ship and submarine hull, mechanical, and electrical systems, of which \$5.0 million would continue the development and demonstration of an advanced main propulsion 36.5 megawatt prototype superconducting direct current (DC) homopolar motor.

The development of component technologies for the all-electric warship is one of the major goals of the Navy's science and technology program. The committee also notes that low temperature superconducting DC homopolar motor technology has the potential technical advantages of being smaller, lighter, and quieter than alternating current (AC) electric motors, and, if realized, would make the superconducting DC homopolar motor a potentially more suitable alternative for use in submarines or in other ship applications where these attributes are desired.

The committee recommends an increase of \$9.2 million in PE 63123N to continue the program for development of a 26.5 megawatt prototype superconducting DC homopolar motor for ship main propulsion.

*Tactical E-field buoy development*

The budget request contained \$4.5 million in PE 63254N for advanced component development and prototypes for anti-submarine warfare systems, including the continued development and evaluation of nonlinear dynamics and stochastic resonance (NDSR) for acoustic, magnetic, and other anti-submarine warfare sensor and signal processing applications.

The committee notes the continuing progress in the application of nonlinear dynamics science and technology to non-acoustic shallow water anti-submarine warfare and the potential for greatly improving anti-submarine warfare systems performance as a result of significantly increased electromagnetic detection ranges, enhanced sonar target discrimination, and improved signal processing. One result of this program has been the establishment of the effectiveness of E-field sensors using state-of-the-art sensor technology coupled with nonlinear signal processing. The committee believes that an air-launched tactical E-field buoy patterned after the Air Deployed Active Receiver sonobuoy has great potential for real-time target detection and classification.

The committee recommends an increase of \$4.0 million in PE 63254N to continue the program for accelerated component and prototype design, development, and laboratory and at-sea testing of a tactical E-field buoy for littoral anti-submarine warfare.

*Task force anti-submarine warfare*

The budget request contained \$17.6 million in PE 63553N for surface anti-submarine warfare (ASW).

Task Force Antisubmarine Warfare (ASW) was established in 2003 at the direction of the Chief of Naval Operations to examine fleet shortcomings in anti-submarine warfare operational capabilities and recommend improvements in technology, operational concepts, and training techniques. The program focuses on fundamentally changing the way ASW is conducted, to render enemy sub-

marines impotent against United States and coalition forces. According to the Navy, changing the calculus of antisubmarine warfare will require developing off-board and distributed systems, minimizing force-on-force engagements, reducing the time required to conduct an ASW engagement, and supporting rapid maneuver of ASW forces.

The committee notes that the Navy plans a multi-level trials program for development of active-passive distributed sensor systems and promising technologies proposed by industry. Two at-sea experiments are planned that would employ active-passive distributed sensor systems to test hardware concepts, evaluate candidate software algorithms, and collect the data required for further software development. The plan also includes advanced development of a minimum of two promising industry-proposed technologies. The program has been established as one of the Chief of Naval Operations highest priority unfunded requirements.

The committee recommends an increase of \$16.6 million in PE 63553N for Task Force ASW multi-level trials for technical and operational evaluation of developmental ASW systems and concepts of operation.

#### *Theater undersea warfare initiative*

The budget request contained \$60.1 million in PE 62235N for common picture applied research. No funds were requested to continue the theater undersea warfare initiative.

The committee notes that Congress has added a total of \$14.5 million in fiscal years 2003 and 2004 for the Theater Undersea Warfare Initiative, which seeks to enhance the Navy's network centric capability for maritime patrol aircraft (MPA) and provide a near real-time, collaborative communication, command, and control capability for MPA operations. The program utilizes the High Performance Computing Center in Maui, Hawaii, to support network-centric undersea warfare (USW) and as a repository for tactical environmental data services; the oceanographic and atmospheric master library, and sensor and platform data bases. The committee notes that over the long term the Office of Naval Research intends to use the program to provide enhanced USW capabilities to the fleet and to transfer the technology developed in the program to USW support activities.

The committee recommends an increase of \$6.0 million in PE 62235N to continue the theater undersea warfare initiative.

#### *Ultrasonic detection equipment*

The budget request contained \$19.0 million in PE 63513N for shipboard system component advanced technology development and prototyping.

The committee notes the recently completed shipboard demonstration of a commercial-off-the-shelf (COTS) ultrasonic tester aboard the USS Gunston Hall that evaluated the effectiveness and the practicality of inexpensive ultrasonic testers to assess the material condition of specific shipboard components and equipment. Areas examined during the demonstration included watertight door integrity, fluid systems leakage, valve leak-by identification, compartment integrity inspections, gear-train and bearing inspections, faulty electrical component identification, and rotating machinery

integrity. The results of the demonstration indicated that the use of relatively inexpensive, COTS ultrasonic testers as a diagnostic tool to assist sailors in conducting periodic maintenance is practical and cost-effective, and supports the implementation of condition-based maintenance in the surface fleet. Based on the results of the test, the committee recommends the adoption of such testers for use in the fleet.

The committee recommends an increase of \$2.5 million in PE 63513N for fielding and evaluation of COTS ultrasonic testers for use by the fleet.

#### *VH-XX executive helicopter development*

The budget request contained \$777.4 million for the VH-XX executive development program, a program that is developing a replacement for the VH-3D helicopter.

The committee notes that the Department of the Navy has delayed the decision to enter the system design and development (SDD) phase of the VH-XX program from fiscal year 2004 to fiscal year 2005, and understands that the VH-XX program SDD phase would select one helicopter manufacturer to develop and produce the VH-XX helicopter. The committee further understands that this decision resulted principally from the awareness of the complexities in equipping helicopter commercial variants with the communication systems required to perform the VH-XX mission. While the committee commends the Department for taking the additional time necessary to further refine requirements and to conduct design and integration planning, it notes that the budget planned for both fiscal year 2004 and fiscal year 2005 assumed that the VH-XX SDD program would begin in the third quarter of fiscal year 2004. Since the committee believes that the VH-XX SDD program will not begin until at least the second quarter of fiscal year 2005, it also believes that \$26.0 million in fiscal year 2004 appropriations can be applied to fiscal year 2005 requirements and that \$194.0 million requested for fiscal year 2005 exceeds requirements.

Consequently, the committee recommends \$557.4 million for the VH-XX executive helicopter development program, a decrease of \$220.0 million.

#### *Virginia class multi-mission modules*

The budget request contained \$143.2 million in PE 64558N for Virginia class submarine design development system development and demonstration.

The committee notes the experience gained in the development, design, and implementation of multi-mission capabilities in the USS Jimmy Carter (SSN-23). The committee believes that the modular design of the Virginia class submarine continues to lend itself to the evaluation of multi-mission module concepts for that submarine that could be considered for insertion in selected hull numbers of the class to increase payload capacity, capability for technology insertion, and adaptability to new missions.

The committee recommends an increase of \$10.0 million in PE 64558N to continue the program for evaluation of modular payload concepts and multi-mission modules for Virginia class submarine variants that would increase payload capacity and mission capability.

*Virtual at-sea training initiative*

The budget request contained \$61.1 million in PE 63236N for warfighter sustainment advanced technology development.

In view of recent reductions in the number of available naval live-fire training ranges, the committee recognizes the benefit of the Department of the Navy's program to develop a technological solution to maintain fleet readiness in the area of live fire targeting and ordnance delivery. The Office of Naval Research's Virtual-at-Sea-Training (VAST) initiative is an encouraging technology solution for solving the problem of maintaining readiness despite the reduction in live fire training ranges. The committee, therefore, supports the Navy's continued development of VAST by the Office of Naval Research for transition into a Department of Defense acquisition program.

The committee recommends an increase of \$4.0 million in PE 63236N for continued development of the VAST initiative.

*Wide band gap semiconductor power electronics*

The budget request contained \$46.3 million in PE 62712E and \$3.5 million in PE 62271N for applied research in wide band gap semiconductor electronics and wide band gap semiconductor electronic devices. Section 212 of the National Defense Authorization Act for Fiscal Year 2002 (Public Law 107-107) requires the Secretary of Defense to carry out a cooperative program to develop and demonstrate advanced technologies and concepts for future Navy radar systems and other applications with particular emphasis on development of high frequency and high power wide band gap semiconductor materials and devices.

The committee notes the progress in the development of silicon carbide and other wide band gap materials in the Defense Advanced Research Projects Agency program and in the Navy program and the potential for transition of the materials technology to applications in advanced power and high frequency semiconductor devices.

The committee recommends an increase of \$4.0 million in PE 62271N for wide band gap semiconductor power electronics applied research.

## AIR FORCE RESEARCH, DEVELOPMENT, TEST, AND EVALUATION

## Overview

The budget request contained \$21,114.7 million for Air Force research, development, test, and evaluation (RDT&E).

The committee recommends \$21,528.0 million, an increase of \$413.3 million to the budget request.

**Title II - RESEARCH, DEVELOPMENT, TEST AND EVALUATION**  
(Dollars in Thousands)

| PE Name  | Line | PROGRAM TITLE  | FY 2005               |                  | FY 2005            |                    |
|--|------|--|-----------------------|------------------|--------------------|--------------------|
|  |      |  | Authorization Request | Committee Change | Committee Increase | Committee Decrease |
| <b>RESEARCH, DEVELOPMENT, TEST &amp; EVALUATION, AIR FORCE</b> |      |  |                       |                  |                    |                    |
| <b>BASIC RESEARCH</b>  |      |  |                       |                  |                    |                    |
| 0601102F   | 1    | Defense Research Sciences                                      | 217,304               | 2,000            | 2,000              | 219,304            |
| 0601103F   | 2    | Chabot Space and Science Center                                | 115,865               |                  |                    | 115,865            |
| 0601108F   | 3    | University Research Initiatives                                | 12,331                |                  |                    | 12,331             |
|  |      | High Energy Laser Research Initiatives                         |                       |                  |                    |                    |
|  |      | <b>TOTAL, BASIC RESEARCH</b>                                   | <b>345,500</b>        | <b>2,000</b>     | <b>2,000</b>       | <b>347,500</b>     |
| <b>APPLIED RESEARCH</b>  |      |  |                       |                  |                    |                    |
| 0602102F   | 4    | Materials  | 73,660                |                  |                    | 73,660             |
| 0602201F   | 5    | Aerospace Vehicle Technologies                                 | 74,679                |                  |                    | 74,679             |
| 0602202F   | 6    | Human Effectiveness Applied Research                           | 71,483                | 3,000            |                    | 74,483             |
| 0602202F   |      | Improved Performance Research Integration Tool                 |                       |                  | 3,000              |                    |
| 0602203F   | 7    | Aerospace Propulsion   | 92,650                | 15,500           |                    | 108,150            |
| 0602203F   |      | Integrated Cooling and Power System Magnetic Bearing           |                       |                  | 4,000              |                    |
| 0602203F   |      | Fuel Cell Technology-Proton Exchange Membrane                  |                       |                  | 2,000              |                    |
| 0602203F   |      | Advanced Vehicle and Propulsion Center                         |                       |                  | 8,500              |                    |
| 0602203F   |      | Engineering Research Lab Equipment Upgrade                     |                       |                  | 1,000              |                    |
| 0602204F   | 8    | Aerospace Sensors  | 78,804                |                  |                    | 78,804             |
| 0602204F   |      | Combat Optical Receiver for Smart Loitering Standoff Munitions |                       |                  | [2,000]            | [2,000]            |
| 0602500F   | 9    | Multi-disciplinary Space Technology                            | 84,581                |                  |                    | 84,581             |
| 0602601F   | 10   | Space Technology   | 88,909                | 8,000            |                    | 96,909             |
| 0602601F   |      | Integrated Control for Autonomous Space Systems                |                       |                  | 4,000              |                    |
| 0602601F   |      | Satellite Tool Kit Technology Integration                      |                       |                  | 4,000              |                    |
| 0602602F   | 11   | Conventional Munitions   | 52,251                |                  |                    | 52,251             |
| 0602603F   | 12   | Directed Energy Technology                                     | 36,532                | 10,000           |                    | 46,532             |
| 0602605F   |      | Ultra Short Pulse Laser Technology                             |                       |                  | 10,000             |                    |
| 0602702F   | 13   | Command Control and Communications                             | 82,147                | 4,500            |                    | 86,647             |
| 0602702F   |      | Collaborative Information and Knowledge Management             |                       |                  | 4,500              |                    |

**Title II - RESEARCH, DEVELOPMENT, TEST AND EVALUATION**  
(Dollars in Thousands)

| PE Name                                | Line | PROGRAM TITLE   | FY 2005               |                  |                    | FY 2005            |                         |
|--|------|---|-----------------------|------------------|--------------------|--------------------|-------------------------|
|  |      |   | Authorization Request | Committee Change | Committee Increase | Committee Decrease | Committee Authorization |
| 0602805F                               | 14   | Dual Use Science and Technology Program                     | 5,151                 |                  |                    |                    | 5,151                   |
| 0602890F                               | 15   | High Energy Laser Research                                  | 45,333                |                  |                    |                    | 45,333                  |
| <b>TOTAL, APPLIED RESEARCH</b>         |      |   | <b>786,780</b>        | <b>41,000</b>    | <b>41,000</b>      |                    | <b>827,780</b>          |
| <b>ADVANCED TECHNOLOGY DEVELOPMENT</b> |      |   |                       |                  |                    |                    |                         |
| 0603112F                               | 16   | Advanced Materials for Weapon Systems                       |                       | 14,000           |                    |                    | 48,284                  |
| 0603203F                               | 17   | Metals Affordability Initiative                             | 34,284                |                  |                    |                    |                         |
| 0603205F                               | 18   | Advanced Aerospace Sensors                                  | 30,634                |                  | 14,000             |                    | 30,634                  |
| 0603211F                               | 19   | Flight Vehicle Technology                                   |                       |                  |                    |                    |                         |
| 0603216F                               | 20   | Aerospace Technology Dev/Demo                               | 29,145                |                  |                    |                    | 29,145                  |
| 0603231F                               | 21   | Aerospace Propulsion and Power Technology                   | 79,914                |                  |                    |                    | 79,914                  |
| 0603270F                               | 22   | Crew Systems and Personnel Protection Technology            | 32,794                |                  |                    |                    | 32,794                  |
| 0603270F                               | 22   | Electronic Combat Technology                                | 28,282                | 12,000           |                    |                    | 40,282                  |
| 0603270F                               | 22   | Day-Night Electro Optical Tracker Countermeasures           |                       |                  | 6,000              |                    |                         |
| 0603311F                               | 23   | Light Weight Modular Support Jammer                         |                       |                  | 6,000              |                    |                         |
| 0603333F                               | 24   | Ballistic Missile Technology                                |                       |                  |                    |                    |                         |
| 0603401F                               | 25   | Unmanned Air Vehicle Dev/Demo                               |                       | 14,000           |                    |                    | 74,124                  |
| 0603401F                               | 25   | Advanced Spacecraft Technology                              | 60,124                |                  |                    |                    |                         |
| 0603401F                               | 25   | Satellite Simulation Toolkit                                |                       |                  |                    |                    |                         |
| 0603401F                               | 25   | Streaker Small Launch Vehicle                               |                       |                  | 5,000              |                    |                         |
| 0603444F                               | 26   | Intelligent Free Space Optical Satellite Communication Node |                       |                  | 6,000              |                    |                         |
| 0603444F                               | 26   | Maui Space Surveillance System (MSSS)                       | 6,306                 | 10,000           | 3,000              |                    | 16,306                  |
| 0603500F                               | 27   | High Accuracy Network Determination System (HANDS)          |                       |                  | 10,000             |                    |                         |
| 0603500F                               | 27   | Multi-disciplinary Advanced Development Space Technology    | 51,114                | 7,000            |                    |                    | 58,114                  |
| 0603601F                               | 28   | Upper Stage Engine Technology                               | 22,398                | 9,000            | 7,000              |                    | 31,398                  |
| 0603601F                               | 28   | Conventional Weapons Technology                             |                       |                  | 9,000              |                    |                         |
| 0603601F                               | 29   | BLU-109H  |                       |                  |                    |                    |                         |
| 0603605F                               | 30   | Advanced Weapons Technology                                 | 31,103                |                  |                    |                    | 31,103                  |
| 0603723F                               | 30   | Environmental Engineering Technology                        |                       |                  |                    |                    |                         |

**Title II - RESEARCH, DEVELOPMENT, TEST AND EVALUATION**  
(Dollars in Thousands)

| PE Name  | Line | PROGRAM TITLE   | FY 2005        |               | FY 2005       |          |                         |
|----------|------|---|----------------|---------------|---------------|----------|-------------------------|
|          |      |   | Request        | Change        | Increase      | Decrease | Committee Authorization |
| 0603789F | 31   | C31 Advanced Development  | 28,524         | 5,000         |               |          | 33,524                  |
| 0603789F |      | Identification of Time Critical Targets                                 |                |               | 5,000         |          |                         |
| 0603801F | 32   | Special Programs  | 320,503        |               |               |          | 320,503                 |
| 0603850F | 33   | Integrated Broadcast Service  | 2,294          |               |               |          | 2,294                   |
| 0603924F | 34   | High Energy Laser Advanced Technology Program                           | 8,547          |               |               |          | 8,547                   |
| 0207423F | 35   | Advanced Communications Systems   | 12,051         |               |               |          | 12,051                  |
| 0401840F | 36   | AMC Command and Control System  | 6,038          |               |               |          | 6,038                   |
| 0604757F | 37   | Joint National Training Center  | 2,939          |               |               |          | 2,939                   |
|          |      | <b>TOTAL, ADVANCED TECHNOLOGY DEVELOPMENT</b>                           | <b>786,994</b> | <b>71,000</b> | <b>71,000</b> |          | <b>857,994</b>          |
|          |      | <b>ADVANCED COMPONENT DEVELOPMENT &amp; PROTOTYPES</b>                  |                |               |               |          |                         |
| 0603260F | 38   | Intelligence Advanced Development                                       | 4,612          |               |               |          | 4,612                   |
| 0603287F | 39   | Physical Security Equipment   | 22,640         | 13,000        |               |          | 35,640                  |
| 0603287F |      | Xray Base Protection System   |                |               | 8,000         |          |                         |
| 0603421F | 40   | Quick Reaction Perimeter Intrusion Detection                            | 40,568         |               |               |          | 40,568                  |
| 0603430F | 41   | NAVSTAR Global Positioning System III                                   | 612,049        |               |               |          | 612,049                 |
| 0603432F | 42   | Advanced EHF MILSATCOM (SPACE)  | 960            |               |               |          | 960                     |
| 0603432F |      | Polar MILSATCOM (SPACE)   |                |               |               |          |                         |
| 0603434F | 43   | National Polar-orbiting Operational Environmental Satellite Sys (SPACE) |                |               |               |          |                         |
| 0603438F | 44   | Space Control Technology  | 15,046         |               |               |          | 15,046                  |
| 0603742F | 45   | Combat Identification Technology  | 19,582         |               |               |          | 19,582                  |
| 0603790F | 46   | NATO Research and Development   | 3,930          |               |               |          | 3,930                   |
| 0603791F | 47   | International Space Cooperative R&D                                     | 552            |               |               |          | 552                     |
| 0603845F | 48   | Transformational SATCOM (TSA-T)   | 774,836        | (100,000)     |               |          | 674,836                 |
| 0603850F | 49   | Integrated Broadcast Service  | 23,927         |               |               |          | 23,927                  |
| 0603851F | 50   | Intercontinental Ballistic Missile                                      | 72,503         |               |               |          | 72,503                  |
| 0603854F | 51   | Wideband Gapfiller System RDT&E (Space)                                 | 73,499         | 15,000        |               |          | 88,499                  |
| 0603856F | 52   | Air Force/National Program Cooperation (AFNPC)                          |                |               |               |          |                         |
| 0603858F | 53   | Space-Based Radar   | 327,732        |               |               |          | 327,732                 |

**Title II - RESEARCH, DEVELOPMENT, TEST AND EVALUATION**  
(Dollars in Thousands)

| PE Name                                       | Line | PROGRAM TITLE   | FY 2005                  |                     |                       | FY 2005<br>Committee<br>Authorization |
|---|------|---|--------------------------|---------------------|-----------------------|---------------------------------------|
|   |      |   | Authorization<br>Request | Committee<br>Change | Committee<br>Increase |                                       |
| 0603859F                                      | 54   | Pollution Prevention  | 2,692                    |                     |                       | 2,692                                 |
| 0603860F                                      | 55   | Joint Precision Approach and Landing Systems                                | 18,385                   |                     |                       | 18,385                                |
| 0604015F                                      | 56   | Next Generation Bomber  |                          | 100,000             | 100,000               | 100,000                               |
| 0604327F                                      | 57   | Hard and Deeply Buried Target Defeat System (HDBTDS) Program                | 6,383                    |                     |                       | 6,383                                 |
| 0604731F                                      | 58   | Unmanned Combat Air Vehicle (UCAV)  |                          |                     |                       |                                       |
| 0604855F                                      | 59   | Operationally Responsive Launch<br>Blue MAJIC                               | 35,362                   | 10,000              | 6,000                 | 45,362                                |
| 0604856F                                      | 60   | Common Aero Vehicle (CAV)   | 21,610                   | 12,000              | 4,000                 | 33,610                                |
| 0305178F                                      | 61   | National Polar-Orbiting Operational Environmental Satellite System (NPOESS) | 307,668                  | 12,000              | 12,000                | 307,668                               |
|   |      | <b>TOTAL, ADVANCED COMPONENT DEVELOPMENT &amp; PROTOTYPES</b>               | <b>2,384,536</b>         | <b>50,000</b>       | <b>150,000</b>        | <b>(100,000)</b>                      |
|   |      | <b>2,434,536</b>  |                          |                     |                       | <b>2,434,536</b>                      |
| <b>SYSTEM DEVELOPMENT &amp; DEMONSTRATION</b> |      |   |                          |                     |                       |                                       |
| 0603840F                                      | 62   | Global Broadcast Service (GBS)  | 33,447                   |                     |                       | 33,447                                |
| 0604012F                                      | 63   | Joint Helmet Mounted Cueing System (JHMCS)                                  | 2,867                    |                     |                       | 2,867                                 |
| 0604222F                                      | 64   | Nuclear Weapons Support   | 13,301                   |                     |                       | 13,301                                |
| 0604226F                                      | 65   | B-1B  | 59,462                   |                     |                       | 59,462                                |
| 0604233F                                      | 66   | Specialized Undergraduate Flight Training                                   | 3,359                    |                     |                       | 3,359                                 |
| 0604239F                                      | 67   | F-22  | 210,000                  |                     |                       | 210,000                               |
| 0604240F                                      | 68   | B-2 Advanced Technology Bomber<br>Global Strike                             | 245,049                  | 98,000              | 98,000                | 343,049                               |
| 0604270F                                      | 69   | EW Development / B-52   | 138,393                  |                     |                       | 138,393                               |
| 0604280F                                      | 70   | Joint Tactical Radio  | 49,856                   |                     |                       | 49,856                                |
| 0604287F                                      | 71   | Physical Security Equipment   | 9,744                    |                     |                       | 9,744                                 |
| 0604329F                                      | 72   | Small Diameter Bomb (SDB)   | 76,489                   |                     |                       | 76,489                                |
| 0604421F                                      | 73   | Counterspace Systems  | 75,863                   |                     |                       | 75,863                                |
| 0604435F                                      | 74   | Advanced Polar MILSATCOM  |                          |                     |                       |                                       |
| 0604441F                                      | 75   | Space Based Infrared System (SBIRS) High EMD                                | 508,448                  | 35,000              | 35,000                | 543,448                               |
| 0604479F                                      | 76   | Milstar LDR/MDR Satellite Communications (SPACE)                            | 1,380                    |                     |                       | 1,380                                 |
| 0604600F                                      | 77   | Munitions Dispenser Development   | 28,048                   |                     |                       | 28,048                                |

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| PE Name  | Line | PROGRAM TITLE  | FY 2005          |                | FY 2005        |                  |
|----------|------|--|------------------|----------------|----------------|------------------|
|          |      |  | Request          | Change         | Increase       | Decrease         |
|          |      |  | 8,353            |                |                | 8,353            |
| 0604602F | 78   | Armament/Ordnance Development                        |                  |                |                |                  |
| 0604604F | 79   | Submunitions   | 4,824            |                |                | 4,824            |
| 0604617F | 80   | Agile Combat Support                                 | 10,053           |                |                | 10,053           |
| 0604618F | 81   | Joint Direct Attack Munition                         |                  |                |                |                  |
| 0604706F | 82   | Life Support Systems                                 | 6,630            |                |                | 6,630            |
| 0604731F | 83   | Unmanned Combat Air Vehicle (UCAV)                   |                  |                |                |                  |
| 0604735F | 84   | Combat Training Ranges                               | 18,714           |                |                | 18,714           |
| 0604740F | 85   | Integrated Command & Control Applications (IC2A)     | 258              | 6,000          |                | 6,258            |
| 0604740F | 85   | Distributed Mission Interoperability Tool Kit        |                  |                | 6,000          |                  |
| 0604750F | 86   | Intelligence Equipment                               | 1,349            |                |                | 1,349            |
| 0604754F | 87   | Tactical Data Link Infrastructure                    |                  |                |                |                  |
| 0604762F | 88   | Common Low Observables Verification System (CLOVerS) | 10,303           |                |                | 10,303           |
| 0604800F | 89   | Joint Strike Fighter (JSF)                           | 2,307,420        |                |                | 2,307,420        |
| 0604851F | 90   | Intercontinental Ballistic Missile                   | 91,687           |                |                | 91,687           |
| 0604853F | 91   | Evolved Expendable Launch Vehicle Program            | 27,000           |                |                | 27,000           |
| 0605011F | 92   | RDT&E for Aging Aircraft                             | 15,665           | 4,000          |                | 19,665           |
| 0605011F | 92   | Enterprise Availability and Cost Optimization System |                  |                | 2,000          |                  |
| 0207131F | 93   | A-10 Squadrons                                       |                  |                |                |                  |
| 0207256F | 94   | Joint Unmanned Combat Air System                     | 2,911            |                |                | 2,911            |
| 0207434F | 95   | Link-16 Support and Sustainment                      | 141,012          |                |                | 141,012          |
| 0207443F | 96   | Family of Interoperable Operational Pictures (FIOP)  | 44,947           |                |                | 44,947           |
| 0207450F | 97   | Multi-Sensor C2 Aircraft (MC2A)                      | 538,860          |                |                | 538,860          |
| 0207701F | 98   | Full Combat Mission Training                         | 5,894            |                |                | 5,894            |
| 0305176F | 99   | Combat Survivor Evader Locator                       |                  |                |                |                  |
| 0401318F | 100  | CV-22  | 16,439           |                |                | 16,439           |
| XXXXXX   | 100a | KC-767   |                  | 80,000         | 80,000         |                  |
|          |      | <b>TOTAL, SYSTEM DEVELOPMENT &amp; DEMONSTRATION</b> | <b>4,708,025</b> | <b>223,000</b> | <b>223,000</b> | <b>4,931,025</b> |

Title II - RESEARCH, DEVELOPMENT, TEST AND EVALUATION  
(Dollars in Thousands)

| PE Name                                    | Line | PROGRAM TITLE  | FY 2005                  |                     |                       | FY 2005<br>Committee<br>Authorization |
|--|------|--|--------------------------|---------------------|-----------------------|---------------------------------------|
|  |      |  | Authorization<br>Request | Committee<br>Change | Committee<br>Increase |                                       |
| <b>RDT&amp;E MANAGEMENT SUPPORT</b>        |      |  |                          |                     |                       |                                       |
| 0604256F                                   | 101  | Threat Simulator Development   | 34,517                   |                     |                       | 34,517                                |
| 0604759F                                   | 102  | Major T&E Investment   | 58,933                   |                     |                       | 58,933                                |
| 0605101F                                   | 103  | RAND Project Air Force   | 24,970                   |                     |                       | 24,970                                |
| 0605306F                                   | 104  | Ranch Hand II Epidemiology Study                                       | 4,813                    |                     |                       | 4,813                                 |
| 0605502F                                   | 105  | Small Business Innovation Research                                     |                          |                     |                       |                                       |
| 0605712F                                   | 106  | Initial Operational Test & Evaluation                                  |                          |                     |                       |                                       |
| 0605807F                                   | 107  | Test and Evaluation Support / Eglin AFB Range                          | 28,839                   |                     |                       | 28,839                                |
| 0605860F                                   | 108  | Rocket Systems Launch Program (SPACE)                                  | 356,266                  |                     |                       | 356,266                               |
| 0605864F                                   | 109  | Space Test Program (STP)   | 7,984                    |                     |                       | 7,984                                 |
| 0605976F                                   | 110  | Facilities Restoration and Modernization - Test and Evaluation Support | 44,521                   |                     |                       | 44,521                                |
| 0605978F                                   | 111  | Facilities Sustainment - Test and Evaluation Support                   | 58,936                   |                     |                       | 58,936                                |
| 0804731F                                   | 112  | Cyber Crime Center   | 23,067                   |                     |                       | 23,067                                |
| 0909900F                                   | 113  | Financing for Expired Account Adjustments                              | 323                      |                     |                       | 323                                   |
| 0909980F                                   | 114  | AC-130U Claim  | 100,000                  |                     |                       | 100,000                               |
| 1001004F                                   | 115  | International Activities   | 3,945                    |                     |                       | 3,945                                 |
| <b>TOTAL, RDT&amp;E MANAGEMENT SUPPORT</b> |      |  | <b>747,114</b>           |                     |                       | <b>747,114</b>                        |
| <b>OPERATIONAL SYSTEMS DEVELOPMENT</b>     |      |  |                          |                     |                       |                                       |
| 0605024F                                   | 116  | Anti-Tamper Technology Executive Agency                                | 7,858                    |                     |                       | 7,858                                 |
| 0101113F                                   | 117  | B-52 Squadrons   | 25,766                   |                     |                       | 25,766                                |
| 0101120F                                   | 118  | Advanced Cruise Missile  | 7,740                    |                     |                       | 7,740                                 |
| 0101122F                                   | 119  | Air-Launched Cruise Missile (ALCM)                                     | 11,837                   |                     |                       | 11,837                                |
| 0101313F                                   | 120  | Strat War Planning System - USSTRATCOM                                 | 23,391                   |                     |                       | 23,391                                |
| 0101314F                                   | 121  | Night Fist - USSTRATCOM  | 4,987                    |                     |                       | 4,987                                 |
| 0101815F                                   | 122  | Advanced Strategic Programs  | 8,393                    |                     |                       | 8,393                                 |
| 0102326F                                   | 123  | Region/Sector Operation Control Center Modernization Program           | 19,047                   |                     |                       | 19,047                                |
| 0203761F                                   | 124  | Warfighter Rapid Acquisition Process (WRAP) Rapid Transition Fund      | 24,935                   |                     |                       | 24,935                                |
| 0207028F                                   | 125  | Joint Expeditionary Force Experiment                                   |                          |                     |                       |                                       |

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| PE Name  | Line | PROGRAM TITLE   | FY 2005               |                  | FY 2005            |                    |
|----------|------|---|-----------------------|------------------|--------------------|--------------------|
|          |      |   | Authorization Request | Committee Change | Committee Increase | Committee Decrease |
| 0207131F | 126  | A-10 Squadrons  | 22,590                |                  |                    | 22,590             |
| 0207133F | 127  | F-16 Squadrons (AFG-68V9)                                       | 99,606                |                  |                    | 99,606             |
| 0207134F | 128  | F-15E Squadrons (APG-63V3)                                      | 115,246               | 17,200           |                    | 132,446            |
| 0207134F |      | Active Electronically Scanned Array Radar                       |                       |                  | 17,200             |                    |
| 0207136F | 129  | Manned Destructive Suppression                                  | 16,976                |                  |                    | 16,976             |
| 0207138F | 130  | F-22 Squadrons  | 354,528               |                  |                    | 354,528            |
| 0207141F | 131  | F-117A Squadrons  | 29,661                |                  |                    | 29,661             |
| 0207161F | 132  | AIM 9 Product Improvement                                       | 5,558                 |                  |                    | 5,558              |
| 0207163F | 133  | Advanced Medium Range Air-to-Air Missile (AMRAAM)               | 33,266                |                  |                    | 33,266             |
| 0207224F | 134  | Personnel Recovery Vehicle - New Rescue Helo                    | 12,342                |                  |                    | 12,342             |
| 0207247F | 135  | AF TENCAP   | 10,673                |                  |                    | 10,673             |
| 0207248F | 136  | Special Evaluation Program                                      | 199,040               |                  |                    | 199,040            |
| 0207253F | 137  | Compass Call  | 3,990                 |                  |                    | 3,990              |
| 0207268F | 138  | Aircraft Engine Component Improvement Program                   | 165,609               |                  |                    | 165,609            |
| 0207277F | 139  | Eagle Vision  | 1,879                 |                  |                    | 1,879              |
| 0207325F | 140  | Joint Air-to-Surface Standoff Missile (JASSM)                   | 45,777                |                  |                    | 45,777             |
| 0207410F | 141  | Air and Space Ops Center  | 27,695                |                  |                    | 27,695             |
| 0207412F | 142  | Battle Control System   | 11,634                |                  |                    | 11,634             |
| 0207417F | 143  | Airborne Warning and Control System (AWACS)                     | 288,787               |                  |                    | 288,787            |
| 0207423F | 144  | Advanced Communications Systems / TACP                          | 20,066                |                  |                    | 20,066             |
| 0207424F | 145  | Evaluation and Analysis Program                                 |                       |                  |                    |                    |
| 0207433F | 146  | Advanced Program Technology                                     | 249,391               |                  |                    | 249,391            |
| 0207438F | 147  | Theater Battle Management (TBM) C4I                             | 37,210                |                  |                    | 37,210             |
| 0207445F | 148  | Fighter Tactical Data Link                                      | 50,976                |                  |                    | 50,976             |
| 0207446F | 149  | Bomber Tactical Data Link                                       | 120,256               |                  |                    | 120,256            |
| 0207448F | 150  | C2ISR Tactical Data Link  | 25,441                |                  |                    | 25,441             |
| 0207449F | 151  | Command and Control (C2) Constellation                          | 44,035                |                  |                    | 44,035             |
| 0207581F | 152  | Joint Surveillance and Target Attack Radar System (Joint STARS) | 89,247                | 11,000           |                    | 100,247            |
| 0207581F |      | Blue Force Combat ID Upgrades                                   |                       |                  | 11,000             |                    |

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| PE Name  | Line | PROGRAM TITLE  | FY 2005 |        | FY 2005  |                         |
|----------|------|--|---------|--------|----------|-------------------------|
|          |      |  | Request | Change | Increase | Committee Authorization |
| 0207590F | 153  | Seek Eagle   | 23,159  |        |          | 23,159                  |
| 0207591F | 154  | Advanced Program Evaluation                                | 474,734 |        |          | 474,734                 |
| 0207601F | 155  | USAF Modeling and Simulation                               | 18,693  |        |          | 18,693                  |
| 0207605F | 156  | Wargaming and Simulation Centers                           | 6,377   |        |          | 6,377                   |
| 0208006F | 157  | Mission Planning Systems                                   | 136,701 |        |          | 136,701                 |
| 0208021F | 158  | Information Warfare Support                                | 7,230   |        |          | 7,230                   |
| 0208160F | 159  | Technical Evaluation System                                |         |        |          |                         |
| 0208161F | 160  | Special Evaluation System                                  |         |        |          |                         |
| 0301310F | 161  | National Air Intelligence Center                           |         |        |          |                         |
| 0301314F | 162  | COBRA BALL   |         |        |          |                         |
| 0301315F | 163  | Missile and Space Technical Collection                     |         |        |          |                         |
| 0301324F | 164  | FOREST GREEN   |         |        |          |                         |
| 0301398F | 165  | Management Headquarters GDIP                               |         |        |          |                         |
| 0302015F | 166  | E-4B National Airborne Operations Center (NAOC)            | 11,172  |        |          | 11,172                  |
| 0303110F | 167  | Defense Satellite Communications System (SPACE)            |         |        |          |                         |
| 0303131F | 168  | Minimum Essential Emergency Communications Network (MEECN) |         |        |          |                         |
| 0303140F | 169  | Information Systems Security Program                       | 33,183  | 8,000  | 8,000    | 33,183                  |
| 0303140F | 169  | Worldwide Infrastructure Security Environment              | 79,625  |        |          | 79,625                  |
| 0303141F | 170  | Global Combat Support System                               | 18,637  |        | 8,000    | 18,637                  |
| 0303150F | 171  | Global Command and Control System                          | 3,611   | 2,000  | 2,000    | 5,611                   |
| 0303150F | 171  | Applied Research in Computing Enterprise Services          |         |        |          |                         |
| 0303401F | 172  | Communications Security (COMSEC)                           |         |        |          |                         |
| 0303601F | 173  | MILSATCOM Terminals  | 272,149 |        |          | 272,149                 |
| 0304111F | 174  | Special Activities   |         |        |          |                         |
| 0304311F | 175  | Selected Activities  |         |        |          |                         |
| 0305099F | 176  | Global Air Traffic Management (GATM)                       | 7,291   |        |          | 7,291                   |
| 0305110F | 177  | Satellite Control Network (SPACE)                          | 17,833  |        |          | 17,833                  |
| 0305111F | 178  | Weather Service  | 16,526  |        |          | 16,526                  |
| 0305114F | 179  | Air Traffic Control, Approach, and Landing System (ATCAL)  | 7,371   |        |          | 7,371                   |

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|----------|------|---|--------------------------|---------------------|-----------------------|---------------------------------------|
|          |      |   | Authorization<br>Request | Committee<br>Change | Committee<br>Increase |                                       |
| 0305116F | 180  | Aerial Targets  | 5,178                    |                     |                       | 5,178                                 |
| 0305128F | 181  | Security and Investigative Activities                                       | 484                      |                     |                       | 484                                   |
| 0305142F | 182  | Applied Technology and Integration  |                          |                     |                       |                                       |
| 0305148F | 183  | Air Force Tactical Measurement and Signature Intelligence (MASINT) Systems/ | 7,905                    |                     |                       | 7,905                                 |
| 0305159F | 184  | Defense Reconnaissance Support Activities (SPACE)                           | 219,345                  |                     |                       | 219,345                               |
| 0305160F | 185  | Defense Meteorological Satellite Program (SPACE)                            |                          |                     |                       |                                       |
| 0305164F | 186  | NAVSTAR Global Positioning System (User Equipment) (SPACE)                  | 104,114                  |                     |                       | 104,114                               |
| 0305165F | 187  | NAVSTAR Global Positioning System (Space and Control Segments) / OCS        | 148,344                  |                     |                       | 148,344                               |
| 0305172F | 188  | Combined Advanced Applications  |                          |                     |                       |                                       |
| 0305174F | 189  | Space Warfare Center  | 411                      |                     |                       | 411                                   |
| 0305182F | 190  | Spacecraft Range System (SPACE)   | 47,253                   |                     |                       | 47,253                                |
| 0305191F | 191  | Personnel Security Investigations Program - Air Force                       | 118,787                  |                     |                       | 118,787                               |
| 0305193F | 192  | Intelligence Support to Information Operations (IO)                         | 1,097                    |                     |                       | 1,097                                 |
| 0305202F | 193  | Dragon U-2 (JMIP)   | 87,745                   | (6,300)             |                       | 81,445                                |
| 0305202F |      | ASIP Sensor Development   |                          |                     |                       |                                       |
| 0305205F | 194  | Endurance Unmanned Aerial Vehicles  |                          | (2,000)             |                       | (2,000)                               |
| 0305205F |      | Network Centric Collaborative Targeting                                     |                          |                     |                       |                                       |
| 0305206F | 195  | Airborne Reconnaissance Systems   | 55,464                   |                     |                       | 55,464                                |
| 0305207F | 196  | Manned Reconnaissance Systems / COBRA BALL                                  | 13,283                   | 11,500              |                       | 24,783                                |
| 0305207F |      | Geo Processor   |                          |                     | 4,000                 |                                       |
| 0305207F |      | COBRA BALL  |                          |                     | 7,500                 |                                       |
| 0305208F | 197  | Distributed Common Ground Systems / RAS-1R                                  |                          |                     |                       |                                       |
| 0305219F | 198  | Predator UAV (JMIP)   | 21,232                   |                     |                       | 21,232                                |
| 0305220F | 199  | Global Hawk UAV (JMIP)  | 81,346                   |                     |                       | 81,346                                |
| 0305887F | 200  | Electronic Combat Intelligence Support                                      | 336,159                  | (18,000)            |                       | 318,159                               |
| 0305906F | 201  | NCMC - TW/AA System   | 963                      |                     |                       | 963                                   |
| 0305910F | 202  | SPACETRACK (SPACE)  | 64,822                   |                     |                       | 64,822                                |
| 0305910F |      | Space Situational Awareness Initiative                                      | 161,838                  | 9,000               |                       | 170,838                               |
| 0305911F | 203  | Defense Support Program (SPACE)   |                          |                     | 9,000                 |                                       |

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|---|------|--|-------------------|---------------------|-----------------------|---------------------------------------|-----------------------|
|   |      |  | Request           | Committee<br>Change | Committee<br>Increase |                                       | Committee<br>Decrease |
| 0305913F  | 204  | NUDET Detection System (SPACE)                                       | 35,398            |                     |                       | 35,398                                |                       |
| 0305917F  | 205  | Space Architect  | 12,907            |                     |                       | 12,907                                |                       |
| 0308601F  | 206  | Modeling and Simulation Support                                      |                   |                     |                       |                                       |                       |
| 0308699F  | 207  | Shared Early Warning (SEW)   | 3,345             |                     |                       | 3,345                                 |                       |
| 0401115F  | 208  | C-130 Airlift Squadron   | 150,242           | 3,000               |                       | 153,242                               |                       |
| 0401115F  |      | Realtime Weight and Balance Measurement                              |                   |                     | 3,000                 |                                       |                       |
| 0401119F  | 209  | C-5 Airlift Squadrons  | 332,982           |                     |                       | 332,982                               |                       |
| 0401130F  | 210  | C-17 Aircraft  | 199,692           |                     |                       | 199,692                               |                       |
| 0401132F  | 211  | C-130J Program   | 36,305            |                     |                       | 36,305                                |                       |
| 0401134F  | 212  | Large Aircraft IR Countermeasures (LAIRCM)                           | 73,684            |                     |                       | 73,684                                |                       |
| 0401218F  | 213  | KC-135s  | 1,079             |                     |                       | 1,079                                 |                       |
| 0401219F  | 214  | KC-10s   | 18,452            | (9,100)             |                       | 9,352                                 |                       |
| 0401219F  |      | KC-10 GATM   |                   |                     |                       | (9,100)                               |                       |
| 0408011F  | 215  | Special Tactics/Combat Control                                       | 1,067             |                     |                       | 1,067                                 |                       |
| 0702207F  | 216  | Depot Maintenance (Non-IF)   | 1,431             |                     |                       | 1,431                                 |                       |
| 0702808F  | 217  | Acquisition and Management Support                                   | 1,596             |                     |                       | 1,596                                 |                       |
| 0708011F  | 218  | Industrial Preparedness  | 38,012            |                     |                       | 38,012                                |                       |
| 0708012F  | 219  | Logistics Support Activities   |                   |                     |                       |                                       |                       |
| 0708026F  | 220  | Productivity, Reliability, Availability, Maintain. Prog Ofc (PRAMPO) |                   |                     |                       |                                       |                       |
| 0708611F  | 221  | Support Systems Development  | 50,238            |                     |                       | 50,238                                |                       |
| 0708612F  | 222  | Computer Resources Support Improvement Program (CRSIP)               |                   |                     |                       |                                       |                       |
| 0808716F  | 223  | Other Personnel Activities   | 110               |                     |                       | 110                                   |                       |
| 0901212F  | 224  | Service-Wide Support (Not Otherwise Accounted For)                   |                   |                     |                       |                                       |                       |
| 0901218F  | 225  | Civilian Compensation Program  | 7,272             |                     |                       | 7,272                                 |                       |
| 0901538F  | 226  | Financial Management Information Systems Development                 | 15,732            |                     |                       | 15,732                                |                       |
| XXXXXX  | 999  | Classified   | 5,551,279         |                     |                       | 5,551,279                             |                       |
| <b>TOTAL, OPERATIONAL SYSTEMS DEVELOPMENT</b>                         |      |  | <b>11,356,318</b> | <b>26,300</b>       | <b>61,700</b>         | <b>(35,400)</b>                       | <b>11,382,618</b>     |
| <b>TOTAL, RESEARCH, DEVELOPMENT, TEST &amp; EVALUATION, AIR FORCE</b> |      |  | <b>21,114,667</b> | <b>413,300</b>      | <b>548,700</b>        | <b>(135,400)</b>                      | <b>21,527,967</b>     |

## Items of Special Interest

*Advanced vehicle and propulsion center and engineering research lab equipment upgrade*

The budget request contained \$92.7 million in PE 62203F for aerospace propulsion, but contained no funds for the advanced vehicle and propulsion center and engineering research laboratory equipment upgrade.

The committee recognizes the value added to Air Force Space Command projects through the Air Force Research Laboratory's effort to merge modeling and simulation capabilities with advanced technologies involving the advanced vehicle and propulsion center. Additionally, the committee notes the need to upgrade propulsion laboratory equipment to support the exploration of emerging technologies.

The committee recommends increases of \$8.5 million in PE 62203F for the advanced vehicle and propulsion center and \$1.0 million for the engineering research lab equipment upgrade.

*Advanced wideband signals intelligence geo-processor*

The budget request contained \$13.3 million in PE 35207F, but contained no funding for the advanced wideband processor and high frequency geo-processor (AWP/HGP).

The committee notes that our asymmetrical adversaries are more commonly using widely available high-technology communications for command and control networks. Airborne collectors are experiencing an increasing challenge in collecting these types of low probability of intercept (LPI)/ low probability of detection (LPD) signals in a dense co-channel environment with rapid geolocation capability. The Air Force Research Laboratory (AFRL) has developed a promising technology that enables signals intelligence collection suites to collect against these signals and provide real-time geo-coordinates of these signals. Flight testing is being conducted and follow-on field testing needs to be accomplished with subsequent integration of this capability into an operational intelligence collector such as the RC-135.

Therefore the committee recommends an increase of \$4.0 million in PE 35207F for the AWP/HGP project for the RC-135 aircraft.

*B-2 development*

The budget request contained \$245.0 million in PE 64240F for B-2 system development, but included no funds to develop the extremely high frequency (EHF) satellite communications (SATCOM) system, or for a global strike capabilities initiative (GSCI). The B-2 is the Department of Defense's most advanced long-range strike aircraft, capable of global force projection in a highly defended target environment.

The EHF SATCOM system is being developed to provide high bandwidth communications for both nuclear and conventional B-2 missions. The committee notes that the Congress appropriated \$12.6 million in fiscal year 2004 for this system, understands that \$24.0 million is required in fiscal year 2005 to complete EHF SATCOM development. Therefore, the committee recommends an increase of \$24.0 million for the EHF SATCOM system.

The GSCI would incrementally upgrade B-2 aircraft with capabilities that address warfighting gaps identified by the Air Force and Joint Force Commanders. For fiscal year 2005, the committee understands that the most urgent capabilities required through the GSCI would include: defensive management system processor upgrades; integrated avionics block development to address deficiencies in the standby flight instruments; Link 16 information exchange between B-2 and other aircraft, and flight management control processor software; and global air traffic management system upgrades. Additionally, the committee understands that the GSCI for fiscal year 2005 would begin development of small diameter bomb (SDB) integration on the B-2, and expects that this effort would eventually provide the B-2 with a capability to deliver 160 to 240 SDBs. Accordingly, the committee recommends an increase of \$74.0 million for the GSCI, and expects that \$13.0 million would upgrade the defensive management system, \$51.0 million would develop an integrated avionics block upgrade, and \$10.0 million would provide for SDB design concepts and program planning necessary to implement an SDB development and integration program.

In total, the committee recommends \$343.0 million for B-2 system development, an increase of \$98.0 million.

#### *Blue MAJIC*

The budget request contained \$35.4 million in PE 64855F for operationally responsive launch, but included no funding for Blue MAJIC.

The committee understands the importance of blue force tracking in the effort to reduce fratricide and increase force protection. The committee recognizes Blue MAJIC would provide the field commander a significant tool to improve blue force tracking. The committee also realizes that Blue MAJIC will pursue a strategy that furthers the employment of responsive launch and integrates current technology into operations.

The committee recommends an increase of \$4.0 million in PE 64855F for Blue MAJIC.

#### *Cobra Ball*

The budget request contained \$13.3 million in PE 35207F for the manned reconnaissance system, but contained no funds for Cobra Ball.

The committee notes Cobra Ball's ability to exploit unused spectral data content and its increased sensitivity and accuracy in the medium wave infrared spectrum and believes it necessary to accelerate this effort.

The committee recommends an increase of \$7.5 million in PE 35207F for Cobra Ball.

#### *Combat optical receiver for smart and loitering standoff weapons*

The budget request included \$78.8 million in PE 62204F for aerospace sensors.

The committee directs that \$2.0 million be made available within funds authorized for PE 62204F for the combat optical receiver for smart and loitering standoff weapons.

*Collaborative information technologies*

The budget request included \$5.3 million in PE 62702F, project 4917, for collaborative information technologies to develop emerging technologies for the next generation of distributed, collaborative command and control systems.

The committee recommends an additional \$4.5 million in PE 62702F, project 4917, to develop an initial operational capability for application of collaborative information technologies to joint and Air Force capability planning, technology assessment, and enterprise management activities.

*Common aero vehicle*

The budget request contained \$21.6 million in PE 64856F for the Common Aero Vehicle (CAV).

The committee is aware that additional funding is required to complete CAV analysis; ensure validation of system components and operational capabilities; fund launch vehicle procurement; and provides flight test planning and range safety support.

The committee recommends \$33.6 million in PE 64856F, an increase of \$12.0 million for CAV.

*Defensive electro-optical tracker countermeasures technologies*

The budget request included \$12.4 million in PE 63270F to develop and demonstrate advanced warning and countermeasures technologies to negate electro-optical, infrared, and laser threats to aerospace platforms.

The committee recommends an additional \$6.0 million in PE 63270F to increase the technology readiness levels to accelerate transition of this capability to system development and demonstration.

*Distributed mission interoperability toolkit*

The budget request contained \$300,000 in PE 64740F for integrated command and control applications, which includes the Distributed Mission Interoperability Toolkit (DMIT) program.

The committee notes that the DMIT is a suite of tools that enable an enterprise architecture for on-demand, trusted, interoperability among mission-oriented command, control, communications, computers, and intelligence (C4I) systems based on lessons learned from Operation Iraqi Freedom.

The committee notes that this program leverages best practices from the commercial sector to positively impact the Department of Defense's C4I programs through the use of open architectures, existing and emerging web standards, and state-of-the-art technologies. The committee believes DMIT will enable rapid and adaptive integration between legacy and new information systems.

Accordingly, the committee recommends \$6.3 million in PE 64740F, an increase of \$6.0 million.

*Enterprise availability and cost optimization system*

The budget request contained \$15.7 million in PE 65011F for development of products and services to improve the performance of aging aircraft systems but included no funds for the enterprise availability and cost optimization system (EACOS).

The committee understands that the program offices supporting aging aircraft systems are each generating their own criteria and processes for identifying enhancements and measuring success. The committee further understands that, as a result of this situation, common problems are being addressed and resolved multiple times in dissimilar manners, and believes that the EACOS, can standardize this process and result in the identification of common solutions.

Accordingly, the committee recommends an increase of \$2.0 million in PE 65011F.

*F-15C/D active electronically scanned array radar*

The budget request contained \$115.2 million in PE 27134F for F-15 development programs, but included no funds for the F-15C/D active electronically scanned array (AESA) radar.

The F-15C/D AESA radar, also known as the APG-63(V) 3 radar, would replace the current APG-63(V) 1 radar, and provide a five hundred percent improvement in reliability while reducing the APG-63(V)1's mobility requirements by eight hundred percent. The committee understands that the F-15C/D AESA radar would also provide significant operational improvements and notes that the Air Force Chief of Staff has included the F-15C/D AESA as his highest unfunded priority for fiscal year 2005.

Consequently, the committee recommends \$132.4 million in PE 27134F, an increase of \$17.2 million for F-15C/D AESA radar.

*Global Hawk United States Southern Command demonstration*

The budget request contained \$336.2 million in PE 35220F for the Air Force Global Hawk high altitude endurance, unmanned aerial vehicle (HAE/UAV) program.

The committee notes that section 221 of the National Defense Authorization Act of 2001 (Public Law 106-398) directed the Secretary of Defense to require and coordinate a concept demonstration of the Global Hawk HAE/UAV. The purpose of the demonstration was to demonstrate the capability of the Global Hawk to operate in an airborne surveillance mode, using available, non-developmental technology in a counter-drug surveillance scenario designed to replicate actual conditions typically encountered in the performance of the counter-drug surveillance mission of the U.S. Southern Command.

The committee believes the Department has not met the requirements of this congressionally directed action.

The committee has received the Air Force January 28, 2004, memorandum that states the directive will be met by utilizing the HAE/UAVs existing ground target moving indicator (GMTI) with surface search modes. The committee notes that the specific intent of section 221, is to provide an airborne air surveillance alternative for U.S. Southern Command through a concept demonstration performed under actual conditions of counter-drug airborne surveillance missions. Additionally, the committee notes that the authorized funds were to also pursue the initiation of concurrent development of an improved surveillance radar, such as an airborne moving target indicator (AMTI) capability, for this purpose.

The committee has determined that the Air Force's present plan does not meet the mandated objective contained in section 221. The

committee suspects the Air Force used the \$18.0 million set aside in 2001 for the counter-drug demonstration to meet other requirements of the Global Hawk development program. The committee concludes that \$18.0 million of Global Hawk requirements, as presented in the 2005 budget request, have been met through the use of the funds set aside for the counter-drug demonstration, and therefore has reduced funds for Global Hawk requirements accordingly.

The committee directs, once again, the Secretary of Defense to conduct a long endurance air-to-air radar surveillance mission concept demonstration of the Global Hawk HAE/UAV that meets the congressional intent of section 221 of Public Law 106-945.

The committee recommends \$318.2 million in PE 35220F, a reduction of \$18.0 million based on the failure of the Department to conduct a demonstration of the Global Hawk UAV for the Southern Command's airborne surveillance concept demonstration for the drug-interdiction mission.

#### *Global positioning system*

The budget request contained \$148.3 million in PE 35165F for the global positioning system, including \$40.6 million for the global positioning system block III (GPS III).

Lessons learned from recent operations have confirmed the value of precision guided munitions in warfare. The committee understands this success relies greatly on the support provided by GPS. Development of GPS III would enhance accuracy, availability and anti-jam capability, while reducing system life-cycle costs. The committee strongly supports this development effort, but is concerned that the first launch, scheduled for fiscal year 2012, is unnecessarily delayed. The committee recommends acceleration of block III satellites consistent with program priorities.

The committee recommends the budget request.

#### *High accuracy network determination system*

The budget request contained \$6.3 million in PE 63444F for the Maui space surveillance system, but included no money for the High Accuracy Network Determination System (HANDS).

The committee recognizes that HANDS would reduce the potential for collisions of space assets by reducing errors in the current space-object maintenance catalog.

The committee recommends \$16.3 million in PE 63444F, an increase of \$10.0 million for HANDS.

#### *Identification of time critical targets*

The budget request included \$28.5 million in PE 63789F for Command, Control, Communications and Intelligence (C3I), including \$5.4 million to develop and demonstrate advanced data and information fusion capabilities for identification of time critical targets (targets under trees).

The committee supports the need for enhanced fusion of intelligence data. Increased funding in fiscal year 2005 would permit the demonstration of fusion technologies for continuous tracking of time critical targets and track continuity to provide more accurate common operational pictures through the use of the Distributed Common Ground System.

Accordingly, the committee recommends an increase of \$5.0 million in PE 63789F for data fusion technologies enabling identification of time critical targets.

*Integrated cooling and power system magnetic bearing technology*

The budget request included \$92.7 million in PE 62203F for Aerospace Propulsion Systems, including \$2.2 million to continue development of advanced bearing concepts for turbine engine applications.

Advanced avionics, electronic warfare systems, and radars in new and upgraded tactical aircraft and unmanned aerial vehicles provide significantly increased capability, but demand advanced solutions to meet power and cooling requirements. One enabling technology to meet these requirements is a magnetic bearing turbo-generator.

Accordingly, the committee recommends an increase of \$4.0 million in PE 62203F for integrated cooling and power system magnetic bearing technology.

*Integrated control for autonomous space systems*

The budget request contained \$88.9 million in PE 62601F for space technology, but contained no funds for integrated control for autonomous space systems (ICASS).

The committee notes that ICASS is intended to provide advanced satellite control and measurement technologies. The committee realizes ICASS has the potential to greatly expand the Department of Defense capability to deploy and control super-compact structures.

The committee recommends an increase of \$4.0 million in PE 62601F for the development of ICASS.

*Intelligent free space optical satellite communication node*

The budget request contained \$60.1 million in PE 63401F for advanced spacecraft technology, but contained no funds for the intelligent free space optical satellite communication node.

The committee is concerned about the development risk of the transformational communications architecture and notes that any laser-based satellite communication system will also require a radio-frequency (RF) capability. The committee believes additional risk-mitigation development is warranted for RF and laser-capable routers and low-cost adaptive switching.

The committee recommends an increase of \$3.0 million in PE 63401F to develop an intelligent free space optical communications node.

*Joint surveillance target attack radar system blue force tracking and combat identification*

The procurement budget request contained \$45.3 million for various E-8C joint surveillance target attack radar system (JSTARS) modifications, but included no funds for the blue force tracking and combat identification (CID) upgrade. Additionally, the research, development, test and evaluation (RDT&E) budget request contained \$89.2 for JSTARS development, but also included no funds to develop the JSTARS blue force CID.

The committee understands that, as a result of Operation Iraqi Freedom, the Department of the Air Force has identified critical needs to prosecute mobile targets; provide a common operating picture of friendly and enemy forces to warfighting decision makers; and accurately distinguish between friendly and enemy forces. The committee also understands that the JSTARS blue force tracking and CID upgrades would network friendly forces in real time with the JSTARS E-8C aircraft in all weather conditions to address these critical needs.

Consequently, the committee recommends \$55.3 million for E-8C procurement modifications, an increase of \$10.0 million for the JSTARS blue force tracking and CID upgrade; and \$100.2 million in PE 27581F, an increase of \$11.0 million to develop the JSTARS blue force combat tracking and CID components.

*KC-10 global air traffic management development*

The budget request contained \$18.5 million in PE 41219F for the KC-10 global air traffic management (GATM) development program.

The KC-10 GATM program is an engineering and manufacturing development (EMD) program that would improve the navigation and communication systems used on KC-10 aircraft. Subsequent to submission of the budget request, the Department of the Air Force canceled the GATM development program due to cost increases. As a result of this decision, the Department informed the committee that it would prefer to transfer these funds into the procurement appropriation to acquire, among other systems, two flight training devices for \$7.8 million and a high-frequency data link for \$1.2 million. While the committee supports the procurement of flight training devices and communication systems, it believes that existing flight training devices are adequate to meet requirements and that the high-frequency data link can be deferred until fiscal year 2006.

Consequently, the committee recommends \$9.4 million in PE 41219F, a decrease of \$9.1 million, for the KC-10 GATM development program.

*Lightweight modular support jammer*

The budget request included \$28.3 million in PE 63270F for electronic combat technology, including \$12.4 million for electro-optical, infrared warning and countermeasures technology.

Countering the threat posed by infrared missiles remains a high priority for the military services. The lightweight modular support jammer (LMSJ) provides a scalable, open architecture, digital receiver and jammer capability for multiple electronic warfare programs and platforms. Additional funding would permit the integration of LMSJ with the Advanced Threat Alert and Response receiver and accelerated testing of the end-to-end system concept.

The committee recommends an increase of \$6.0 million in PE 63270F for LMSJ.

*Metals affordability*

The budget request included \$34.3 million in PE 63112F for advanced materials for weapon systems.

The committee supports the continued government-industry collaboration provided through the Metals Affordability Initiative, pro-

viding significant improvements in the manufacturing of specialty metals for aerospace applications for the private and government sectors of the aerospace industry.

The committee recommends an additional \$14.0 million in PE 63112F for the Metals Affordability Initiative.

#### *Next generation bomber program*

The budget request contained no funds in PE 64015F for the next generation bomber program.

In the committee report on H.R. 1588 (H. Rept. 108–106) for fiscal year 2004, the committee noted both the increasing age of the Department of the Air Force's B–52 bomber fleet and existing plans to begin a next generation bomber program between the years of 2012 to 2015. The committee concluded that Air Force deferral of a next generation bomber program to 2012 to 2015 would be too late to assure a sufficient bomber force structure to meet future requirements for long-range strike in light of the prospect that future basing for shorter range aircraft may not be assured. Consequently, the committee recommended an increase of \$100.0 million for this purpose and notes that \$45.0 million was appropriated. However, the committee is dismayed that budget justification documents accompanying the fiscal year 2005 budget request reveal that these funds would be used to develop, mature and study integration of next generation style technologies with the existing bomber fleet, rather than beginning a next generation bomber program that would develop, and eventually procure, new bomber aircraft to meet future long range strike requirements.

For fiscal year 2005, the committee notes that, despite its expectation that the Department of the Air Force would begin a program to develop and procure a next generation bomber beginning in fiscal year 2004, the Department does not include any funds for this purpose until fiscal year 2008, with additional funding planned for fiscal year 2009. While the committee recognizes that the Department of the Air Force has accelerated its next generation bomber plan from the 2012 to 2015 timeframe to fiscal year 2008, the committee remains steadfast in its prior year view that development of a next generation bomber aircraft needs to be initiated, since most of the Air Force's bomber fleet consists of 94 B–52 aircraft which are now approximately 42 years old.

Accordingly, the committee recommends \$100.0 million in PE 64015F for the next generation bomber program, and strongly urges the Department of the Air Force to budget for a next generation bomber program each year in its Future Years Defense Program.

#### *Operationally responsive launch*

The budget request contained \$35.4 million in PE 64855F for operationally responsive launch.

The committee strongly supports an operationally responsive launch capability and its objective of developing an affordable, reliable, time responsive launch system, including Scorpius. The committee believes integration of operationally responsive launches would greatly increase the speed of delivering critical space capabilities to the warfighter.

The committee recommends an increase of \$6.0 million in PE 64855F for development of an operationally responsive launch capability, including Scorpius.

*Satellite simulation toolkit*

The budget request contained \$60.1 million in PE 63401F for advanced spacecraft technology, but contained no funds for integrated control for a satellite simulation toolkit (SST).

SST provides value to the acquisition and development of space systems via coherent systems engineering and virtual prototyping. The committee is aware of the need to complete development and integration of new and legacy models for the full implementation of SST based effects.

The committee recommends an increase of \$5.0 million in PE 63401F for SST.

*Satellite tool kit technical integration concept of operations for tactical satellite*

The budget request contained \$88.9 million in PE 62601F for space technology, but contained no funds for satellite tool kit technical integration.

The committee notes that satellite tool kit technical integration would provide tactical data to the warfighter indicating when a satellite overflight will occur to allow single pass tasking and downlink of time-sensitive surveillance information. This program would benefit in-theater warfighters by enabling immediate access to tactical intelligence, surveillance and reconnaissance assets to enable the collection and delivery of timely surveillance information to enable battlefield superiority. Additionally, these assets provide surge capability to augment existing national assets or help reconstitute space capabilities lost due to enemy action.

The committee recommends an increase of \$4.0 million in PE 62601F for satellite tool kit technical integration.

*Space-based infrared system*

The budget request included \$508.4 million in PE 64441F for development of the space-based infrared system (SBIRS).

When finally deployed, SBIRS will provide improved early-warning capabilities and technical intelligence. The committee notes that the SBIRS program has had persistent cost, schedule and technical problems over the last three years of its development. Unexpected technical difficulties on the first SBIRS payload resulted in cost overruns and schedule delays. These problems and further technical difficulties have in turn resulted in a delay of at least one year for the first launch of a SBIRS satellite into geostationary orbit.

The committee notes that the Commander of United States Strategic Command testified to the Strategic Forces Subcommittee in February, 2004 that continuation of the SBIRS program is absolutely essential to his command. The committee remains supportive of the SBIRS program because of the critical nature of its mission. The committee notes the recent technical issues with the geosynchronous sensors and concurs with the recovery plan as presented by the Undersecretary of the Air Force.

The committee recommends an increase of \$35.0 million in PE 64441F to address the SBIRS budget shortfall, overcome development difficulties and minimize the schedule delay.

*Space-based radar*

The budget request contained \$327.7 million in PE 63858F for space-based radar (SBR).

The committee recognizes the benefits SBR will provide through a persistent, near real-time, high resolution surveillance capability deep into enemy territory and denied areas, benefiting both military and intelligence communities. The committee believes the country cannot afford separate SBR systems to address the needs of these two communities and, as such, it is imperative to develop this system with full support and involvement of the Department of Defense and the Intelligence Community (IC). The committee strongly urges the Department and the IC to work in a joint manner toward the development of a SBR capability.

The committee notes unfavorable schedule and cost performance of several space system acquisition programs. As a result of this trend, the committee recommends a legislative provision (sec. 216) affecting the progression to Milestone B for SBR.

The committee recommends the budget request.

*Space cadre*

The committee is committed to the development of highly skilled and knowledgeable professionals to address the acquisition, policy, and technology aspects of space necessary to ensure United States preeminence in tomorrow's space environment. The committee is aware of the ongoing effort by the Department of Defense to institute the space human capital resources strategy as described in the February 2004 report to the congressional defense committees titled, "Space Human Capital Resources Strategy."

The committee notes that this three-phased strategy will initiate the development of a professional space cadre. The committee supports this effort and encourages the Secretary of Defense to continue this effort. The committee recommends that the Department include in its strategy a thorough review of education, training, and the development of a robust, joint space curriculum.

*Space situational awareness initiative*

The budget request contained \$161.8 million in PE 35910F for Spacetrack, but included no funds for the space situational awareness initiative.

The committee notes the importance of this upgrade for the future of the counter space mission. Moreover, the committee understands the effort will require nearly eight years to achieve a full operational capability and believes it is prudent to initiate this effort immediately.

The committee recommends \$170.8 million in PE 35910F, an increase of \$9.0 million for the space situational awareness initiative.

*Streaker small launch vehicle*

The budget request contained \$60.1 million in PE 63401F for advanced spacecraft technology, but included no funds for the Streaker small launch vehicle (SLV).

The committee is aware that the Department of Defense desires to develop this capability to affordably launch small satellites to low earth orbits for a variety of purposes. The committee notes that the Streaker SLV has the potential to provide affordable responsive launch for small satellites.

The committee recommends an increase of \$6.0 million in PE 63401F for the Streaker SLV.

*Transformational satellite communications*

The budget request contained \$774.8 million in PE 63845F for the transformational communications satellite (TSAT) system.

The General Accounting Office expressed concerns in report GAO-04-71R about the immaturity of the TSAT technology and the significant engineering challenges facing a laser-based satellite communications system. The committee remains concerned that the TSAT system is still being driven by an aggressive schedule that does not adequately take into account the immaturity of several key enabling technologies and challenging integration issues.

While the committee supports the goal of TSAT and recognizes the modest steps the Air Force has taken to address the concerns raised in the committee report on H.R. 1588 (H. Rept. 108-106) last year, the committee believes a slower, more realistic schedule for this program is warranted.

The committee recommends \$674.8 million in PE 63845F, a decrease of \$100.0 million for the TSAT program.

*Ultra short pulse laser technology*

The budget request contained \$36.5 million in PE 62605F for directed energy technology, but included no funding for ultra short pulse laser technology.

The committee is aware that ultra short pulse laser technology has the potential to be a breakthrough in size, weight and effectiveness for many applications.

The committee recommends \$46.5 million in PE 62605F, an increase of \$10.0 million for ultra short pulse laser.

*Upper stage engine technology*

The budget request contained \$51.1 million in PE 63500F for multi-disciplinary space technology, but contained no funds for upper stage engine technology.

Upper stage engine technology supports the Air Force's goal to improve liquid oxygen/hydrogen simulation and forecasting tools. The committee recognizes this goal will reduce the risk associated with new technology transition into upper stage engines for reusable and expendable launch vehicles.

The committee recommends \$58.1 million in PE 63500F, an increase of \$7.0 million for upper stage engine technology.

*Wideband gapfiller system*

The budget request included \$73.5 million in PE 63854F and \$40.3 million in Missile Procurement, Air Force, for the wideband gapfiller satellite (WGS) communications system.

WGS will provide a significant increase in communications bandwidth for warfighters. The committee notes the Air Force's plan to acquire and launch three satellites over the course of fiscal years

2005 and 2007. The committee also notes plans during fiscal year 2005 to negotiate a contract to acquire two additional satellites that would be launched starting in fiscal year 2009. This plan could leave a three-year production gap between the third and fourth satellites, a gap that could increase program risk and cost resulting from parts obsolescence, personnel fluctuations, and the potential need to re-qualify subcontractors. The committee also notes that the Department of Defense supplements its satellite communications network by leasing commercial satellite communications capacity at a cost of about \$300.0 million per year. The committee believes that deferring additional military satellite communications acquisition may not be cost effective.

The committee believes that the Air Force decision to proceed with WGS acquisition is correct, but the acquisition strategy that results in this production gap is not well considered.

The committee recommends \$88.5 million in PE 63854F, an increase of \$15.0 million for additional WGS spare parts.

#### *Worldwide infrastructure security environment*

The budget request contained \$79.6 million in PE 33140F for information security systems programs, but included no funding for the worldwide infrastructure security environment (WISE).

The committee supports this initiative to provide protection and response to attacks that exploit our reliance on computers. This program will manage the complex interactions between physical access, network access, authentication, monitoring, and environmental controls to provide defense against sophisticated hackers. This program also addresses the cyber threat of the year 2010 and beyond with a unique approach to protect information on the Global Information Grid through transaction authentication.

Accordingly, the committee recommends \$87.6 million in PE 33140F, an increase of \$8.0 million for WISE.

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

#### Overview

The budget request contained \$20,739.8 million for Defense-wide research, development, test, and evaluation (RDT&E).

The committee recommends \$20,769.3 million, an increase of \$29.4 million to the budget request.

**Title II - RESEARCH, DEVELOPMENT, TEST AND EVALUATION**  
(Dollars in Thousands)

| PE Name  | Line | PROGRAM TITLE  | FY 2005               |                  | FY 2005            |                    |
|--|------|--|-----------------------|------------------|--------------------|--------------------|
|  |      |  | Authorization Request | Committee Change | Committee Increase | Committee Decrease |
| <b>RESEARCH, DEVELOPMENT, TEST &amp; EVAL, DEFENSEWIDE</b> |      |  |                       |                  |                    |                    |
| <b>BASIC RESEARCH</b>                                      |      |  |                       |                  |                    |                    |
| 0601101D8Z   | 1    | In-House Laboratory Independent Research                       |                       |                  |                    | 148,729            |
| 0601101E   | 2    | Defense Research Sciences                                      | 143,729               | 5,000            | 3,000              |                    |
| 0601101E   |      | Optoelectronics and Optical Communications                     |                       |                  | 2,000              |                    |
| 0601101E   |      | Super Lattice Nanotechnology                                   |                       |                  |                    |                    |
| 0601103D8Z   | 3    | University Research Initiatives                                |                       |                  |                    |                    |
| 0601105D8Z   | 4    | Force Health Protection  |                       |                  |                    |                    |
| 0601108D8Z   | 5    | High Energy Laser Research Initiatives                         |                       |                  |                    |                    |
| 0601111D8Z   | 6    | Government/Industry Cosponsorship of University Research       |                       |                  |                    |                    |
| 0601114D8Z   | 7    | Defense Experimental Program to Stimulate Competitive Research | 9,590                 |                  |                    | 9,590              |
| 0601384BP  | 8    | Chemical and Biological Defense Program                        | 36,769                | 15,000           | 15,000             | 51,769             |
|  |      | <b>TOTAL, BASIC RESEARCH</b>                                   | <b>190,088</b>        | <b>20,000</b>    | <b>20,000</b>      | <b>210,088</b>     |
| <b>APPLIED RESEARCH</b>                                    |      |  |                       |                  |                    |                    |
| 0602227D8Z   | 9    | Medical Free Electron Laser                                    | 9,668                 | 10,000           | 10,000             | 19,668             |
| 0602228D8Z   | 10   | Historically Black Colleges and Universities (HBCU) Science    | 14,192                |                  |                    | 14,192             |
| 0602234D8Z   | 11   | Lincoln Laboratory Research Program                            | 25,441                |                  |                    | 25,441             |
| 0602301E   | 12   | Computing Systems and Communications Technology                | 342,614               | (20,000)         |                    | 322,614            |
| 0602301E   |      | Program Reduction  |                       |                  |                    | (20,000)           |
| 0602302E   | 13   | Embedded Software and Pervasive Computing                      | 147,533               | 10,000           |                    | 157,533            |
| 0602383E   | 14   | Biological Warfare Defense                                     |                       |                  | 10,000             |                    |
| 0602383E   |      | Asymmetric Protocols   |                       |                  |                    |                    |
| 0602384BP  | 15   | Chemical and Biological Defense Program see RDA-30/121         | 104,385               | 25,000           |                    | 129,385            |
| 0602384BP  |      | Applied Research Initiative                                    |                       |                  | 25,000             |                    |
| 0602702E   | 16   | Tactical Technology  | 339,175               | (39,000)         |                    | 300,175            |
| 0602702E   |      | Stimulated Isomer Energy Release                               |                       |                  |                    | (4,000)            |
| 0602702E   |      | Walrus Hybrid Airlift Vehicle                                  |                       |                  |                    | (10,000)           |
| 0602702E   |      | High-speed/Hypersonic reusable demonstration                   |                       |                  |                    | (15,000)           |

**Title II - RESEARCH, DEVELOPMENT, TEST AND EVALUATION**  
(Dollars in Thousands)

| PE Name    | Line | PROGRAM TITLE  | FY 2005                  |                     |                       | FY 2005<br>Committee<br>Authorization |
|------------|------|--|--------------------------|---------------------|-----------------------|---------------------------------------|
|            |      |  | Authorization<br>Request | Committee<br>Change | Committee<br>Increase |                                       |
| 0602702E   |      | Program Reduction  |                          |                     |                       |                                       |
| 0602712E   | 17   | Materials and Electronics Technology                     | 502,044                  | (10,000)            |                       | 492,044                               |
| 0602712E   |      | Program Reduction  |                          |                     |                       |                                       |
| 0602716BR  | 18   | WMD Defeat Technology                                    | 249,786                  | 10,000              |                       | 259,786                               |
| 0602716BR  |      | Nuclear Weapons Effects                                  |                          |                     | 10,000                |                                       |
| 0602717BR  | 19   | WMD Defense Technologies                                 | 116,113                  |                     |                       | 116,113                               |
| 0602787D8Z | 20   | Medical Technology                                       | 10,084                   |                     |                       | 10,084                                |
| 0602690D8Z | 21   | High Energy Laser Research                               |                          |                     |                       |                                       |
| 1160401BB  | 22   | Special Operations Technology Development and Production | 13,109                   | 3,000               |                       | 16,109                                |
| 1160401BB  |      | Spike Missile Development and Production                 |                          |                     | 3,000                 |                                       |
| 1160407BB  | 23   | SOF Medical Technology Development                       | 2,162                    |                     |                       | 2,162                                 |
|            |      | <b>TOTAL, APPLIED RESEARCH</b>                           | <b>1,876,306</b>         | <b>(11,000)</b>     | <b>58,000</b>         | <b>1,865,306</b>                      |
|            |      | <b>ADVANCED TECHNOLOGY DEVELOPMENT</b>                   |                          |                     |                       |                                       |
| 0603002D8Z | 24   | Medical Advanced Technology                              | 2,063                    | 5,000               |                       | 7,063                                 |
| 0603002D8Z |      | Anti-radiation Drug and Trials Program                   |                          |                     | 5,000                 |                                       |
| 0603104D8Z | 25   | Explosives Demilitarization Technology                   |                          |                     |                       |                                       |
| 0603121D8Z | 26   | SO/LIC Advanced Development                              | 32,682                   |                     |                       | 32,682                                |
| 0603122D8Z | 27   | Combating Terrorism Technology Support                   | 46,719                   | 27,500              |                       | 74,219                                |
| 0603122D8Z |      | SVS Collaborative and Virtual Reality Training Pilot     |                          |                     | 2,500                 |                                       |
| 0603122D8Z |      | Advanced Combating Terrorism Technology                  |                          |                     | 25,000                |                                       |
| 0603160BR  | 28   | Counterproliferation Advanced Development Technologies   | 74,456                   |                     |                       | 74,456                                |
| 0603175C   | 29   | Ballistic Missile Defense Technology                     | 204,320                  | 4,000               |                       | 208,320                               |
| 0603225D8Z | 30   | Joint DoD-DoE Munitions Technology Development           | 23,319                   |                     |                       | 23,319                                |
| 0603232D8Z | 31   | Automatic Target Recognition                             |                          |                     |                       |                                       |
| 0603285E   | 32   | Advanced Aerospace Systems                               | 361,067                  | (55,000)            |                       | 306,067                               |
| 0603285E   |      | Program Reduction  |                          |                     |                       | (20,000)                              |
| 0603285E   |      | Walrus Hybrid Airlift Vehicle                            |                          |                     |                       | (10,000)                              |
| 0603285E   |      | Transfer to 63122D8Z                                     |                          |                     |                       | (25,000)                              |

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|------------|------|--|--------------------------|---------------------|-----------------------|---------------------------------------|
|            |      |  | Authorization<br>Request | Committee<br>Change | Committee<br>Increase |                                       |
|            |      |  | 117,343                  | 35,000              | 35,000                | 152,343                               |
|            |      | Chemical and Biological Defense Program - Advanced Development | 284,617                  |                     |                       | 284,617                               |
| 0603384BP  | 33   | J-UCAS   |                          |                     |                       |                                       |
| 0603400D8Z | 34   | Special Technical Support                                      |                          |                     |                       |                                       |
| 0603704D8Z | 35   | Arms Control Technology  |                          |                     |                       |                                       |
| 0603711BR  | 36   | Generic Logistics R&D Technology Demonstrations                | 27,542                   | 2,000               | 2,000                 | 29,542                                |
| 0603712S   | 37   | Connectory for Rapid ID of Tech Resources                      |                          |                     |                       |                                       |
| 0603712S   | 38   | Strategic Environmental Research Program                       | 56,936                   |                     |                       | 56,936                                |
| 0603716D8Z | 39   | Joint Warfighting Program                                      | 9,936                    |                     |                       | 9,936                                 |
| 0603727D8Z | 40   | Advanced Electronics Technologies                              | 218,151                  | (5,000)             |                       | 213,151                               |
| 0603739E   | 41   | Program Reduction  |                          |                     |                       |                                       |
| 0603750D8Z | 42   | Advanced Concept Technology Demonstrations                     | 213,901                  | 6,000               | 6,000                 | 219,901                               |
| 0603755D8Z | 43   | High Performance Computing Modernization Program               | 186,666                  |                     |                       | 186,666                               |
| 0603755D8Z | 44   | SMDC Simulation Center   |                          |                     |                       |                                       |
| 0603760E   | 45   | Command, Control and Communications Systems                    | 225,784                  | (20,000)            |                       | 205,784                               |
| 0603762E   | 46   | Program Reduction  |                          |                     |                       |                                       |
| 0603762E   | 47   | Sensor and Guidance Technology                                 | 337,117                  | (25,000)            |                       | 312,117                               |
| 0603762E   | 48   | Program Reduction  |                          |                     |                       |                                       |
| 0603763E   | 49   | Marine Technology  |                          |                     |                       |                                       |
| 0603764E   | 50   | Land Warfare Technology / FCS                                  | 63,121                   |                     |                       | 63,121                                |
| 0603765E   | 51   | Classified DARPA Programs                                      | 238,131                  | (25,000)            |                       | 213,131                               |
| 0603765E   | 52   | Program Reduction  |                          |                     |                       |                                       |
| 0603766E   | 53   | Network-Centric Warfare Technology                             | 125,124                  | (15,000)            |                       | 110,124                               |
| 0603766E   | 54   | Program Reduction  |                          |                     |                       |                                       |
| 0603769DSE | 55   | Distributed Learning Advanced Technology Development           | 13,756                   |                     |                       | 13,756                                |
| 0603781D8Z | 56   | Software Engineering Institute                                 | 21,599                   |                     |                       | 21,599                                |
| 0603805S   | 57   | Dual Use Application Programs                                  |                          |                     |                       |                                       |
| 0603826D8Z | 58   | Quick Reaction Special Projects/Challenge Program              | 64,389                   | 105,000             | 30,000                | 169,389                               |
| 0603826D8Z | 59   | IED Electronic Counter Measures and Jammers                    |                          |                     | 25,000                | 25,000                                |
| 0603826D8Z | 60   | Optical Surveillance Systems                                   |                          |                     |                       |                                       |

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|------------|------|---|--------------------------|---------------------|-----------------------|-----------------------|---------------------------------------|
|            |      |   | Authorization<br>Request | Committee<br>Change | Committee<br>Increase | Committee<br>Decrease |                                       |
| 0603826D8Z |      |   |                          |                     | 50,000                |                       | 46,017                                |
| 0603832D8Z | 53   | Quick Reaction Counter Rocket and Mortar Capability       | 46,017                   |                     |                       |                       | 46,017                                |
| 0603924D8Z | 54   | Joint Wargaming Simulation Management Office              |                          |                     |                       |                       |                                       |
| 0603942D8Z | 55   | High Energy Laser Advanced Technology Program             | 1,934                    |                     |                       |                       | 1,934                                 |
| 0605160D8Z | 56   | Technology Link   | 1,958                    |                     |                       |                       | 1,958                                 |
| 1160402BB  | 57   | Counterproliferation Support                              | 48,803                   | 16,000              |                       |                       | 64,803                                |
| 1160402BB  |      | Special Operations Advanced Technology Development        |                          |                     | 4,000                 |                       |                                       |
| 1160402BB  |      | Remote Sensor Power Source                                |                          |                     | 3,000                 |                       |                                       |
| 1160402BB  |      | Advanced ID Capability for AC-130U                        |                          |                     | 6,000                 |                       |                                       |
| 1160402BB  |      | ANGELFIRE Active Protection                               |                          |                     | 3,000                 |                       |                                       |
| 1160402BB  |      | Surveillance Augmentation Vehicle - Insertable on Request |                          |                     |                       |                       |                                       |
|            |      | <b>TOTAL, ADVANCED TECHNOLOGY DEVELOPMENT</b>             | <b>3,047,451</b>         | <b>55,500</b>       | <b>200,500</b>        | <b>(145,000)</b>      | <b>3,102,951</b>                      |
|            |      | <b>ADVANCED COMPONENT DEVELOPMENT &amp; PROTOTYPES</b>    |                          |                     |                       |                       |                                       |
| 0603228D8Z | 58   | Physical Security Equipment                               |                          |                     |                       |                       |                                       |
| 0603709D8Z | 59   | Joint Robotics Program                                    | 11,771                   |                     |                       |                       | 11,771                                |
| 0603714D8Z | 60   | Advanced Sensor Applications Program                      | 17,581                   | 18,000              | 10,000                |                       | 35,581                                |
| 0603714D8Z |      | Multi-Wavelength Surface Scanning Biologics Sensor        |                          |                     | 3,000                 |                       |                                       |
| 0603714D8Z |      | Advanced Solid State Dye Laser                            |                          |                     | 5,000                 |                       |                                       |
| 0603736D8Z | 61   | CALS Initiative   | 32,546                   |                     |                       |                       | 32,546                                |
| 0603851D8Z | 62   | Environmental Security Technical Certification Program    |                          |                     |                       |                       |                                       |
| 0603869C   | 63   | Meads Concepts  | 256,159                  | (50,000)            |                       |                       | 206,159                               |
| 0603879C   | 64   | Advanced Concepts, Evaluations And Systems                |                          |                     |                       |                       |                                       |
| 0603880C   | 65   | Ballistic Missile Defense System Segment                  | 937,748                  | 47,000              | 47,000                |                       | 984,748                               |
| 0603881C   | 66   | Ballistic Missile Defense Terminal Defense Segment        | 4,384,775                | 30,000              |                       |                       | 4,414,775                             |
| 0603882C   | 67   | Ballistic Missile Defense Midcourse Defense Segment       |                          |                     | 30,000                |                       |                                       |
| 0603882C   |      | Solid State S Band Radar                                  |                          |                     |                       |                       |                                       |
| 0603883C   | 68   | Ballistic Missile Defense Boost Defense Segment           | 492,614                  |                     |                       |                       | 492,614                               |
| 0603884BP  | 69   | Chemical and Biological Defense Program                   | 104,195                  |                     |                       |                       | 104,195                               |
| 0603884C   | 70   | Ballistic Missile Defense Sensors                         | 591,957                  | (51,000)            |                       |                       | 540,957                               |

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| PE Name    | Line | PROGRAM TITLE   | FY 2005               |                  | FY 2005            |                    |                         |         |
|------------|------|---|-----------------------|------------------|--------------------|--------------------|-------------------------|---------|
|            |      |   | Authorization Request | Committee Change | Committee Increase | Committee Decrease | Committee Authorization |         |
| 0603884C   |      | Post Ramos Project  |                       |                  | 5,000              |                    |                         |         |
| 0603886C   | 71   | Ballistic Missile Defense System Interceptor                  | 511,262               | (67,000)         |                    | (75,000)           | 444,262                 |         |
| 0603886C   |      | Boost Phase Hit-to-Kill                                       |                       |                  | 8,000              |                    |                         |         |
| 0603888C   | 72   | Ballistic Missile Defense Test & Targets                      | 713,658               |                  |                    |                    | 713,658                 |         |
| 0603889C   | 73   | Ballistic Missile Defense Products                            | 418,608               | (60,000)         |                    | (60,000)           | 358,608                 |         |
| 0603890C   | 74   | Ballistic Missile Defense Systems Core                        | 479,764               | (30,000)         |                    | (30,000)           | 449,764                 |         |
| 0603890C   |      | Wide Bandwidth Technology                                     |                       | [4,000]          |                    |                    | [4,000]                 |         |
| 0603910D8Z | 75   | Strategic Capability Modernization                            |                       |                  |                    |                    |                         | 13,747  |
| 0603920D8Z | 76   | Humanitarian Demining   | 13,747                |                  |                    |                    |                         | 5,886   |
| 0603923D8Z | 77   | Coalition Warfare   | 5,886                 |                  |                    |                    |                         | 422,873 |
| 0604000D8Z | 78   | J-UCAS  | 422,873               |                  |                    |                    |                         |         |
| 0604722D8Z | 79   | Joint Service Education and Training Systems Development      |                       |                  |                    |                    |                         | 27,351  |
| 0605017D8Z | 80   | Reduction Of Total Ownership Cost                             | 27,351                |                  |                    |                    |                         | 6,679   |
| 0303191D8Z | 81   | Joint Electromagnetic Technology (JET) Program                | 6,679                 |                  |                    |                    |                         | 167,626 |
|            | 81a  | Joint Experimentation   |                       |                  | 167,626            |                    |                         | 26      |
|            | 81b  | Joint Warfare Experiments                                     |                       |                  | 26                 |                    |                         | 22,450  |
|            | 81c  | Joint Warfare Transformation Programs                         |                       |                  | 22,450             |                    |                         |         |
|            |      | <b>TOTAL, ADVANCED COMPONENT DEVELOPMENT &amp; PROTOTYPES</b> | <b>9,429,174</b>      | <b>27,102</b>    | <b>298,102</b>     | <b>(271,000)</b>   | <b>9,456,276</b>        |         |
|            |      | <b>SYSTEM DEVELOPMENT &amp; DEMONSTRATION</b>                 |                       |                  |                    |                    |                         |         |
| 0604384BP  | 82   | Chemical and Biological Defense Program                       | 152,379               | 13,000           |                    |                    | 165,379                 |         |
| 0604384BP  |      | Joint Biological Point Detection System                       |                       |                  | 5,000              |                    |                         |         |
| 0604384BP  |      | Joint Service Lightweight Standoff Chemical Agent Detector    |                       |                  | 8,000              |                    |                         |         |
| 0604618D8Z | 83   | MANPADS Defense Program                                       | 14,135                | (14,135)         |                    | (14,135)           |                         |         |
| 0604709D8Z | 84   | Joint Robotics Program  | 13,845                |                  |                    |                    | 13,845                  |         |
| 0604764K   | 85   | Advanced IT Services Joint Program Office (AITS-JPO)          | 18,183                |                  |                    |                    | 18,183                  |         |
| 0604771D8Z | 86   | Joint Tactical Information Distribution System (JTIDS)        | 18,515                |                  |                    |                    | 18,515                  |         |
| 0604861C   | 87   | Theater High-Altitude Area Defense System - TMD               |                       |                  |                    |                    |                         |         |
| 0604865C   | 88   | Patriot PAC-3 Theater Missile Defense Acquisition             |                       |                  |                    |                    |                         |         |

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|--|------|--|--------------------------|---------------------|-----------------------|---------------------------------------|
|  |      |  | Authorization<br>Request | Committee<br>Change | Committee<br>Increase |                                       |
| 0605013BL  | 89   | Information Technology Development                                   | 10,683                   |                     |                       | 10,683                                |
| 0605013D8Z   | 90   | Prototype Accounting Systems   | 52,407                   |                     |                       | 52,407                                |
| 0605014SE  | 91   | Information Technology Development                                   | 6,690                    |                     |                       | 6,690                                 |
| 0605015BL  | 92   | Information Technology Development-Standard Procurement System (SPS) | 94,767                   | (49,000)            |                       | 45,767                                |
| 0605016D8Z   | 93   | Financial Management System Improvements                             | 6,623                    |                     |                       | 6,623                                 |
| 0303129K   | 94   | Defense Message System   | 2,493                    |                     |                       | 2,493                                 |
| 0303140K   | 95   | Information Systems Security Program                                 | 17,867                   |                     |                       | 17,867                                |
| 0303141K   | 96   | Global Combat Support System   | 3,000                    |                     |                       | 3,000                                 |
| 0303158K   | 97   | Joint Command and Control Program (JC2)                              | 3,466                    |                     |                       | 3,466                                 |
| 0305840K   | 98   | Electronic Commerce  | 2,345                    |                     |                       | 2,345                                 |
| 0305840S   | 99   | Electronic Commerce  | 7,472                    |                     |                       | 7,472                                 |
| 0901200D8Z   | 100  | BMMP Domain Management and Systems Integration                       | 424,870                  | (50,135)            | 13,000                | 374,735                               |
| <b>TOTAL, SYSTEM DEVELOPMENT &amp; DEMONSTRATION</b> |      |  |                          |                     |                       |                                       |
| <b>RDT&amp;E MANAGEMENT SUPPORT</b>                  |      |  |                          |                     |                       |                                       |
| 0603704D8Z   | 101  | Special Technical Support  | 19,274                   |                     |                       | 19,274                                |
| 0603757D8Z   | 102  | Training Transformation (T2)   | 9,977                    |                     |                       | 9,977                                 |
| 0603835D8Z   | 103  | Transformation Initiatives Program                                   | 19,691                   |                     |                       | 19,691                                |
| 0603858D8Z   | 104  | Unexploded Ordnance Detection and Clearance                          | 4,989                    |                     |                       | 4,989                                 |
| 0604774D8Z   | 105  | Defense Readiness Reporting System (DRRS)                            | 7,263                    |                     |                       | 7,263                                 |
| 0604875D8Z   | 106  | Joint Systems Architecture Development                               | 30,818                   | 1,000               |                       | 31,818                                |
| 0604843D8Z   | 107  | Thermal Vicar  |                          |                     |                       |                                       |
| 0605104D8Z   | 108  | Technical Studies, Support and Analysis                              |                          |                     | 1,000                 |                                       |
| 0605110BR  | 109  | NDU Technology Pilot Program   | 1,937                    |                     |                       | 1,937                                 |
| 0605114D8Z   | 110  | BLACK LIGHT  | 21,535                   |                     |                       | 21,535                                |
| 0605116D8Z   | 111  | General Support to C3I   | 35,572                   |                     |                       | 35,572                                |
| 0605117D8Z   | 112  | Foreign Material Acquisition and Exploitation                        | 5,882                    |                     |                       | 5,882                                 |
| 0605123D8Z   | 113  | Interagency Export License Automation                                |                          |                     |                       |                                       |

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|------------|------|---|--------------------------|---------------------|-----------------------|---------------------------------------|
|            |      |   | Authorization<br>Request | Committee<br>Change | Committee<br>Increase |                                       |
| 0605124D8Z | 114  | Defense Travel System                                       | 28,508                   |                     |                       | 28,508                                |
| 0605126J   | 115  | Joint Theater Air and Missile Defense Organization          | 86,409                   |                     |                       | 86,409                                |
| 0605128D8Z | 116  | Classified Program USD(P)                                   |                          |                     |                       |                                       |
| 0605130D8Z | 117  | Foreign Comparative Testing                                 | 35,633                   | 1,550               |                       | 37,183                                |
| 0605130D8Z |      | Weather SCOUT UAV   |                          |                     | 1,550                 |                                       |
| 0605170D8Z | 118  | Support to Networks and Information Integration             | 11,490                   |                     |                       | 11,490                                |
| 0605200D8Z | 119  | General Support to USD (Intelligence)                       | 4,830                    |                     |                       | 4,830                                 |
| 0605384BP  | 120  | Chemical and Biological Defense Program                     | 42,652                   |                     |                       | 42,652                                |
| 0605502BR  | 121  | Small Business Innovative Research                          |                          |                     |                       |                                       |
| 0605502C   | 122  | Small Business Innovative Research - MDA                    |                          |                     |                       |                                       |
| 0605502D8Z | 123  | Small Business Innovative Research                          |                          |                     |                       |                                       |
| 0605502E   | 124  | Small Business Innovative Research                          |                          |                     |                       |                                       |
| 0605710D8Z | 125  | Classified Programs - C3I                                   |                          |                     |                       |                                       |
| 0605790D8Z | 126  | Small Business Innovation Research/Challenge Administration | 1,999                    |                     |                       | 1,999                                 |
| 0605798S   | 127  | Defense Technology Analysis                                 | 7,279                    |                     |                       | 7,279                                 |
| 0605799D8Z | 128  | Force Transformation  | 19,591                   | 25,000              |                       | 44,591                                |
|            |      | Operationally Responsive Satellite                          |                          |                     | 25,000                |                                       |
| 0605801K   | 129  | Defense Technical Information Services (DTIC)               | 45,203                   |                     |                       | 45,203                                |
| 0605803SE  | 130  | R&D in Support of DoD Enlistment, Testing and Evaluation    | 10,598                   |                     |                       | 10,598                                |
| 0605804D8Z | 131  | Development Test and Evaluation                             | 8,882                    |                     |                       | 8,882                                 |
| 0605898E   | 132  | Management Headquarters (Research and Development) DARPA    | 46,689                   |                     |                       | 46,689                                |
| 0303169D8Z | 133  | Information Technology Rapid Acquisition                    | 19,958                   | (17,000)            |                       | 2,958                                 |
|            |      | Rapid Acquisition Process                                   |                          |                     |                       |                                       |
| 0305193D8Z | 134  | Intelligence Support to Information Operations (IO)         | 12,878                   |                     |                       | 12,878                                |
| 0305193G   | 135  | Intelligence Support to Information Operations (IO)         |                          |                     |                       |                                       |
| 0901585C   | 136  | Pentagon Reservation  | 13,884                   |                     |                       | 13,884                                |
| 0901598C   | 137  | Management Headquarters - MDA                               | 141,923                  |                     |                       | 141,923                               |
| 0901598D8W | 138  | IT Software Dev Initiatives                                 | 1,700                    |                     |                       | 1,700                                 |
| 0909999E   | 139  | Financing for Cancelled Account Adjustments                 |                          |                     |                       |                                       |

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| PE Name                                    | Line | PROGRAM TITLE  | FY 2005<br>Authorization<br>Request | Committee<br>Change | Committee<br>Increase | Committee<br>Decrease | FY 2005<br>Committee<br>Authorization |
|--|------|--|-------------------------------------|---------------------|-----------------------|-----------------------|---------------------------------------|
| XXXXXX                                     | 989  | Classified Programs  | 14,482                              | 20,400              | 20,400                |                       | 34,882                                |
| XXXXXX                                     |      | Program Increase   |                                     |                     |                       |                       |                                       |
| <b>TOTAL, RDT&amp;E MANAGEMENT SUPPORT</b> |      |  | <b>711,326</b>                      | <b>30,950</b>       | <b>47,950</b>         | <b>(17,000)</b>       | <b>742,276</b>                        |
| <b>OPERATIONAL SYSTEMS DEVELOPMENT</b>     |      |  |                                     |                     |                       |                       |                                       |
| 0604805D8Z                                 | 140  | Commercial Operations and Support Savings Initiative       |                                     |                     |                       |                       | 6,995                                 |
| 0605127T                                   | 141  | Partnership for Peace (PFP) Information Management System  |                                     |                     |                       |                       | 2,178                                 |
| 0607384BP                                  | 142  | Chemical and Biological Defense                            |                                     |                     |                       |                       | 1,663                                 |
| 0208043J                                   | 143  | Classified Programs  |                                     |                     |                       |                       | 41,074                                |
| 0208045K                                   | 144  | C4I Interoperability                                       |                                     |                     |                       |                       | 5,577                                 |
| 0208052J                                   | 145  | Joint Analytical Model Improvement Program                 |                                     |                     |                       |                       |                                       |
| 0300205R                                   | 146  | Information Technology Systems                             |                                     |                     |                       |                       |                                       |
| 0301011G                                   | 147  | Cryptologic Activities                                     |                                     |                     |                       |                       |                                       |
| 0301301L                                   | 148  | General Defense Intelligence Program                       |                                     |                     |                       |                       |                                       |
| 0301318BB                                  | 149  | HUMINT (Controlled)  |                                     |                     |                       |                       |                                       |
| 0301398L                                   | 150  | Management Headquarters GDIP, DIA                          |                                     |                     |                       |                       |                                       |
| 0301555BB                                  | 151  | CLASSIFIED PROGRAMS  |                                     |                     |                       |                       |                                       |
| 0301556BB                                  | 152  | SPECIAL PROGRAM  |                                     |                     |                       |                       |                                       |
| 0302016K                                   | 153  | National Military Command System-Wide Support              | 1,240                               |                     |                       |                       | 1,240                                 |
| 0302019K                                   | 154  | Defense Info Infrastructure Engineering and Integration    | 2,517                               |                     |                       |                       | 2,517                                 |
| 0303126K                                   | 155  | Long Haul Communications (DCS)                             | 11,401                              |                     |                       |                       | 11,401                                |
| 0303127K                                   | 156  | Support of the National Communications System              |                                     |                     |                       |                       |                                       |
| 0303131K                                   | 157  | Minimum Essential Emergency Communications Network (MEECN) | 7,261                               |                     |                       |                       | 7,261                                 |
| 0303140D8Z                                 | 158  | Information Systems Security Program                       | 11,135                              |                     |                       |                       | 11,135                                |
| 0303140G                                   | 159  | Information Systems Security Program                       | 477,846                             |                     |                       |                       | 477,846                               |
| 0303149J                                   | 160  | C4I for the Warrior  | 4,177                               |                     |                       |                       | 4,177                                 |
| 0303149K                                   | 161  | C4I for the Warrior  | 24,712                              |                     |                       |                       | 24,712                                |
| 0303150K                                   | 162  | Global Command and Control System                          | 43,693                              |                     |                       |                       | 43,693                                |
| 0303153K                                   | 163  | Joint Spectrum Center                                      | 18,941                              |                     |                       |                       | 18,941                                |

**Title II - RESEARCH, DEVELOPMENT, TEST AND EVALUATION**  
(Dollars in Thousands)

| PE Name    | Line | PROGRAM TITLE                                       | FY 2005                  |                     |                       | FY 2005<br>Committee<br>Authorization |
|------------|------|---|--------------------------|---------------------|-----------------------|---------------------------------------|
|            |      |   | Authorization<br>Request | Committee<br>Change | Committee<br>Increase |                                       |
| 0303165K   | 164  | Defense Collaboration Tool Suite (DCTS)             | 8,503                    |                     |                       | 8,503                                 |
| 0303170K   | 165  | Net-Centric Enterprise Services (NCES)              | 52,059                   |                     |                       | 52,059                                |
| 0303810K   | 166  | Teleport Program                                    | 10,272                   |                     |                       | 10,272                                |
| 0304210BB  | 167  | Special Applications for Contingencies              | 20,758                   |                     |                       | 20,758                                |
| 0304345BQ  | 168  | National Imagery and Mapping Program                |                          |                     |                       |                                       |
| 0305102BQ  | 169  | Defense Imagery and Mapping Program                 |                          | (200)               |                       | (200)                                 |
| 0305102BQ  |      | TPED of SYERS-2                                     |                          |                     | 3,000                 |                                       |
| 0305102BQ  |      | National Geospatial-Intelligence Agency             |                          |                     |                       |                                       |
| 0305125D8Z | 170  | Critical Infrastructure Protection (CIP)            | 28,021                   |                     |                       | 28,021                                |
| 0305127BZ  | 171  | Foreign Counterintelligence Activities              |                          |                     |                       |                                       |
| 0305127V   | 172  | Foreign Counterintelligence Activities              |                          |                     |                       |                                       |
| 0305146BZ  | 173  | Defense Joint Counterintelligence Program (JMIP)    |                          |                     |                       |                                       |
| 0305146D8Z | 174  | Defense Joint Counterintelligence Program (JMIP)    | 32,939                   |                     |                       | 32,939                                |
| 0305183L   | 175  | Defense Human Intelligence (HUMINT) Program (DHIP)  |                          |                     |                       |                                       |
| 0305190D8Z | 176  | C3I Intelligence Programs                           |                          |                     |                       |                                       |
| 0305191D8Z | 177  | Technology Development                              |                          |                     |                       |                                       |
| 0305193G   | 178  | Intelligence Support to Information Operations (IO) |                          |                     |                       |                                       |
| 0305193L   | 179  | Intelligence Support to Information Operations (IO) |                          |                     |                       |                                       |
| 0305199D8Z | 180  | Net Centricity                                      | 214,222                  | (70,000)            |                       | 144,222                               |
| 0305202G   | 181  | Dragon U-2 (JMIP)                                   |                          |                     |                       |                                       |
| 0305206G   | 182  | Airborne Reconnaissance Systems                     |                          |                     |                       |                                       |
| 0305207G   | 183  | Manned Reconnaissance Systems                       |                          |                     |                       |                                       |
| 0305208BQ  | 184  | Distributed Common Ground Systems                   |                          |                     |                       |                                       |
| 0305208G   | 185  | Distributed Common Ground Systems                   |                          |                     |                       |                                       |
| 0305208L   | 186  | Distributed Common Ground Systems                   |                          |                     |                       |                                       |
| 0305883L   | 187  | Hard and Deeply Buried Target (HDBT) Intel Support  |                          |                     |                       |                                       |
| 0305884L   | 188  | Intelligence Planning and Review Activities         |                          | 10,000              |                       | 10,000                                |
| 0305884L   |      | Measures and Signatures Intelligence Consortium     |                          |                     | 10,000                |                                       |
| 0305885G   | 189  | Tactical Cryptologic Activities                     |                          |                     |                       |                                       |

Title II - RESEARCH, DEVELOPMENT, TEST AND EVALUATION  
(Dollars in Thousands)

| PE Name                                       | Line | PROGRAM TITLE   | FY 2005<br>Authorization<br>Request | Committee<br>Change | Committee<br>Increase | Committee<br>Decrease | FY 2005<br>Committee<br>Authorization |
|---|------|---|-------------------------------------|---------------------|-----------------------|-----------------------|---------------------------------------|
| 0305889G                                      | 190  | Counterdrug Intelligence Support                                      |                                     |                     |                       |                       |                                       |
| 0305917D8Z                                    | 191  | National Security Space Architect (NSSA)                              |                                     |                     |                       |                       |                                       |
| 0708011S                                      | 192  | Industrial Preparedness   | 11,005                              | 12,200              |                       |                       | 23,205                                |
| 0708011S                                      |      | Smart Machine Platform Initiative                                     |                                     |                     | 12,200                |                       |                                       |
| 0708012S                                      | 193  | Logistics Support Activities  | 11,389                              |                     |                       |                       | 11,389                                |
| 0902298J                                      | 194  | Management Headquarters (JCS)   | 22,421                              |                     |                       |                       | 22,421                                |
| 1001018D8Z                                    | 195  | NATO Joint STARS  | 30,399                              |                     |                       |                       | 30,399                                |
| 1160279BB                                     | 196  | Small Business Innovative Research/Small Bus Tech Transfer Pilot Prog |                                     |                     |                       |                       |                                       |
| 1160401BB                                     | 197  | Special Operations Technology Development                             |                                     |                     |                       |                       |                                       |
| 1160402BB                                     | 198  | Special Operations Advanced Technology Development                    |                                     |                     |                       |                       |                                       |
| 1160404BB                                     | 199  | Special Operations Tactical Systems Development                       | 311,966                             |                     |                       |                       | 311,966                               |
| 1160405BB                                     | 200  | Special Operations Intelligence Systems Development                   | 25,015                              |                     |                       |                       | 25,015                                |
| 1160407BB                                     | 201  | SOF Medical Technology Development                                    | 57,643                              |                     |                       |                       | 57,643                                |
| 1160408BB                                     | 202  | SOF Operational Enhancements  | 3,563,600                           | 5,000               |                       |                       | 3,568,600                             |
| XXXXXX  | 999  | Classified  |                                     |                     |                       |                       |                                       |
| XXXXXX  |      | Program Increase  |                                     |                     | 5,000                 |                       |                                       |
| <b>TOTAL, OPERATIONAL SYSTEMS DEVELOPMENT</b> |      |   | <b>5,060,622</b>                    | <b>(43,000)</b>     | <b>30,200</b>         | <b>(73,200)</b>       | <b>5,017,622</b>                      |
| <b>TOTAL, RDT&amp;E, DEFENSE WIDE</b>         |      |   | <b>20,739,837</b>                   | <b>29,417</b>       | <b>667,752</b>        | <b>(638,335)</b>      | <b>20,769,254</b>                     |

## Items of Special Interest

*Accelerating transition and fielding of advanced technologies for emerging critical operational needs*

The pace at which new technology moves from the laboratory to a fielded system has been an area of continuing concern to the Department of Defense and to Congress. Scaling technology up in size and integrating it with other technologies can present problems, not identified in the laboratory, that delay a program and/or greatly increase program costs. More emphasis and an increased share of the science and technology program have been directed toward the use of technology demonstrations and joint experiments to solve these problems before beginning an acquisition program and speeding the transition of new technology to operational capabilities the user faster and at less cost.

The transition of technology from discovery and demonstration to development and fielding is also difficult because the Department's planning and budgeting process frequently creates a funding gap. Revolutionary technologies that "change minds" and ways of doing things often occur faster than the present defense budget and the appropriations process can respond. Additionally, it is difficult to reallocate fiscal funding for a revolutionary technology within current year funding. The institutional process within the Department lacks the flexibility at all levels: service laboratory; research; development and engineering center; systems command; military departments, and the defense secretariat—to capitalize on new discoveries in academia or institute, service or national laboratory, large industry or small business, and to rapidly develop, demonstrate, and transition the new technology to the military user. There are a number of initiatives underway to address this problem: the Advanced Concept Technology Demonstration program, the Army's Rapid Fielding Initiative, the congressionally sponsored Technology Transition Initiative and the Defense Challenge program. Section 806 of the Bob Stump National Defense Authorization Act for Fiscal Year 2003 (Public Law 107-314) requires the Secretary of Defense to prescribe rapid acquisition and deployment procedures. Section 1443 of the National Defense Authorization Act for Fiscal Year 2004 (Public Law 108-136) provides special emergency procurement authority for use in support of contingency operations or in response to a nuclear, biological, chemical, or radiological attack. During the committee hearing on the Defense science and technology budget request for fiscal year 2005, the Director, Defense and Engineering testified about the establishment of the quick reaction special projects program, which he characterized as a flexible continuum of technology transition projects that moves products from the Department to the warfighter quickly.

Many of these initiatives are at an early stage and changes to acquisition and budgeting systems to provide the Department with greater flexibility to take advantage of rapidly developing technology are slow to be institutionalized. The committee is encouraged by many of the improvements in the rapid fielding of technology to support the war on terrorism, but also recognizes that there is much to be done. The committee directs the Secretary of Defense to report to the congressional defense committees by December 31, 2004, any additional recommendations for measures to

accelerate the more rapid transition and fielding of advanced technologies to meet emerging critical needs.

*Advanced metal casting technology*

The budget request contained \$27.5 million in PE 78011S, for manufacturing technology research and development, including \$2.3 million for procurement readiness optimization—advanced casting technology.

The committee notes the success of collaborative problem solving environments that have been prototyped in several of the military services' engineering support activities, each of which has been custom designed to reflect the needs of the weapons systems and processes used by the military services. The committee also notes the development of casting technology for cost reduction, including advances in steel casting, development of a foundry tooling database, use of casting software visualization tools to reduce trial and error, improvements in melting and molding processes, use of cheaper tooling materials for short run production, and other technologies for reducing production time. The committee considers these inter-related programs to be of great value to the Department of Defense and to the national industrial base as well.

The committee strongly encourages the Secretary of Defense and the secretaries of the military departments to allocate additional resources in future budgets for development of further improvements in collaborative problem solving and casting manufacturing technologies.

*Advanced sensor applications program*

The budget request contained \$17.6 million in PE 63714D8Z for the advanced sensor applications program. The committee is concerned that promising projects executed by the Navy's PMA 264 program office are appreciably underfunded for special programs under development.

Therefore, the committee recommends an increase of \$10.0 million in PE 63714D8Z for the advanced sensor applications program. Additional details are contained in the classified annex to this report.

*Advanced tactical laser program*

The committee supports the efforts across the Department's science and technology community to develop tactically useful directed energy weapons. The committee believes that the attributes of such weapons, such as stealth, precision, and minimal collateral damage, make high powered laser tactical weapons ideal in the fight against terrorism. The committee is concerned, however, that the research effort is not directed as precisely as the weapons themselves. For example, the committee understands that chemical laser systems are the most highly developed high powered lasers, but that several efforts are underway to develop more tactically feasible solid state high powered laser systems. Given the large size of chemical laser systems, the committee believes that the Special Operations Command's (SOCOM) Advanced Concept Technology Demonstration (ACTD) for the development of a chemical laser system for an AC-130 gunship may not lead to a militarily useful system before solid state systems mature.

Accordingly, the committee will continue to carefully monitor the SOCOM ACTD, and directs the Secretary of Defense to report to the Senate Committee on Armed Services and the House Committee on Armed Services should the military utility assessment for the advanced tactical laser be delayed beyond fiscal year 2007.

*Anti-radiation drug and trials program*

The budget request contained \$2.1 million in PE 63002D8Z for medical advanced technology development, including \$120,000 for development of the 5-adrostendiol (5-AED) advanced radioprotectant (“anti-radiation”) drug.

The committee notes progress in the development of 5-AED, the Armed Forces Radiobiology Research Institute leading candidate for a whole body radioprotectant drug compound: pre-clinical safety and toxicity assessments, small and large animal trials, and extension of the work to pre-clinical trials in a large animal model have been initiated.

The committee recommends \$7.1 million in PE 63002D8Z, an increase of \$5.0 million to support final efficacy and human toxicity trials of the 5-AED radioprotectant drug.

*Asymmetric protocols for biological defense*

The budget request contained \$147.5 million in PE 62383E for biological warfare defense applied research.

A military or terrorist scenario in which aerosolized biological agents such as anthrax spores or smallpox virus are used would almost certainly result in mass casualties. Weaponized forms of the agents offer significant challenges to medical treatments that are not found in naturally occurring forms. While antibiotics are the only approved method for treating anthrax, the 2003 bioterrorist anthrax attack in Washington, D.C., showed that antibiotics are unfortunately not adequate to provide full treatment against inhalation anthrax. The committee also notes that there are a number of biological agents that could, with appropriate development and weaponization, be used in biological warfare or in a terrorist attack. Developing specific protection against all possible biological agents presents a significant challenge. As a result, the committee believes there is a need for therapeutics that would provide broad spectrum protection against a range of possible biological agents and also work in concert with other methods of treatment.

The committee notes research in therapeutics that shows good results from laboratory testing in mice against pox virus and against anthrax and appears to have the potential for providing broad spectrum protection. Other tests have involved therapeutics that may reinforce the innate immunity of the host. The committee believes that the results of the research to date are promising and the research should continue, but also believes that the research protocols and results to date should undergo an independent peer review. The committee directs the Director of Defense Research and Engineering to conduct such a review and report the results of the review to the congressional defense committees by December 31, 2004.

The committee recommends an increase of \$10.0 million in PE 62383E to continue research in asymmetric protocols that would provide broad spectrum protection for biological defense.

*Ballistic missile defense*

The budget request contained \$9,200.0 million for ballistic missile defense.

The committee notes that the budget request reflects an increase of \$1,500.0 million over the fiscal year 2004 budget request and recommends a reallocation of the fiscal year 2005 request to focus on near term missile defense capability development and testing.

The committee recommends \$9,023.0 million, a reduction of \$177.0 million.

*Advanced concepts*

The budget request contained \$256.2 million in PE 63879C for Advanced Concepts, Evaluations and Systems, an increase of \$106.0 million from the fiscal year 2005 projection in the fiscal year 2004 budget request.

The committee has reservations that such an increase is justified or that it can be effectively executed. The committee encourages the Department of Defense to focus their advanced concepts work on earlier block applications.

The committee recommends \$206.2 million in PE 63879C, a decrease of \$50.0 million.

*Boost defense segment*

The budget request contained \$492.6 million in PE 63883C for boost defense. The committee notes with approval the Department of Defense restructuring of the Airborne Laser (ABL) program in late 2003. The committee also recognizes that the future of the ABL program depends upon successful completion of the ground laser test and the flight test of the beam-control fire control system. These milestones must be completed in order for the committee to further support the program after fiscal year 2005. Therefore, the committee directs the Secretary of Defense to submit a report to the congressional defense committees by February 1, 2005, on the status of these two major component tests as well as a recommendation for the future of the program.

The committee recommends the budget request for boost defense.

*Core*

The budget request contained \$479.8 million in PE 63890C for system core activities.

The committee notes that funding for the systems engineering and integration effort has increased significantly from fiscal year 2004. The committee recommends \$449.8 million, a decrease of \$30.0 million. The committee encourages the Director of the Missile Defense Agency (MDA) to focus the national team on the near term block 2004 and 2006 efforts.

The committee also understands that development of wide bandwidth technology is critical for the MDA to transmit test data over extensive distances in support of the test and evaluation program. The committee is encouraged by the recent success of a feasibility demonstration of seamless collaboration utilizing mobile satellite communications from the Reagan Test Site to the Joint National Integration Center.

Within the funds available, the committee recommends \$4.0 million for the development of wide bandwidth technology in support of the MDA test program.

*Midcourse defense segment*

The budget request contained \$4,384.8 million in PE 63882C for the ballistic missile defense (BMD) midcourse defense segment.

The Navy has previously funded research and development efforts for an S-band radar prototype. Development of a Solid State S-Band Radar will support future Aegis BMD system capability.

The committee recommends \$4,414.8 million in PE 63882C, an increase of \$30.0 million for the development of a Solid State S-Band Radar to support Aegis BMD system radar capability.

*Post Ramos Project*

The committee notes that the Department of Defense announced its intention to terminate the Russian-American Observation Satellite (RAMOS) program earlier this year. The committee also understands that the Department desires to explore other opportunities for missile defense cooperative programs with the Russian Federation that build upon the experience gained in the RAMOS program.

The committee recommends an increase of \$5.0 million in PE 63884C to explore future opportunities for missile defense cooperation with the Russian Federation.

*Products*

The budget request contained \$418.6 million in PE 63889C for products.

The committee notes that the request represents a \$113.0 million increase from a fiscal year 2005 projection in the 2004 budget request. The committee also notes that the funding for Command and Control, Battle Management and Communications (C2BMC) has increased significantly from fiscal year 2004 with C2BMC efforts spread across blocks 2004, 2006 and 2008, even though block 2004 has not undergone full operational testing. While the committee supports in principle the concept of spiral development, it also notes that development of C2BMC software is complex and that successful spirals are grounded in successful testing of an initial baseline.

The committee recommends \$358.6 million in PE 63889C, a decrease of \$60.0 million and urges the Department of Defense to focus C2BMC efforts on near term block requirements.

*Sensors*

The budget request contained \$592.0 million in PE 63884C for sensors.

The committee notes that funding in PE 63884C for block 2006 ballistic missile defense radars has increased by \$156.0 million from the fiscal year 2004 budget request.

The committee is concerned with the projected costs of the Forward Deployable Radar (FDR) since the FDR program uses radar technology already developed for the Terminal High Altitude Area Defense system.

The committee recommends \$536.0 million in PE 63884C, a decrease of \$56.0 million for sensors.

*System interceptor*

The budget request contained \$511.3 million in PE 63886C for system interceptor. The committee notes that the request reflects a \$360.2 million increase from the fiscal year 2004 authorization.

The committee supports pursuing the land-based Kinetic Energy Interceptor (KEI) in block 2010 as an alternative to the Airborne Laser for boost phase defense. However, the committee also notes that the request contains funds for block 2012 even though the block 2010 effort just started in 2004. The block 2012 program includes options for a sea-based KEI. The block 2012 sea-based element is designed to integrate the block 2010 land-based KEI element into operational sea-based platforms.

The committee notes that block 2010 will serve as the foundation for the block 2012 program and that progress must first be achieved in the land-based KEI program prior to beginning work in earnest on future sea-based programs. The committee also notes that designation of a platform for the sea-based interceptor is dependent upon future decisions on future Navy force structure and ship design. At this stage of the KEI program, the committee views funding for a sea-based platform option as premature.

The committee recommends \$436.3 million, a decrease of \$75.0 million for system interceptor. The committee authorizes no funding for sea-based options in block 2012 until 30 days after the Department of Defense has submitted a report to the congressional defense committees that contains a Navy-approved plan for future force structure and existing ship and/or future ship design requirements to support operational deployment of the sea-based interceptors envisioned for block 2012.

The committee understands that the boost phase defense element is the least mature of the elements within the layered defense. Given the importance of intercepting a ballistic missile in the boost phase, the committee believes that the Department should be open to considering additional options for boost phase defense. The committee notes the speed with which United States and coalition forces have established air superiority in recent military operations. The committee is further encouraged by the successful operational demonstration of long duration unmanned aerial vehicles (UAVs) such as Global Hawk and the employment of the Predator UAV to remotely engage ground targets.

The committee observes that the Air Force has conducted some preliminary studies into the feasibility of using the advanced medium range air-to-air missile launched from tactical aircraft to intercept missiles in boost phase ascent. The committee believes that tactical aircraft or UAVs may offer an alternate launch platform for air intercept missiles for boost phase defense.

The committee recommends an increase of \$8.0 million in PE 63886C for assessments and demonstrations related to the use of tactical aircraft or UAVs as platforms from which to interdict threat ballistic missiles in their boost phase using "hit-to-kill" technologies. The committee directs the Secretary of the Air Force to provide all required test equipment and logistical support including aircraft and range support to facilitate this demonstration.

*Technology*

The budget request contained \$204.3 million in PE 63175C for ballistic missile defense technology.

The committee is aware of the requirement for missile defense command and control elements to transmit large amounts of data to interceptors. The committee recognizes that high density optical networks can provide this capability for defense satellite systems.

The committee recommends \$208.3 million in PE 63175C, an increase of \$4.0 million for research into massively parallel optical interconnects.

*Terminal defense segment*

The budget request contained \$937.7 million in PE 63881C for the ballistic missile defense terminal defense segment.

The committee notes that the Terminal High Altitude Area Defense (THAAD) program was negatively impacted by the boost motor propellant explosion in 2003. As a result of the explosion, a number of block 2004 program activities were deferred. The committee is particularly concerned with the deferral of risk reduction activities and schedule delays.

The committee recommends \$984.7 million in PE 63881C, an increase of \$47.0 million to reduce program risks and to prevent schedule delays in the THAAD program.

*Business management modernization program*

The budget request contained \$94.8 million in PE 65016D8Z for research, development, testing and evaluation for the business management modernization program (BMMP), a Department-wide initiative to transform business processes while standardizing and integrating information systems using common, network centric processes and portfolio management.

The committee supports such business transformation initiatives that would enable interoperability among financial, accounting, human resources, logistics, acquisition, information technology infrastructure, and strategic planning and budgeting systems. In addition, the committee believes the business enterprise architecture, once implemented and controlled, will be a good start towards achieving this goal. However, the committee has serious concerns that the final cost of this program will amount to almost \$1.0 billion by fiscal year 2009. Additionally, the committee is also concerned that the enterprise architecture is still incomplete at the present time. Furthermore, the Department has yet to devise a strategy to monitor the progress of this program or measure the program's development. It remains unclear whether this program will meet the Department's 2007 deadline for providing a clean financial audit opinion.

The committee notes that the Department's inability to control its business information technology investments has serious implications, including the continuous spending of billions of dollars on service-specific or non-interoperable system solutions that do not address longstanding business problems.

Additionally, the committee has serious concerns that this program lacks adequate accountability and management oversight to manage the Department's business system investments of roughly \$5.0 billion in the fiscal year 2005 budget request. The committee

believes it is critical that the Department gain more effective control and accountability over its business systems funding and insists on a clear direction and an overarching architecture before funding at the level suggested in the budget request is approved.

Accordingly, the committee recommends \$45.8 million for PE 65016D8Z for business management modernization, a decrease of \$49.0 million.

*Chemical/biological defense research, development, test and evaluation program*

The budget request contained a total of \$559.9 million for chemical/biological defense research, development, test, and evaluation, including \$36.8 million in PE 61384BP for basic research, \$104.4 million in PE 62384BP for applied research, \$117.3 million in PE 63384BP for advanced technology development, \$104.2 million in PE 63884BP for advanced component development and prototypes, \$152.4 million in PE 64384BP for system development and demonstration, \$42.7 million in PE 65384BP for RDT&E management support, and \$2.2 million in PE 67384BP for operational systems development. The budget request also contained \$147.5 million in PE 62383E for the Defense Advanced Research Projects Agency (DARPA) biological warfare defense research program.

The committee notes that the changing chemical and biological threat, both to U.S. armed forces on the world's battlefields and to U.S. homeland security, places more emphasis on the need for responsive technology options that could address the threat; the ability to quickly assess, develop, and demonstrate the technology; and then, the ability to rapidly insert or deploy the technology in fielded systems. The committee also continues to note the wealth of new concepts and technologies of varying levels of maturity that emerge annually from the nation's science and technology base. The committee recommends the continuation of two chemical and biological defense research and development initiatives established in the National Defense Authorization Act for Fiscal Year 2004 (Public Law 108-136), one in the applied research category and one in the advanced technology development category, and the establishment of a third initiative in chemical and biological defense basic research, that would provide the opportunity for emerging technologies and concepts to compete for funding on the basis of technical merit and on the contribution that the technology could make to the chemical and biological defense capabilities of the armed forces and to homeland defense. During its review of the fiscal year 2005 budget request the committee received proposals for establishment of a number of projects that the committee recommends be considered for possible funding under the appropriate initiative.

*Accelerating the research, development, and acquisition of medical countermeasures against biological warfare agents*

In the National Defense Authorization Act for Fiscal Year 2002 (Public Law 107-107), Congress directed the Secretary of Defense to accelerate the Department's efforts to develop medical countermeasures (licensed by the Food and Drug Administration) against biological warfare agents. In addition, Congress directed the Sec-

retary to contract with the Institute of Medicine and the National Research Council (IOM/NRC) for a study of the review and approval process for new medical countermeasures in order to identify new approaches to accelerate that process and to identify methods for ensuring that new countermeasures would be safe and effective.

IOM/NRC report “Giving Full Measure to Countermeasures—Addressing Problems in the DOD Program to Develop Medical Countermeasures against Biological Warfare Agents—2004,” raises a number of issues concerning the current efforts of the Department of Defense chemical and biological defense program to produce medical biodefense countermeasures.

The committee directs the Secretary of Defense to review and evaluate the IOM/NRC report and to report the results of that review to the congressional defense committees by December 31, 2004. The Secretary’s report shall contain an analysis of the recommendations made in the IOM/NRC report and the actions planned by the Department with respect to each of the recommendations.

Elsewhere in this report the committee has directed the Secretary of Defense to report to the congressional defense committees on the actions taken to implement the authorities granted in Title XVI of the National Defense Authorization Act for Fiscal Year 2004 (Public Law 108–186). The Act provides the authority for the Secretary to establish an enhanced biomedical countermeasures program within the Department to protect members of the Armed Forces from attack with chemical, biological, radiological, or nuclear (CBRN) agents. The committee has also recommended a provision (section 1005) that would remove funding restrictions on the development of medical countermeasures against biological warfare threats and enable the Department to respond more effectively to the increased threat that could be posed by rapid advances in biotechnology.

The committee directs the Secretary of Defense to provide to the congressional defense committees, with the submission of the fiscal year 2006 defense budget request, the Department’s strategic plan detailing its response to recommendations contained in the IOM/NRC report: the implementation of the additional authorities granted in Title XVI for accelerated research, development; the procurement of advanced biomedical countermeasures; and the repeal of funding restrictions on the development of countermeasures against biological warfare threats. This plan should provide the basis for the development by the Secretary of Defense of a strategic plan for the rapid development of biomedical countermeasures for protection of members of the Armed Forces against current and future biological agent threats.

*Chemical/biological defense basic research initiative*

The committee recommends that the technologies to be considered for funding under the basic research initiative include, but are not limited to the following:

- (1) Engineered pathogen identification and countermeasures (“Bug to Drug”);
- (2) Fluorescence activated sensing technology; and
- (3) Multi-purpose biodefense immunoarray.

The committee recommends \$51.8 million in PE 61384BP, an increase of \$15.0 million for the chemical/biological defense basic research initiative.

*Chemical/biological defense applied research initiative*

The committee recommends that the projects and technologies to be considered for funding under the applied research initiative include, but are not limited to the following:

- (1) Adaptive infrared imaging spectroradiometer-wide area-detector;
- (2) Air containment monitoring technology;
- (3) Automated system for liquid phase detectors of toxic compounds;
- (4) Genomic-based bioterrorism agent detection and countermeasures;
- (5) Heat shock protein vaccine creation process;
- (6) LHA-SAW biosensor prototype development;
- (7) Low cost chemical-biological protective shelters;
- (8) Membrane research for next generation chemical-biological protective suits;
- (9) Mustard gas antidote (STIMAL);
- (10) Rapid anti-body based biological countermeasures; and
- (11) Rapid decontamination system for nerve agents.

The committee recommends an increase of \$25.0 million in PE 62384BP for the chemical/biological defense applied research initiative.

*Chemical/biological defense advanced technology development initiative*

The committee recommends that the projects and technologies to be considered for funding under the advanced technology development initiative include, but not be limited the following:

- (1) Hand-held biological agent detection system;
- (2) Immuno biological/chemical threat agent detector;
- (3) Non-invasive vectored vaccine development; and
- (4) Recombinant protein vaccines.

The committee recommends \$152.3 million in PE 63384BP, an increase of \$35.0 million for the chemical/biological defense advanced technology development initiative.

*Joint biological point detection system*

The budget request contained \$152.4 million in PE 64384BP for chemical and biological defense system development and demonstration, including \$8.6 million for joint biological point detection system (JBPDS) system development and demonstration.

The committee recommends an increase of \$5.0 million in PE 64384BP for continued product improvement and enhancement of the JBPDS.

*Joint service lightweight standoff chemical agent detector*

The budget request contained \$152.4 million in PE 64384BP for chemical and biological defense system development and demonstration, including \$20.1 million for joint service lightweight standoff chemical agent detector (JSLSCAD) system development and demonstration.

The committee recommends an increase of \$8.0 million in PE 64384BP to continue development and evaluation of the JSLSCAD.

*Connectory for rapid identification of technology resources*

The budget request contained \$27.5 million in PE 63712S for generic logistics research and development technology demonstrations, but included no funding for the connectory of rapid identification of technology sources for the Department of Defense. The connectory pilot would provide the Department with instant access to the industrial technology base, permitting rapid identification of promising sources of new, creative technical solutions for current combat and anti-terrorism problems.

The committee recommends an increase of \$2.0 million in PE 63712S for connectory for rapid identification of technology resources.

*Counter-terrorism technology support*

The combating terrorism technology support program develops technology and prototype equipment that address needs and requirements with direct operational application in the national effort to combat terrorism. The program addresses defense, inter-agency, and international requirements for combating terrorism technology. Projects support antiterrorism, counter terrorism, intelligence and terrorism consequence management activities to: conduct tactical operations; protect military forces, civilian personnel, installations, infrastructure elements and the general population from terrorist attack; detect, neutralize, and mitigate the effect of conventional and unconventional devices; conduct surveillance and tracking of terrorists; conduct threat and incident assessments; and process and disseminate information.

The committee notes and highly commends the contributions made by the Technical Support Working Group (TSWG) in the development, demonstration, and fielding of advanced technologies for the fight against terrorism. The committee encourages the TSWG to coordinate with counterpart activities within the government of the United Kingdom and the government of Israel to take advantage of the experience of their activities in the development and fielding of advanced technologies for force protection and for combating terrorism.

In title XV of this report, the committee has recommended an increase of \$75.0 million for combating terrorism technology support. In addition, the committee directs that, of the funds provided in title II of this report for the Defense Advanced Research Projects Agency, up to \$25.0 million may be made available for the establishment of cooperative programs with the government of the United Kingdom and the government of Israel for the development of advanced technologies and prototype equipment for combating terrorism. The committee further directs the Secretary of Defense to give priority consideration to the experience of the government of Israel and the government of the United Kingdom in establishing such programs.

*Defense advanced research projects agency*

The Defense Advanced Research Projects Agency (DARPA) has been a leader and innovator in basic scientific research and defense

science and technology for decades. The committee has supported ever-increasing funding for DARPA as the only agency not tied to a military service mission and the demands of a service budget to produce quick results. The committee encourages DARPA to continue to examine the “far side,” and investigate concepts that may never come to fruition.

Nevertheless, DARPA remains a Defense Agency and must be closely attuned to real defense requirements. Furthermore, the pursuit of the more futuristic technologies on the “far side” must be tempered by the hard fact that we are a nation at war. Our commanders and troops in Iraq have immediate needs for innovative technical solutions across a variety of disciplines. The committee commends DARPA on its quick reaction support and fielding of advanced innovative technologies to meet emerging critical operational needs of our forces in Operation Iraqi Freedom and elsewhere in support of the global war on terrorism.

The committee believes, however, that DARPA should redirect some of its more futuristic efforts to the solution of today’s combat problems. Those immediate needs involving detection, sensing, protection, surveillance and a host of other issues may well be “DARPA hard” problems that the Agency should be examining, rather than some of the more futuristic efforts in the DARPA program.

The committee recognizes that DARPA receives input from the military departments, Joint Staff, combatant commanders, and other defense agencies, as the agency leadership builds a program to address national-level problems, operational dominance, and exploitation of high-risk, high-payoff technologies. The committee commends the director of DARPA for his outreach program and operational liaison initiatives. The committee believes, however, that increased emphasis needs to be placed on liaison with the combatant commanders and directs the director of DARPA to establish continuing contact with engaged combatant commanders to determine how DARPA may assist in solving today’s real world combat problems, while at the same time continuing promising research into long term creative technologies. In support of these liaison initiatives, the committee strongly recommends that additional military billets be assigned to DARPA and that military officers assigned to DARPA be given joint service credit at the completion of their tour of duty with the agency.

Although the committee is pleased with the overall progress in the defense science and technology program, the committee believes that increased priority must be given to the nearer-term requirements of the combatant commanders and U.S. armed forces in the field. Consequently, the committee makes a series of recommendations for general reductions in DARPA programs:

| [In millions of dollars]                                     |        |
|--|--------|
| 62301E—Computing systems and communications technology ..... | (20.0) |
| 62702E—Tactical technology .....                             | (10.0) |
| 62712E—Materials and electronics technology .....            | (10.0) |
| 63285E—Advanced aerospace systems .....                      | (20.0) |
| 63739E—Advanced electronics technology .....                 | (5.0)  |

|  |        |
|--|--------|
| 63760E—Command, control and communications systems ..... | (20.0) |
| 63762E—Sensor and guidance technology .....              | (25.0) |
| 63765E—Classified DARPA programs .....                   | (25.0) |
| 63766E—Network-centric warfare technology .....          | (15.0) |

These recommendations are made without prejudice to the particular account identified.

*Defense science and technology funding*

The budget request contained \$10.6 billion for the Department of Defense (DOD) science and technology program, including all defense-wide and military service funding for basic research, applied research, and advanced technology development. The request included \$1.8 billion for the Army, \$1.7 billion for the Navy, \$1.9 billion for the Air Force, and \$5.1 billion for Defense Agency science and technology, including \$3.1 billion for the Defense Advanced Research Projects Agency (DARPA). The committee recommends \$11.1 billion for the Department of Defense science and technology program, an increase of \$874.0 million to the budget request. The committee's recommendation includes \$2.1 billion for the Army, an increase of \$304.8 million; \$1.8 billion for the Navy, an increase of \$ 201.7 million; \$2.0 billion for the Air Force, an increase of \$114.0 million; and \$5.2 billion for Defense agency science and technology, an increase of \$64.5 million (including \$2.9 billion for DARPA, a decrease of \$204.0 million). Elsewhere in this report the committee has recommended a provision (section 214) that would transfer funding for the joint experimentation program from the Navy to a Defense-wide account.

The committee regards defense science and technology investment as critical to maintaining U.S. military technological superiority in the face of growing and changing threats to U.S. national security interests around the world. Adjusted for inflation, the fiscal year 2005 request represents an increase of about \$200.0 million, but shows a decline from the fiscal year 2004 appropriation of \$12.2 billion. The committee notes that the budget request at a level of 2.6 percent of the total DOD budget, does not meet the goal of 3 percent established by the 2001 Quadrennial Defense Review. However, the committee received testimony from DOD witnesses during the committee hearing on the defense science and technology program that confirmed that the goal for science and technology funding remains 3 percent of the total DOD budget.

The committee notes that the military departments are responsible for approximately 51 percent of the defense science and technology budget (Army 17 percent, Navy 16 percent, and Air Force 18 percent) and Defense Agencies account for 49 percent, including 29 percent in DARPA. Defense agencies focus on science and technology specific to the particular agency or, in the case of DARPA, on national-level problems, operational dominance, and exploitation of high-risk, high-payoff technologies. The military departments' science and technology programs focus on the development and transition of more mature technologies into future weapons systems that are key to the ability of the individual military departments to achieve their transformation objectives.

The past year has provided numerous examples of successful technology development and deployment. The men and women of the U.S. armed forces are better equipped, trained, and protected because of revolutionary breakthroughs emerging from the technology base. The committee commends the Department for the response of the Defense science and technology base to the emerging critical operational needs in support of the global war on terrorism and Operation Iraqi Freedom. Elsewhere in this report the committee has recommended increased funding to further accelerate the transition of advanced technologies.

Despite the positive aspects of the Department's science and technology program, the committee is concerned about long-term projections for reductions in DOD science and technology as a percentage of total obligation authority and in short-term trends in the science and technology accounts of some of the military departments and defense agencies. The committee cannot emphasize too strongly the need for the Department to maintain a strong and robustly funded science and technology program that will provide the advanced technologies needed to assure technical dominance of our armed forces on any current or future battlefield.

*Expanding the role of small businesses in the defense acquisition process*

The committee subscribes to the view that small businesses are the nation's engine of technology innovation. The Department of Defense (DOD) spends significant sums annually on Phase I and Phase II Small Business Innovative Research (SBIR) technology development. In many cases, however, successful results of the department's investment have not been transitioned into the mainstream of system acquisition programs.

The committee believes that our soldiers, sailors, airmen, and marines deserve to have the best tools possible as they wage the global war on terrorism. The committee notes the recent Navy-Marine Corps quick-response SBIR solicitation seeking immediate innovative technology approaches for protecting Marines from improvised explosive devices, rocket-propelled grenades, mortars, rockets, and missiles during combat. Broader participation by the nation's small business community is needed now to meet emergent DOD requirements in support of the global war on terrorism, as well as to improve the capability and lower the cost of weapon systems through application of advanced technologies developed by small businesses.

The committee strongly endorses the President's Executive Order 13329, Encouraging Innovation in Manufacturing, directing that SBIR awards involving manufacturing and manufacturing technology be given priority. This is an essential step in broadening the defense industrial base and creating new manufacturing capacity in the United States. In recent years Congress has clarified SBIR Phase III contracting authority and data rights provisions in an attempt to clear the way for the military services to transition promising Phase I and Phase II SBIR technology development efforts to the mainstream of defense acquisition. The committee is encouraged by the small cadre of DOD program managers who have effectively transitioned SBIR technology into their programs through award of Phase III contracts. The committee believes that strong

leadership from the Office of the Secretary of Defense is necessary in order to ensure that all the benefits from the Department's significant annual SBIR technology development investment are realized.

The committee recognizes that an essential element of acquisition reform is the continuing evolution of the acquisition culture in the Department by program managers who possess the insight and commitment to take advantage of small innovative businesses through Phase III transition of SBIR technology. The committee directs that the Under Secretary of Defense for Acquisition, Technology and Logistics (USD (AT&L)) encourage DOD acquisition program managers and prime contractors to make significantly more SBIR Phase III contract awards than has been done in the past. The committee further directs the USD (AT&L) to provide a report to the congressional defense committees, by March 31, 2005, to (1) provide information on DOD SBIR Phase III awards during the past three years; (2) describe what action the Office of the Secretary of Defense has taken to encourage DOD acquisition program managers to award SBIR Phase III contracts at a higher rate and to make award of SBIR Phase III contracts a priority within the Defense Acquisition system; and (3) identify specific Phase III transitions that have been conducted or are planned in fiscal year 2005.

#### *High-speed/hypersonic reusable demonstration*

The budget request contained \$339.2 million in PE 62702E for tactical technology applied research, including \$15.0 million for the high-speed/hypersonic reusable demonstration.

The committee supports the objectives of the high-speed/hypersonic reusable demonstration. However, because there are higher priority, near-term requirements associated with the global war on terrorism, the committee believes that the DARPA high-speed, hypersonic reusable demonstration should be deferred.

The committee recommends a decrease of \$15.0 million in PE 62702E, and no funding for the high-speed/hypersonic reusable demonstration.

#### *Horizontal fusion*

The budget request contained \$214.2 million in PE 35199D8Z for Net Centricity, which includes the horizontal fusion program, and \$23.3 million for Washington Headquarters Services major equipment, which includes \$10.5 million for horizontal fusion. The committee is aware that horizontal fusion reflects a significant shift in the Department of Defense's (DOD) approach to intelligence data. Currently intelligence analysts process and analyze data before delivering it to the field for use. The Department realized the more efficient way to provide timely intelligence to the warfighter is to post data quickly, allowing analysts in the field to do unit specific analysis. This philosophical shift necessitates significant changes in the systems that hold the information and form the basis of the DOD network.

However, the committee is concerned that the scale of the Department's undertaking is unprecedented, even compared to the commercial sector's use of metadata, which tags data with descriptive information and lists it in a central registry, to manage its applications. The committee is concerned that the scope of this pro-

gram to exploit data on this level without a systems architecture to define data and terms to ensure that the information is consistent for all users could compromise intelligence and cause technological failures. The committee believes the Department must set the rules, standards, protocols, and other parameters to determine who or what entity is ultimately responsible for the data, before the funding at the level proposed in the budget request can be productively expended.

Accordingly, the committee recommends \$144.2 million in PE 35199D8Z for continued research, a reduction of \$70.0 million, and \$18.9 million for Washington Headquarters Services major equipment procurement, a reduction of \$4.4 million for horizontal fusion.

#### *Implementation of defense biomedical countermeasures*

Title XVI of the National Defense Authorization Act for 2004 (Public Law 108–186) provides authority for the Secretary of Defense to establish an enhanced biomedical countermeasures program within the Department of Defense to protect members of the Armed Forces from attack with chemical, biological, radiological, or nuclear (CBRN) agents. This title of Public Law 108–136 parallels H.R. 2122, the Project Bioshield Act of 2003, which was developed in response to the Bioshield initiative announced by the President in his State of the Union address to the Congress on January 20, 2004; passed in the House of Representatives; and introduced in the Senate. Title XVI addresses research and development, procurement, and emergency use of biomedical countermeasures.

Section 1601 requires the Secretary of Defense to establish a program to accelerate research and development of biological countermeasures to CBRN threats and provides authorities to speed research.

Section 1602 authorizes the Secretary of Defense to enter into an interagency agreement with the Secretaries of Homeland Security and Health and Human Services to provide for acquisition by the Secretary of Defense for use by the Armed Forces of biomedical countermeasures procured for the Strategic National Stockpile by the Secretary of Health and Human Services. Section 1602 also authorizes the Secretary of Defense to transfer those funds to the Secretary of Health and Human Services that are necessary to carry out such agreements and the Secretary of Health and Human Services to expend any such transferred funds to procure such countermeasures for use by the Armed Forces, or to replenish the stockpile.

Section 1603 establishes conditions under which the Secretary of Health and Human Services may authorize emergency use by the general public of certain drugs, devices, or biological products based on a determination by the Secretary of Defense that there is a military emergency involving a heightened risk to United States military forces of attack with specified CBRN agents. Section 1603 would also authorize the President to waive the right of service members to refuse the administration of such a biomedical countermeasure.

The committee directs the Secretary of Defense to report to the congressional defense committees by December 31, 2004, on the actions taken to implement the authorities granted in title XVI of the Act.

*Man portable air defense system defense program*

The budget request included \$14.1 million in PE 64618D8Z for systems development and demonstration (SDD) for a network-centric, portable, ground-based, counter-man portable air defense system (MANPADS).

SDD programs require validated requirements and technologies that have been demonstrated in at least a laboratory or test range environment. There are no validated requirements for this program, nor have any technologies been demonstrated. Further, the committee understands the concept for this program was considered by the Department of Homeland Security for its on-going program to protect civilian aircraft from the MANPADS threat and was rejected. Consequently, this program would be unique to the military services. Finally, the committee believes the Office of the Secretary of Defense (OSD) should not be managing programs that are inherently within the purview of the military services.

If OSD, in its oversight role, believes that there is sufficient merit in the concept engendered in this request, it should mandate incorporation of the concept within one of the several counter-MANPADS programs resident within the military services and defense agencies as part of their research and development programs.

The committee recommends no funds in PE 64618D8Z for fiscal year 2005, a decrease of \$14.1 million.

*Measures and signatures intelligence consortium*

The budget request contained no funds in PE 35884L for intelligence planning and review for the Measures and Signatures Intelligence (MASINT) Consortium.

The MASINT Consortium, led by the Defense Intelligence Agency, began in fiscal year 2003 by congressional directive to coordinate basic and applied science research as it relates to the Intelligence Community (IC) and the Department of Defense. The committee believes this is an IC requirement that encourages the advancement of basic and applied systems research within the MASINT discipline. Amplifying information on this issue may be found in the classified annex to this report.

The committee recommends an increase of \$10.0 million in PE 35884L for the MASINT Consortium.

*Medical free electron laser*

The budget request contained \$9.7 million in PE 62227D8Z for medical free electron laser applied research.

The committee notes that the medical free electron laser program seeks to develop advanced, laser-based applications for military medicine and related materials research. Because free electron lasers provide unique pulse features and tunable wavelength characteristics that are unavailable in other laser devices, their use broadens the experimental options for the development of new laser-based medical technologies. The program is a merit-based, peer-reviewed, competitively awarded research program, the majority of which is focused on developing advanced procedures for rapid diagnosis and treatment of battlefield related medical problems.

The committee recommends \$19.7 million in PE 62227D8Z, an increase of \$10.0 million to continue the merit-based, peer-re-

viewed, competitively awarded program in medical free electron laser applied research.

*Multi-wavelength surface scanning biologics sensor*

The budget request contained \$17.6 million in PE 63714D8Z for the advanced sensor applications program.

The committee notes on-going research in the use of multi-wavelength excitation spectral technology for the detection and identification of biologic agents that are not discernible with conventional sensors. The committee understands that successful demonstration of this technology for two dimensional fluorescence that spectrally resolve the target in both excitation and emission dimensions could provide the capability to detect and identify biological agents and a significant improvement in the scanning and screening of potentially contaminated locations. Congress appropriated \$2.0 million in fiscal year 2004 to continue previously funded work on the technology and support evaluation of a laboratory test bed system with a wide range of simulated and target bacteria and pathogens and environmental backgrounds. The committee understands that the success of these efforts has motivated further testing of the laboratory test bed prototype to support the design and development of a second generation or "beta" system with significantly expanded capabilities.

The committee recommends an increase of \$3.0 million in PE 63714D8Z to continue the program for development and demonstration of two-dimensional fluorescence spectral sensing instruments for the real-time detection and identification of pathogens.

*National Defense University technology pilot program*

The budget request contained \$30.6 million in PE 65104D8Z for the Office of the Secretary of Defense technical studies, support, and analysis.

The committee notes that the National Defense University (NDU), supported by funding provided by the Director of Defense Research and Engineering, has established a pilot research and analysis program focused on defense policy issues that have significant technology elements. The committee further notes that the objective of this program is to determine how the United States can maintain its competitive edge against other military adversaries at a time when commercial information technology (IT) is readily available on the global market. The committee is interested to learn the results of NDU's proposed pilot programs for fiscal year 2005 which include the use of IT for stabilization efforts and reconstruction operations in Iraq, and homeland security.

Accordingly, the committee recommends \$31.6 million for PE 65104D8Z, an increase of \$1.0 million for the NDU technology pilot program.

*Nuclear weapons effects applied research*

The budget request contained \$249.8 million in PE 62716BR for applied research in weapons of mass destruction defeat technology, including \$67.8 million for applied research in weapons effects technology.

The committee continues to note that the budget for nuclear weapons effects applied research has declined dramatically since

the early 1990s and the decline in the budget has been accompanied by a decline in the capability for and expertise in analysis of nuclear weapons effects. The current program uses a combination of computer analysis, simulation and protection technology to address key issues regarding the survivability of critical U.S. systems in a potential nuclear environment, including missile defense interceptors, satellite electronics, and warfighting command, control, communications and intelligence (C3I) systems and facilities. The committee believes that the U.S. nuclear weapons effects analysis capability needs to be revitalized to address emerging 21st Century threats, such as the potential for terrorist use of radiological dispersion devices (“dirty bombs”) or crude nuclear weapons in an urban environment; the potential effect of electromagnetic pulse generated by a nuclear weapon on C3I and other electronic systems; the potential use of small nuclear weapons for defeat of chemical or biological agents, or for defeat of hard and buried targets; and analysis of requirements for defense of critical assets.

The committee recommends \$259.8 million in PE 62716BR, an increase of \$10.0 million for nuclear weapons effects applied research.

*Operationally responsive satellite*

The budget request contained \$19.6 million in PE 65799D8Z for Force Transformation Directorate, but contained no funds for operationally responsive satellites.

With the advent of operationally responsive launches, the committee believes research and development should begin on the use of satellites that would fit this new family of launch vehicles and address near-term warfighter requirements. These new satellites should provide critical capabilities from space in an affordable, reliable, and timely manner. This new perspective on satellite acquisition represents a truly transformational strategy and, as such, should be managed by the Secretary of Defense’s new Office of Force Transformation.

The committee recommends \$44.6 million in PE 65799D8Z, an increase of \$25.0 million for the development of operationally responsive satellites.

*Smart machine platform initiative*

The budget request contained \$11.0 million in PE 78011S for Industrial Preparedness, of which no funds were requested for the Smart Machine Platform Initiative.

The committee has been encouraged by the efforts of the machine tool industry to develop breakthrough technology for defense manufacturing applications by which the next generation of machine technology will provide the capability to monitor and modify a work plan during the production process. This smart machine technology would substantially reduce both the cost and time to develop defense products.

The committee recommends \$23.2 million for PE 78011S, an increase of \$12.2 million for the Smart Machine Platform Initiative.

*Space and missile defense command simulation center*

The budget request contained \$186.7 million for the high performance computing modernization program, which includes the

Army Space and Missile Defense Command (SMDC) Simulation Center. The center is a mission critical computer facility established to provide supercomputer computational assets with high performance network and storage support for the development, testing, and integration of strategic defense technologies and simulations including computational physics and chemistry, weapons design, and force modeling for SMDC, the Missile Defense Agency (MDA), and the military services. The committee understands that the SMDC needs to upgrade its information technology systems to meet computational demands for simulation, testing, and evaluation of advanced interceptors and sensors. The committee believes the technology upgrades are important to the work the SMDC is presently conducting.

Accordingly, the committee recommends \$192.7 million in PE 63755D8Z, an increase of \$6.0 million for the SMDC.

*Special operations advanced technology development*

The budget request contained \$48.8 million in PE 116402BB for special operations advanced technology development, but contained no funding for development of long term battery-free power sources, the advanced target identification capability for AC-130U gunships, the ANGELFIRE active protection system, and the surveillance augmentation vehicle-insertable on request (SAVIOR) system.

The committee is aware of the need for power sources that may be used to supply power to remote monitoring and surveillance sensors for long periods of duration. Furthermore, the committee understands that promising technology exists that may meet that military requirement by converting ambient light to power.

The advanced target identification system is a significant enhancement to the gunship radar and will enable the crew to make accurate and near instantaneous identification of friendly and enemy vehicles on the battlefield. To complete the project, funding is needed to fully integrate identification software with a family of ground and airborne systems.

ANGELFIRE is a promising integrated sensor and countermeasure package with the potential to provide increased protection to lightly protected military aircraft and vehicles in hostile environments. Such systems are urgently needed in today's increasingly lethal operating environments.

The SAVIOR system also promises to increase force protection for troops operating in cluttered, urban environments. SAVIOR is a mobile, intelligent sensor suite that can alert ground forces to the presence of a threat with its intensive surveillance network.

The committee recommends \$64.8 million for PE 1160402BB special operations advanced technology development, increases of \$4.0 million to develop battery free power sources for sensors, \$3.0 million for the advanced identification capability for AC-130 gunships, \$6.0 million to develop the ANGELFIRE active protection system, and \$3.0 million for development of the SAVIOR system.

*Special operations technology development*

The budget request contained \$13.1 million in PE 116401BB for special operations technology development, but included no funding for shoulder fired smart round (SPIKE) urban warfare system de-

velopment. The SPIKE missile fills a critical need for a low-cost, light-weight fire and forget missile for ground troops to use against lightly armored and other material targets and has possible maritime application as well.

The committee recommends \$16.1 million in PE 116401BB, an increase of \$3.0 million for SPIKE missile development.

*Stimulated isomer energy release*

The budget request contained \$339.2 million in PE 62702E for tactical technology applied research, including \$4.0 million for stimulated isomer energy release.

The committee is aware that the Defense Advanced Research Project Agency (DARPA) is funding research to investigate the feasibility of stimulating the release of energy stored in nuclear isomers. The committee understands that the DARPA-sponsored research is investigating two of the most difficult technical challenges in this program and that the research is being conducted in the national laboratories, the Department of Energy, the military service laboratories, and other facilities. Given the significant policy issues associated with any eventual use of an isomer weapon and given the inability of distinguished scientists to replicate the reported successful triggering experiment of 1998, the committee believes that the Department of Defense should not be engaged in this research. The proper agency to investigate the feasibility of this technology is the National Nuclear Security Administration and its national laboratory complex. The committee questions the utility of this research in any circumstances and is particularly skeptical of research into nuclear isomer production before triggering is shown to be possible.

Accordingly, the committee directs the Secretary of Defense to terminate this program, and recommends no funding for the stimulated isomer energy release in PE 62702E, a reduction of \$4.0 million.

*Tasking, processing, exploitation, and dissemination of SYERS-2 data*

The budget request contained no funding in PE 35102BQ for defense imagery and mapping.

The committee is concerned that multi-spectral data from the SYERS-2 sensor is not being exploited by the National Geospatial Intelligence Agency (NGA).

The committee recommends \$3.0 million in PE 35102BQ, an increase of \$3.0 million to permit the NGA to fully process, exploit, and disseminate SYERS-2 data.

*Use of research and development funds to procure systems*

The committee has observed the increasing use of funds designated for research and development (R&D) purposes to acquire operational platforms. The fiscal 2005 budget proposal would take the practice to unprecedented levels, with three DD(X) and two LCS ships, three E-2C aircraft, and eleven VH-XX helicopters proposed for acquisition with R&D funds.

The use of R&D funds for prototypes and truly developmental items is both proper and prudent. This practice also makes sense when, following the completion of testing, a test asset still has use-

ful capability to bring to the operational fleet. However, it is difficult to believe that nearly half of the VH-XX fleet, for example, qualifies as prototypes or dedicated test assets. The fact that the platforms may occasionally be used for some testing purposes does not, in the committee's view, qualify them as research craft. Indeed, the committee would be surprised were the department actually proposing to regularly carry the President on prototype aircraft.

While the committee recognizes the increased flexibility of R&D funds in acquiring platforms, there is concern that placing acquisition programs in the R&D budget, particularly at their early, least stable stage, threatens other programs, particularly in science and technology. The R&D budget is a very small pool from which to fund acquisitions of large items like ships, and as procurements are must-pay bills, typical procurement cost-growth would put the rest of the R&D budget at risk.

The committee's action with regard to particular programs funded in R&D should therefore be seen not only as a reflection of the merits of those items, but also as an expression of concern over the rapidly expanding portion of the R&D budget being used for purposes other than R&D.

#### *Walrus*

The budget request contained \$339.2 million in PE 62702E for tactical technology applied research, including \$10.0 million for the Walrus program, and \$361.0 million in PE 63285E for advanced aerospace systems advanced technology development, including \$10.0 million for the Walrus program.

The committee notes that the Defense Advanced Research Projects Agency (DARPA) Walrus program would combine technologies for high-strength and low structural weight airframes, high efficiency propulsion systems; and heavy-lift cargo transport investigated in earlier DARPA programs. The Walrus program would develop and evaluate a very large "hybrid" airlift vehicle concept that is designed to fly through a combination of aerodynamics and gas buoyancy. The first phase of the program would include system studies and development of a notional objective vehicle and would be followed by a competitive second phase that would lead to the development, design, build, and initial flight test of an advanced technology demonstration air vehicle with air lift capability comparable to a C-130 aircraft. As envisioned, an objective vehicle would be capable of lifting over 500 tons across inter-continental distances.

The committee acknowledges the Department of Defense's objective of being able to deploy quickly to overseas theaters from the continental United States. Nevertheless, the committee is also aware of previous programs in the late 1980s and early 1990s that envisioned very large, long-endurance airship concepts for inter-theater lift, which after some initial enthusiasm were not pursued because of the large costs associated with the development and production of such systems. The committee has also received no estimates of the potential development and production costs for the Walrus concept. Because there are higher priority, near-term requirements associated with the global war on terrorism, the com-

mittee believes that the work on the DARPA Walrus program should be deferred.

Accordingly, the committee recommends no funding for the Walrus program, a reduction of \$10.0 million in PE 62702E and a reduction of \$10.0 million in PE 63285E.

#### OPERATIONAL TEST AND EVALUATION, DEFENSE

##### Overview

The budget request contained \$305.1 million for Operational Test and Evaluation, Defense.

The committee recommends \$305.1 million, no change to the budget request.

**Title II - RESEARCH, DEVELOPMENT, TEST AND EVALUATION**  
(Dollars in Thousands)

| PE Name    | Line | PROGRAM TITLE  | FY 2005               | Committee Change | Committee Increase | Committee Decrease | FY 2005                 |
|------------|------|--|-----------------------|------------------|--------------------|--------------------|-------------------------|
|            |      |  | Authorization Request |                  |                    |                    | Committee Authorization |
|            |      | <b>OPERATIONAL TEST &amp; EVALUATION, DEFENSE</b>          |                       |                  |                    |                    |                         |
| 0603941D8Z | 1    | Test & Evaluation Science & Technology                     | 16,295                |                  |                    |                    | 16,295                  |
| 0604940D8Z | 2    | Central Test and Evaluation Investment Development (CTEIP) | 123,562               |                  |                    |                    | 123,562                 |
| 0605118D8Z | 3    | Operational Test and Evaluation                            | 42,390                |                  |                    |                    | 42,390                  |
| 0605131D8Z | 4    | Live Fire Testing  | 10,209                |                  |                    |                    | 10,209                  |
| 0605804D8Z | 5    | Development Test and Evaluation                            | 112,679               |                  |                    |                    | 112,679                 |
|            |      | <b>TOTAL, OPERATIONAL TEST &amp; EVALUATION, DEFENSE</b>   | <b>305,135</b>        |                  |                    |                    | <b>305,135</b>          |

## LEGISLATIVE PROVISIONS

## SUBTITLE A—AUTHORIZATION OF APPROPRIATIONS

## Section 201—Authorization of Appropriations

This section would establish research, development, test and evaluation authorization levels for the Department of Defense for fiscal year 2005.

## Section 202—Amount for Defense Science and Technology

This section would establish defense science and technology authorization levels for the Department of Defense for fiscal year 2005.

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

## Section 211—Future Combat Systems Program Strategy

This section would limit authorization of appropriations for Future Combat Systems (FCS) in fiscal year 2005 to \$2.2 billion until the following is submitted to Congress prior to the Milestone B update:

- (1) An independent program cost estimate;
- (2) A report on the maturity levels of critical technologies;
- (3) A report on the status of the network and command, control, communications, computers, intelligence, surveillance and reconnaissance components; and
- (4) The key performance parameters.

This section would also require the Secretary of the Army to certify that the following requirements are applied to the Future Combat Systems program:

- (1) At the design readiness review, 90 percent of engineering drawings will be releasable to manufacturing;
- (2) Before production facilitization and long lead items are contracted for, the performance of the information network is demonstrated to be acceptable, including the contributions of complementary programs such as the Joint Tactical Radio System and the Warfighter Information Network-Tactical;
- (3) Before the initial production decision, prototypes of each system demonstrate their collective ability to meet system of system requirements when integrated with the network.

FCS is a revolutionary system of systems that the Army is developing to equip its future forces. FCS consists of an information network that links a suite of 18 new smaller and lighter manned and unmanned ground vehicles, air vehicles, sensors, and munitions. The success of FCS depends on the ability of the network to collect, process, and deliver vast amounts of information such as imagery and communications and the performance of the individual systems themselves.

The committee supports the Army's transformation goals and the desired capabilities that the FCS program promises. However, the committee is greatly concerned about the Army's ability to deliver these capabilities within cost and schedule estimates. The Army has never managed any program of the size and complexity of FCS:

18 systems, 32 critical technology areas, 34 million lines of code, 129 trade studies, and 157 other necessary systems outside of the FCS program structure.

In its March 2004 report, the General Accounting Office indicated the FCS program has many of the same risk markers that have led to problems on other programs. These include:

- (1) An extremely challenging and unforgiving requirement to outperform the current heavy force at a fraction of the weight and logistics footprint;
- (2) Reliance on numerous advanced yet immature technologies to meet the requirement; and;
- (3) A schedule that proceeds to production in an unprecedented 5½ years.

The committee is aware of the fiscal realities that make it difficult to fund simultaneously the development of transformational future military systems and the maintenance and sustainment of current military systems. FCS will field 15, brigade like, Units of Action by 2025. This will constitute about one-third of the active component of the Army. The Army does not have a plan and has not budgeted funds to sustain the current force through 2025. The committee believes that the current force must be provided with a sufficient sustainment and modernization budget such that this force remains capable, reliable, interoperable, and relevant until FCS can assume the majority of the responsibility for the Army's mission.

#### Section 212—Collaborative Program for Research and Development of Vacuum Electronics Technologies

This provision would require the Secretary of Defense to establish a program for research and development in advanced vacuum electronics technology to meet Department of Defense (DOD) requirements for radio frequency electromagnetic systems. The program would be carried out collaboratively by the Director of Defense Research and Engineering, the Secretary of the Navy, the Secretary of the Air Force, the Secretary of the Army, and other appropriate elements of the Department of Defense. The provision would also increase the fiscal year 2005 budget request for vacuum technology research and development by a total of \$15.0 million, an increase of \$10.0 million in PE 62771N for vacuum electronics applied research and an increase of \$5.0 million in PE 63771N for vacuum electronics advanced technology development.

The committee has long recognized the unique needs of the Department of Defense for high power vacuum electronics for radar and other electromagnetic systems, and has advocated increased funding for research and development in advanced vacuum electronics technology. The committee reports on H.R. 1402 (H. Rept. 106–162) and on H.R. 4546 (H. Rept. 107–436) noted the committee's support for a robust vacuum electronics research and development program in the Department of Defense and other federal agencies. The committee has reviewed the results of the Secretary of the Navy's report to Congress on the DOD vacuum electronics program and the Department's April 2001 Technology Area Review and Assessment (TARA) on creating a balanced tri-service investment strategy for RF vacuum electronics and solid-state power electronics technologies. In the committee report on H.R. 4546, the

committee endorsed the TARA views on the criticality of support for both vacuum electronics and solid-state power electronics technologies. The committee notes the TARA review's recommendations for increased funding in the tri-service vacuum electronics program and for establishment of a combined tri-service initiative to rapidly advance wide band gap semiconductor device technology to enable advanced military radar and other systems requiring power electronics in the mid-to-long term.

Section 212 of the National Defense Authorization Act for Fiscal Year 2002 (Public Law 107-107) required the Secretary of Defense to establish a collaborative program for development of advanced radar systems, which has focused on developing the technology for high frequency and high power wide band gap semiconductors recommended in the TARA review. Section 212 of this Act would implement the TARA recommendation for the tri-service vacuum electronics program.

The committee expects the Under Secretary of Defense (Acquisition, Technology, and Logistics), acting through the Director of Defense Research and Engineering, to ensure a balanced investment strategy for vacuum electronics and solid state power technologies that will meet DOD requirements for current and future systems that use radio frequency power electronics.

#### Section 213—Annual Comptroller General Report on Joint Strike Fighter Program

This section would establish an annual review of the Joint Strike Fighter system development and demonstration (SDD) program by the Comptroller General to be submitted to Congress by March 15, of each year. The report would include the extent to which such SDD program is meeting established performance, cost, and schedule goals; the plan for such SDD for the next fiscal year; and a conclusion whether such SDD program is likely to be completed at a cost not in excess of the most recent Selected Acquisition Report. The final report required by this section would be submitted on March 15, 2009.

#### Section 214—Amounts for United States Joint Forces Command to be Derived Only from Defense-wide Amounts

This section would transfer funding for the joint warfare experimentation program and related Joint Forces Command programs from Research, Development, Test and Evaluation, Navy to a Defense-wide account.

In 1998, the Secretary of Defense chartered the combatant commander, U.S. Joint Forces Command, as the executive agent for conducting joint warfighting concept development and experimentation within the Department of Defense. The committee believes that, as the Department's executive agent for joint warfighting concept development and experimentation, the command's budget for joint warfare experimentation and related programs should be independent of, and separate from the budgets of the military departments. The committee also notes that the precedent that has been established by the Department in maintaining the budgets for the Joint Staff and defense agencies separate from the budgets of the military departments. The committee also observes that main-

taining the budget for the joint warfare experimentation and transformation programs as a part of budget request for the Navy's science and technology program tends to create a false impression of funding levels for the latter.

The committee directs the transfer of funding for the Joint Forces Command joint experimentation, joint warfare experiments and joint warfare transformation programs from Research, Development, Test, and Evaluation, Navy to Research, Development, Test, and Evaluation, Defense-wide, as follows:

- (1) \$167.7 million for Joint Experimentation from Navy PE 32727N to Defense-wide PE 63xx1;
- (2) \$26,000 for Joint Warfare Experiments from Navy PE 63757N to Defense-wide PE 63xx2, and;
- (3) \$22.5 million for Joint Warfare Transformation Programs from Navy PE 64787N to Defense-wide PE 63xx3.

#### Section 215—Authority of Director of Defense Research and Engineering to Award Prizes for Advanced Technology Achievements

This section would amend the process by which the Secretary of Defense carries out a program to award cash prizes in recognition of outstanding achievements in basic, advanced, and applied research, technology development, and prototype development that have the potential for application to the performance of the military missions of the Department of Defense. The amendment would provide that the program would be carried out by the Secretary of Defense, acting through the Director of Defense Research and Engineering, rather than through the Director, Defense Advanced Research Projects Agency.

#### Section 216—Space Based Radar

This section would prohibit the Space Based Radar program from proceeding to Department of Defense acquisition milestone B. The program may not proceed until 30 days after meeting the requirement to notify the congressional defense committees and the intelligence committees of the completion of an independent cost estimate, a technology maturity and readiness assessment, and the system design concept.

#### Section 217—Mark-54 Torpedo Product Improvement Program

This section would provide \$2.0 million of funds authorized in Navy, Research and Development for the Mark-54 Product Improvement Program.

### SUBTITLE C—BALLISTIC MISSILE DEFENSE

#### Section 221—Fielding of Ballistic Missile Defense Capabilities

This section would allow the Department of Defense to use research, development, test and evaluation funding to develop and field ballistic missile defense capabilities with funds appropriated in fiscal years 2005 and 2006.

The committee is concerned with the Department's plans to transition program elements of the ballistic missile defense program from the Missile Defense Agency to the military services. The committee notes that section 223(a) of the National Defense Authoriza-

tion Act for Fiscal Year 2004 (Public Law 108–136) requires the Secretary of Defense to submit with the annual budget request the potential date of availability of individual ballistic missile defense program elements for fielding, and the estimated date for the transfer of individual ballistic missile defense system elements from the Director of the Missile Defense Agency to the secretary of a military department. The committee expects that the fielding and acquisition strategy provided by the Department will assist the committee in considering future requests by the Department to use research, development, test and evaluation funds for the development and fielding of ballistic missile capabilities.

### TITLE III—OPERATION AND MAINTENANCE

#### OVERVIEW

The budget request contained \$140.6 billion for operation and maintenance funds throughout the Department of Defense (DOD). The committee reviewed this request to evaluate whether readiness accounts are properly funded and managed for a peacetime environment. The committee conducted a focused review on joint training, logistics transformation, prepositioned assets, as well as the overall readiness of military units.

The committee believes the Secretary of Defense and DOD leadership recognize the importance of joint training and are taking appropriate action to implement the Joint National Training Capabilities program. DOD leadership also appears committed to improving logistics and providing total asset visibility of supplies and personnel to the combatant commanders. The committee will continue in its oversight role to evaluate whether various training exercises and logistics systems migrate toward a joint environment or whether military-unique training and stove-piped logistics systems continue to be the norm. The committee believes any program identified as joint, total, or global will face some level of resistance. The burden will be on the Secretary of Defense and the secretaries of the military departments to adopt and endorse programs that benefit the Department as a whole, rather than merely benefiting a particular service or agency.

The committee also believes the Secretary of Defense and the secretaries of the military departments have a unique opportunity to replenish their prepositioned materials and equipment in a manner most beneficial to global security. Many lessons were learned as to the value of prepositioned equipment and how to manage such assets. The committee hopes DOD leadership takes advantage of these lessons and adjusts its prepositioning program accordingly.

Finally, the committee notes the challenge of evaluating a peacetime budget when the nation is at war. The budget request contained no additional funds to support the operating tempo for units deployed for Operation Iraqi Freedom and Operation Enduring Freedom. Title XV of this bill accordingly addresses this issue and the need for additional operational and maintenance funds.