	MODIFICATIONS						
56	COMM ELECT MODS	65,700		65,700			
	TOTAL, ELECTRONICS AND TELECOMMUNICATIONS EQUIP	1,265,033		1,225,333			−59,700
	OTHER BASE MAINTENANCE AND SUPPORT EQUIP						
	PERSONAL SAFETY AND RESCUE EQUIP						
58	ITEMS LESS THAN $5,000,000 (SAFETY)	54,416		46,416			−8,000
	DEPOT PLANT + MATERIALS HANDLING EQ						
59	MECHANIZED MATERIAL HANDLING	7,344		7,344			
	BASE SUPPORT EQUIPMENT						
61	BASE PROCURED EQUIPMENT	6,852		6,852			
63	MOBILITY EQUIPMENT	8,146		13,146			+5,000
64	ITEMS LESS THAN $5M (BASE SUPPORT)	28,427		28,427			
	SPECIAL SUPPORT PROJECTS						
66	DARP RC135	25,287		25,287			
67	DISTRIBUTED GROUND SYSTEMS	169,201		169,201			
69	SPECIAL UPDATE PROGRAM	576,710		576,710			
	TOTAL, OTHER BASE MAINTENANCE AND SUPPORT EQUIP	876,383		873,383			−3,000
	SPARE AND REPAIR PARTS						
72	SPARES AND REPAIR PARTS	15,784		15,784			
	CLASSIFIED PROGRAMS	15,119,705		15,261,824			+142,119
	TOTAL, OTHER PROCUREMENT, AIR FORCE	17,438,056		17,503,191			+65,135

COMMITTEE RECOMMENDED ADJUSTMENTS

The following table details the adjustments recommended by the Committee:

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
1	Passenger Carrying Vehicles	14,437	11,437	−3,000
	Improving funds management: Unjustified growth			−3,000
2	Medium Tactical Vehicle	24,812	16,812	−8,000
	Improving funds management: Unobligated balances			−8,000
3	Cap Vehicles	984	1,700	+716
	Program increase: Civil Air Patrol—vehicles			+716
4	Items Less Than $5 Million	11,191	7,191	−4,000
	Improving funds management: Unjustified growth			−4,000
12	Comsec Equipment	72,359	84,359	+12,000
	Program increase: Cybersecurity upgrades			+12,000
16	Air Traffic Control & Landing Sys	55,803	49,403	−6,400
	Restoring acquisition accountability: Schedule slips (RAPCON)			−6,400
21	Strategic Command And Control	39,803	19,903	−19,900
	Improving funds management: Unobligated balances			−19,900
26	General Information Technology	41,779	50,679	+8,900
	Program increase: Cybersecurity training			+8,900
38	Air Operations Center (AOC) 10.2	30,623	15,323	−15,300
	Restoring acquisition accountability: Schedule slips			−15,300
40	AFNET	146,897	131,897	−15,000
	Improving funds management: Unobligated balances			−15,000
52	Tactical C–E Equipment	109,836	106,836	−3,000
	Maintain program affordability: Eliminate program growth (TACP–M MCS Non-Recurring)			−3,000
55	Base Comm Infrastructure	109,215	88,215	−21,000
	Improving funds management: Unobligated balances			−21,000
58	Items Less Than $5 Million	54,416	46,416	−8,000
	Improving funds management: Program delays (LSS)			−8,000
63	Mobility Equipment	8,146	13,146	+5,000
	Other Base Maintenance and Support Equipment			+5,000
	Classified Programs	15,119,705	15,261,824	+142,119
	Classified adjustment			+142,119

PROCUREMENT, DEFENSE-WIDE

Appropriations, 2016	$5,245,443,000
Budget estimate, 2017	4,524,918,000
Committee recommendation	4,921,274,000

The Committee recommends an appropriation of $4,921,274,000. This is $396,356,000 above the budget estimate.

COMMITTEE RECOMMENDED PROGRAM

The following table summarizes the budget estimate for this appropriation, the Committee recommendation, and the Committee recommended adjustments to the budget estimate:

(Dollars in thousands)

Line	Item	Qty.	2017 budget estimate	Qty	Committee recommendation	Change from	
						Qty.	Budget estimate
	PROCUREMENT, DEFENSE-WIDE						
	MAJOR EQUIPMENT						
	MAJOR EQUIPMENT, DCAA						
1	MAJOR EQUIPMENT ITEMS LESS THAN $5M		2,964		2,964		
	MAJOR EQUIPMENT, DCMA						
2	MAJOR EQUIPMENT		92				−92
	MAJOR EQUIPMENT, DHRA						
3	PERSONNEL ADMINISTRATION		14,232		14,232		
	MAJOR EQUIPMENT, DISA						
6	INFORMATION SYSTEMS SECURITY		21,347		21,347		
7	TELEPORT PROGRAM		50,597		50,597		
8	ITEMS LESS THAN $5M		10,420		10,420		
9	NET CENTRIC ENTERPRISE SERVICES (NCES)		1,634		1,634		
10	DEFENSE INFORMATION SYSTEMS NETWORK		87,235		87,235		
11	CYBER SECURITY INITIATIVE		4,528		4,528		
12	WHITE HOUSE COMMUNICATION AGENCY		36,846		36,846		
13	SENIOR LEADERSHIP ENTERPRISE		599,391		599,391		
15	JOINT REGIONAL SECURITY STACKS		150,221		150,221		
	MAJOR EQUIPMENT, DLA						
17	MAJOR EQUIPMENT		2,055		2,055		
	MAJOR EQUIPMENT, DMACT						
18	A—WEAPON SYSTEM COST	4	8,060	4	8,060		
	MAJOR EQUIPMENT, DODEA						
19	AUTOMATION/EDUCATIONAL SUPPORT & LOGISTICS		288		288		
	MAJOR EQUIPMENT, DSS						
20	MAJOR EQUIPMENT		1,057		1,057		
	MAJOR EQUIPMENT, DEFENSE THREAT REDUCTION AGENCY						
21	VEHICLES		200		200		
22	OTHER MAJOR EQUIPMENT		6,437		6,437		

	MAJOR EQUIPMENT, MDA						
23	THAAD SYSTEM	24	369,608	24	419,608		+ 50,000
24	AEGIS BMD	35	463,801	35	513,801		+ 50,000
25	BMDS AN/TPY–2 RADARS		5,503		5,503		
26	ARROW WEAPON SYSTEM CO–PRODUCTION				120,000		+ 120,000
27	DAVID'S SLING WEAPON SYSTEM CO–PRODUCTION		57,493		57,493		+ 150,000
28	AEGIS ASHORE PHASE III		42,000		62,000		+ 20,000
29	IRON DOME SYSTEM CO–PRODUCTION		50,098		50,098		
30	AEGIS BMD HARDWARE AND SOFTWARE				50,000		+ 50,000
	REDESIGNED KILL VEHICLE–AP						
	MAJOR EQUIPMENT, NSA						
36	INFORMATION SYSTEMS SECURITY PROGRAM [ISSP]		4,399		4,399		
	MAJOR EQUIPMENT, OSD						
37	MAJOR EQUIPMENT, OSD	39	29,211	39	29,211		
	MAJOR EQUIPMENT, TJS						
38	MAJOR EQUIPMENT, TJS		7,988		7,988		
	MAJOR EQUIPMENT, WHS						
40	MAJOR EQUIPMENT, WHS		24,979		24,979		
	TOTAL, MAJOR EQUIPMENT		2,052,684		2,492,592		+ 439,908
	SPECIAL OPERATIONS COMMAND						
	AVIATION PROGRAMS						
42	SOF ROTARY WING UPGRADES AND SUSTAINMENT		150,396		150,396		
43	UNMANNED ISR		21,190		21,190		
45	NON–STANDARD AVIATION		4,905		4,905		
46	SOF U–28		3,970		3,970		
47	MH–47 CHINOOK		25,022		25,022		
49	CV–22 SOF MODIFICATION		19,008		19,008		
51	MQ–9 UNMANNED AERIAL VEHICLE		10,598		10,598		
53	PRECISION STRIKE PACKAGE		213,122		200,072		– 13,050
54	AC/MC–130J		73,548		76,598		+ 3,050
55	C–130 MODIFICATIONS		32,970		32,970		
	SHIPBUILDING						
56	UNDERWATER SYSTEMS		37,098		37,098		
	AMMUNITION PROGRAMS						
57	SOF ORDNANCE ITEMS UNDER $5,000,000		105,267		105,267		

(Dollars in thousands)

Line	Item	Qty.	2017 budget estimate	Qty.	Committee recommendation	Change from	
						Qty.	Budget estimate
	OTHER PROCUREMENT PROGRAMS						
58	SOF INTELLIGENCE SYSTEMS		79,963		79,963		
59	DCGS–SOF		13,432		13,432		
60	OTHER ITEMS UNDER $5,000,000		66,436		66,436		
61	SOF COMBATANT CRAFT SYSTEMS		55,820		55,820		
62	SPECIAL PROGRAMS		107,432		107,432		
63	TACTICAL VEHICLES		67,849		67,849		
64	WARRIOR SYSTEMS UNDER $5,000,000		245,781		245,781		
65	COMBAT MISSION REQUIREMENTS		19,566		19,566		
66	SOF GLOBAL VIDEO SURVEILLANCE ACTIVITIES		3,437		3,437		
67	SOF OPERATIONAL ENHANCEMENTS INTELLIGENCE		17,299		17,299		
69	SOF OPERATIONAL ENHANCEMENTS		219,945		224,393		+ 4,448
	TOTAL, SPECIAL OPERATIONS COMMAND		1,594,054		1,588,502		– 5,552
	CHEMICAL/BIOLOGICAL DEFENSE						
70	CHEMICAL BIOLOGICAL SITUATIONAL AWARENESS		148,203		148,203		
71	CB PROTECTION AND HAZARD MITIGATION		161,113		161,113		
	TOTAL, CHEMICAL/BIOLOGICAL DEFENSE		309,316		309,316		
	CLASSIFIED PROGRAMS		568,864		530,864		– 38,000
	TOTAL, PROCUREMENT, DEFENSE–WIDE		4,524,918		4,921,274		+ 396,356

COMMITTEE RECOMMENDED ADJUSTMENTS

The following table details the adjustments recommended by the Committee:

(In thousands of dollars)

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
2	Major Equipment	92		−92
	Budget documentation disparity: Ahead of need			−92
23	THAAD	369,608	419,608	+50,000
	Program increase: Obsolescence upgrades			+50,000
24	Aegis BMD	463,801	513,801	+50,000
	Program increase: Obsolescence upgrades			+50,000
26	Arrow Upper Tier		120,000	+120,000
	Increase for Arrow 3 co-production upper tier interceptor program			+120,000
27	David's Sling		150,000	+150,000
	Increase for David Sling's co-production program			+150,000
29	Iron Dome	42,000	62,000	+20,000
	Increase for Iron Dome co-production			+20,000
XX	Redesigned Kill Vehicle—AP		50,000	+50,000
	RKV long lead materials only			+50,000
	Classified Programs	568,864	530,864	−38,000
	Classified adjustment			−38,000
53	Precision Strike Package	213,122	200,072	−13,050
	Transfer Precision Strike Package: SOCOM requested to PDW Line #54 AC/MC–130J			−13,050
54	AC/MC–130J	73,548	76,598	+3,050
	Transfer Precision Strike Package: SOCOM requested from PDW Line #53 Precision Strike Package			+13,050
	Improving funds management: Program delays (MC–130J)			−10,000
64	Warrior Systems <$5M	245,781	245,781	
	Improving funds management: Level funding profile (SCAMPI)			−4,000
	Program increase: Weapons accessories			+4,000
69	Operational Enhancements	219,945	224,393	4,448
	Classified adjustment			−552
	Program increase: Rotary-wing ammo			+5,000

DEFENSE PRODUCTION ACT PURCHASES

Appropriations, 2016	$76,680,000
Budget estimate, 2017	44,065,000
Committee recommendation	64,065,000

The Committee recommends an appropriation of $64,065,000. This is $20,000,000 above the budget estimate.

COMMITTEE RECOMMENDED PROGRAM

The following table summarizes the budget estimate for this appropriation, the Committee recommendation, and the Committee recommended adjustments to the budget estimate:

(Dollars in thousands)

Line	Item	Qty.	2017 budget estimate	Qty.	Committee recommendation	Change from	
						Qty.	Budget estimate
	DEFENSE PRODUCTION ACT PURCHASES						
1	DEFENSE PRODUCTION ACT PURCHASES	.....	44,065	.....	64,065	.....	+ 20,000

Additional Funding.—The Committee recognizes the critical role that the Defense Production Act [DPA] title III program serves in strengthening the U.S. defense industrial base and believes that this work is in the national interest. Therefore, the Committee increases funding for DPA by $20,000,000 over the budget request. The Committee directs that the additional funding be competitively awarded to new initiatives and priority consideration should be given to completion of DPA projects initiated in prior years. Furthermore, the Committee directs the Under Secretary of Defense (Acquisition, Technology, and Logistics) to notify the congressional defense committees 30 days prior to any obligation or expenditure of these funds.

TITLE IV

RESEARCH, DEVELOPMENT, TEST AND EVALUATION

Funds appropriated under this title provide the resources required to conduct a program of research, development, test and evaluation, including research in basic science, applied research, advanced technology development, demonstration and validation, engineering and manufacturing development, and operational systems development.

The President's fiscal year 2017 budget requests a total of $71,391,771,000 for research, development, test and evaluation appropriations.

SUMMARY OF COMMITTEE ACTION

The Committee recommends research, development, test and evaluation appropriations totaling $70,800,794,000 for fiscal year 2017. This is $590,977,000 below the budget estimate.

Committee recommended research, development, test and evaluation appropriations for fiscal year 2017 are summarized below:

SUMMARY OF RESEARCH, DEVELOPMENT, TEST AND EVALUATION APPROPRIATIONS

(In thousands of dollars)

Account	2017 budget estimate	Committee recommendation	Change from budget estimate
Research, Development, Test and Evaluation:			
Research, Development, Test and Evaluation, Army	7,515,399	7,767,010	+251,611
Research, Development, Test and Evaluation, Navy	17,276,301	16,877,818	−398,483
Research, Development, Test and Evaluation, Air Force	28,112,251	27,490,944	−621,307
Research, Development, Test and Evaluation, Defense-Wide	18,308,826	18,478,028	+169,202
Operational Test and Evaluation, Defense	178,994	186,994	+8,000
Total	71,391,771	70,800,794	−590,977

REPROGRAMMING GUIDANCE FOR ACQUISITION ACCOUNTS

The Secretary of Defense is directed to continue to follow the reprogramming guidance as specified in the report accompanying the House version of the Department of Defense appropriations bill for fiscal year 2008 (House Report 110–279). Specifically, the dollar threshold for reprogramming funds will remain at $20,000,000 for procurement and $10,000,000 for research, development, test and evaluation.

Also, the Under Secretary of Defense (Comptroller) is directed to continue to provide the congressional defense committees quarterly, spreadsheet-based DD Form 1416 reports for service and defense-wide accounts in titles III and IV of this act. Reports for titles III and IV shall comply with guidance specified in the explanatory statement accompanying the Department of Defense Appropriations Act for Fiscal Year 2006. The Department shall continue to follow the limitation that prior approval reprogrammings are set at either the specified dollar threshold or 20 percent of the procurement or research, development, test and evaluation line, whichever is less. These thresholds are cumulative from the base for re-

programming value as modified by any adjustments. Therefore, if the combined value of transfers into or out of a procurement (P–1), or a research, development, test and evaluation (R–1) line exceeds the identified threshold, the Secretary of Defense must submit a prior approval reprogramming to the congressional defense committees. In addition, guidelines on the application of prior approval reprogramming procedures for congressional special interest items are established elsewhere in this report.

RESEARCH, DEVELOPMENT, TEST AND EVALUATION OVERVIEW

Use of Research, Development, Test and Evaluation funds to procure end-items.—As in previous years, the Committee retains a general provision, section 8057, prohibiting the use of funds appropriated in title IV of this act to procure end-items for delivery to military forces for operational training, operational use or inventory requirements with the exception of end-items used in development, prototyping, and test activities preceding and leading to acceptance for operational use. The Committee notes a marked increase in the use of title IV funds under these exceptions and directs the Under Secretary of Defense (Acquisition, Technology, Logistics), in conjunction with the Assistant Secretary of the Army (Acquisition, Logistics and Technology), the Assistant Secretary of the Navy (Research, Development and Acquisition), the Deputy Commandant (Combat Development and Integration), the Assistant Secretary of the Air Force (Acquisition), and the Acquisition Executive, Special Operations Command, to provide no later than submission of the fiscal year 2018 President's budget request a report to the congressional defense committees detailing by fiscal year for each military service, all prototypes or other end-items funded with title IV funds planned for operational use. The report shall cover each of the previous three fiscal years and each fiscal year in the Fiscal Year 2018 Future Years Defense Program.

Basic Research.—The fiscal year 2017 budget request includes $2,101,832,000 for basic research in Research, Development, Test and Evaluation for the Army, Navy, Air Force and Department of Defense. This amount is $207,364,000 below the amount appropriated in the Department of Defense Appropriations Act, 2016 (Public Law 114–113). The Committee believes that further investment in basic research must continue and is concerned with the minor increases being made in basic research. The Army, Air Force and the Department of Defense made only modest increases in basic research in fiscal year 2017 compared with the fiscal year 2016 request. Most alarming was the Navy's reduction in basic research funding which decreased by $43,958,000 in fiscal year 2017 compared with the fiscal year 2016 request.

Basic research is the foundation of innovative breakthroughs that are critical to maintaining the Nation's future technological edge. Investments in basic research not only provide advances in technology for our military men and women but also provide an important incubator for national labs and academic research institutions. These investments also encourage partnerships and collaboration with industry. In order to keep pace with the global challenges to come, the Committee believes that additional funding should be allocated to Federal research. Therefore, the Committee

recommends $2,264,832,000 for basic research, an increase of $163,000,000 over the fiscal year 2017 budget request.

Alternative Energy Research.—The Committee continues to support the fiscal and operational value of investing in alternative energy research. The Committee recommends an additional $55,000,000 for Army, Navy and Air Force research and development to continue research of promising alternative energy technologies, such as renewable energies, alternative fuels, and energy efficiencies. The Committee encourages the services to focus on the ability of platforms, installations, and personnel to operate with diverse mix of fuels.

Department of Defense Laboratory Alternative Governance Assessment Pilot Program.—The Committee encourages the Assistant Secretary of Defense for Research, Development and Engineering to conduct a study evaluating alternative governance models for Department of Defense laboratories. This review should build upon previous work and may result in a pilot program that permits the laboratories selected to implement new management approaches and governance methods that improve autonomy, decision-making and technology transfer opportunities.

RESEARCH, DEVELOPMENT, TEST AND EVALUATION, ARMY

Appropriations, 2016	$7,565,327,000
Budget estimate, 2017	7,515,399,000
Committee recommendation	7,767,010,000

The Committee recommends an appropriation of $7,767,010,000. This is $251,611,000 above the budget estimate.

COMMITTEE RECOMMENDED PROGRAM

The following table summarizes the budget estimate for this appropriation, the Committee recommendation, and the Committee recommended adjustments to the budget estimate:

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
	RESEARCH, DEVELOPMENT, TEST & EVAL, ARMY			
	BASIC RESEARCH			
1	IN-HOUSE LABORATORY INDEPENDENT RESEARCH	12,381	12,381	
2	DEFENSE RESEARCH SCIENCES	253,116	293,116	+40,000
3	UNIVERSITY RESEARCH INITIATIVES	69,166	69,166	
4	UNIVERSITY AND INDUSTRY RESEARCH CENTERS	94,280	107,280	+13,000
	TOTAL, BASIC RESEARCH	428,943	481,943	+53,000
	APPLIED RESEARCH			
5	MATERIALS TECHNOLOGY	31,533	62,533	+31,000
6	SENSORS AND ELECTRONIC SURVIVABILITY	36,109	46,109	+10,000
7	TRACTOR HIP	6,995	6,995	
8	AVIATION TECHNOLOGY	65,914	69,914	+4,000
9	ELECTRONIC WARFARE TECHNOLOGY	25,466	25,466	
10	MISSILE TECHNOLOGY	44,313	59,313	+15,000
11	ADVANCED WEAPONS TECHNOLOGY	28,803	43,803	+15,000
12	ADVANCED CONCEPTS AND SIMULATION	27,688	30,688	+3,000
13	COMBAT VEHICLE AND AUTOMOTIVE TECHNOLOGY	67,959	92,959	+25,000
14	BALLISTICS TECHNOLOGY	85,436	105,436	+20,000
15	CHEMICAL, SMOKE AND EQUIPMENT DEFEATING TECHNOLOGY	3,923	3,923	
16	JOINT SERVICE SMALL ARMS PROGRAM	5,545	5,545	
17	WEAPONS AND MUNITIONS TECHNOLOGY	53,581	83,581	+30,000
18	ELECTRONICS AND ELECTRONIC DEVICES	56,322	66,322	+10,000
19	NIGHT VISION TECHNOLOGY	36,079	36,079	
20	COUNTERMINE SYSTEMS	26,497	30,497	+4,000
21	HUMAN FACTORS ENGINEERING TECHNOLOGY	23,671	23,671	
22	ENVIRONMENTAL QUALITY TECHNOLOGY	22,151	30,151	+8,000
23	COMMAND, CONTROL, COMMUNICATIONS TECHNOLOGY	37,803	37,803	
24	COMPUTER AND SOFTWARE TECHNOLOGY	13,811	13,811	
25	MILITARY ENGINEERING TECHNOLOGY	67,416	82,416	+15,000
26	MANPOWER/PERSONNEL/TRAINING TECHNOLOGY	26,045	26,045	
27	WARFIGHTER TECHNOLOGY	37,403	49,103	+11,700
28	MEDICAL TECHNOLOGY	77,111	77,111	
	TOTAL, APPLIED RESEARCH	907,574	1,109,274	+201,700
	ADVANCED TECHNOLOGY DEVELOPMENT			
29	WARFIGHTER ADVANCED TECHNOLOGY	38,831	51,331	+12,500
30	MEDICAL ADVANCED TECHNOLOGY	68,365	76,365	+8,000
31	AVIATION ADVANCED TECHNOLOGY	94,280	94,280	
32	WEAPONS AND MUNITIONS ADVANCED TECHNOLOGY	68,714	101,214	+32,500
33	COMBAT VEHICLE AND AUTOMOTIVE ADVANCED TECHNOLOGY	122,132	152,132	+30,000
34	SPACE APPLICATION ADVANCED TECHNOLOGY	3,904	3,904	
35	MANPOWER, PERSONNEL AND TRAINING ADVANCED TECHNOLOGY	14,417	14,417	
37	TRACTOR HIKE	8,074	8,074	
38	NEXT GENERATION TRAINING & SIMULATION SYSTEMS	18,969	18,969	
39	TRACTOR ROSE	11,910	11,910	

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
40	COMBATING TERRORISM, TECHNOLOGY DEVELOPMENT	27,686	35,686	+8,000
41	TRACTOR NAIL	2,340	2,340	
42	TRACTOR EGGS	2,470	2,470	
43	ELECTRONIC WARFARE TECHNOLOGY	27,893	41,893	+14,000
44	MISSILE AND ROCKET ADVANCED TECHNOLOGY	52,190	82,190	+30,000
45	TRACTOR CAGE	11,107	11,107	
46	HIGH PERFORMANCE COMPUTING MODERNIZATION PROGRAM	177,190	222,190	+45,000
47	LANDMINE WARFARE AND BARRIER ADVANCED TECHNOLOGY	17,451	17,451	
48	JOINT SERVICE SMALL ARMS PROGRAM	5,839	5,839	
49	NIGHT VISION ADVANCED TECHNOLOGY	44,468	44,468	
50	ENVIRONMENTAL QUALITY TECHNOLOGY DEMONSTRATIONS	11,137	21,137	+10,000
51	MILITARY ENGINEERING ADVANCED TECHNOLOGY	20,684	55,684	+35,000
52	ADVANCED TACTICAL COMPUTER SCIENCE & SENSOR TECHNOLOGY	44,239	54,239	+10,000
53	COMMAND, CONTROL, COMMUNICATIONS ADVANCED TECHNOLOGY	35,775	37,775	+2,000
	TOTAL, ADVANCED TECHNOLOGY DEVELOPMENT	930,065	1,167,065	+237,000
	DEMONSTRATION & VALIDATION			
54	ARMY MISSILE DEFENSE SYSTEMS INTEGRATION	9,433	42,433	+33,000
55	ARMY MISSILE DEFENSE SYSTEMS INTEGRATION (SPACE)	23,056	23,056	
56	LANDMINE WARFARE AND BARRIER—ADV DEV	72,117	72,117	
57	SMOKE, OBSCURANT AND TARGET DEFEATING SYS–ADV DEV	28,244	28,244	
58	TANK AND MEDIUM CALIBER AMMUNITION	40,096	40,096	
59	SOLDIER SUPPORT AND SURVIVABILITY	10,506	14,006	+3,500
60	TACTICAL ELECTRONIC SURVEILLANCE SYSTEM—AD	15,730	15,730	
61	NIGHT VISION SYSTEMS ADVANCED DEVELOPMENT	10,321	10,321	
62	ENVIRONMENTAL QUALITY TECHNOLOGY	7,785	7,785	
63	NATO RESEARCH AND DEVELOPMENT	2,300	2,300	
64	AVIATION—ADV DEV	10,014	10,014	
65	LOGISTICS AND ENGINEER EQUIPMENT—ADV DEV	20,834	18,126	−2,708
66	MEDICAL SYSTEMS—ADV DEV	33,503	33,503	
67	SOLDIER SYSTEMS—ADVANCED DEVELOPMENT	31,120	54,120	+23,000
68	ANALYSIS OF ALTERNATIVES	6,608	6,608	
69	LOWER TIER AIR MISSILE DEFENSE (LTAMD) SENSOR	35,132	35,132	
70	TECHNOLOGY MATURATION INITIATIVES	70,047	36,038	−34,009
71	ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)	83,279	83,279	
73	CYBERSPACE OPERATIONS FORCES AND FORCE SUPPORT	40,510	3,000	−37,510
	TOTAL, DEMONSTRATION & VALIDATION	550,635	535,908	−14,727
	ENGINEERING & MANUFACTURING DEVELOPMENT			
74	AIRCRAFT AVIONICS	83,248	62,248	−21,000
75	ELECTRONIC WARFARE DEVELOPMENT	34,642	34,642	
77	MID-TIER NETWORKING VEHICULAR RADIO	12,172	12,172	
78	ALL SOURCE ANALYSIS SYSTEM	3,958	3,958	
79	TRACTOR CAGE	12,525	12,525	
80	INFANTRY SUPPORT WEAPONS	66,943	60,918	−6,025
82	JAVELIN	20,011	20,011	
83	FAMILY OF HEAVY TACTICAL VEHICLES	11,429	11,429	
84	AIR TRAFFIC CONTROL	3,421	3,421	
85	TACTICAL UNMANNED GROUND VEHICLE	39,282	33,532	−5,750
86	LIGHT TACTICAL WHEELED VEHICLES	494	494	
87	ARMORED SYSTEMS MODERNIZATION (ASM)—ENG DEV	9,678	9,678	
88	NIGHT VISION SYSTEMS—SDD	84,519	77,944	−6,575
89	COMBAT FEEDING, CLOTHING, AND EQUIPMENT	2,054	2,054	
90	NON-SYSTEM TRAINING DEVICES—SDD	30,774	29,801	−973
91	AIR DEFENSE COMMAND, CONTROL AND INTELLIGENCE—SDD	53,332	53,332	
92	CONSTRUCTIVE SIMULATION SYSTEMS DEVELOPMENT	17,887	17,887	
93	AUTOMATIC TEST EQUIPMENT DEVELOPMENT	8,813	8,813	
94	DISTRIBUTIVE INTERACTIVE SIMULATIONS (DIS)—SDD	10,487	10,487	
95	COMBINED ARMS TACTICAL TRAINER (CATT) CORE	15,068	15,068	
96	BRIGADE ANALYSIS, INTEGRATION AND EVALUATION	89,716	89,716	
97	WEAPONS AND MUNITIONS—SDD	80,365	80,365	

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
98	LOGISTICS AND ENGINEER EQUIPMENT—SDD	75,098	70,760	−4,338
99	COMMAND, CONTROL, COMMUNICATIONS SYSTEMS—SDD	4,245	4,245	
100	MEDICAL MATERIEL/MEDICAL BIOLOGICAL DEFENSE EQUIPMENT	41,124	41,124	
101	LANDMINE WARFARE/BARRIER—SDD	39,630	33,354	−6,276
102	ARMY TACTICAL COMMAND & CONTROL HARDWARE & SOFTWARE	205,590	195,774	−9,816
103	RADAR DEVELOPMENT	15,983	15,983	
104	GENERAL FUND ENTERPRISE BUSINESS SYSTEM (GFEBS)	6,805	6,805	
105	FIREFINDER	9,235	6,425	−2,810
106	SOLDIER SYSTEMS—WARRIOR DEM/VAL	12,393	12,393	
107	ARTILLERY SYSTEMS	1,756	1,756	
108	INFORMATION TECHNOLOGY DEVELOPMENT	74,236	58,651	−15,585
109	ARMY INTEGRATED MILITARY HUMAN RESOURCES SYSTEM (A-IMH)	155,584	144,584	−11,000
110	ARMORED MULTI-PURPOSE VEHICLE	184,221	184,221	
111	INTEGRATED GROUND SECURITY SURVEILLANCE RESPONSE CAPABILITY (IGSSR-C)	4,980	4,980	
112	JOINT TACTICAL NETWORK CENTER (JTNC)	15,041	15,041	
113	JOINT TACTICAL NETWORK (JTN)	16,014	16,014	
114	TRACTOR TIRE	27,254	27,254	
115	GROUND-BASED OPERATIONAL SURVEILLANCE SYSTEM—EXPENDITIONARY (GBOSS-E)	5,032	5,032	
116	TACTICAL SECURITY SYSTEM (TSS)	2,904	2,904	
117	COMMON INFRARED COUNTERMEASURES (CIRCM)	96,977	61,138	−35,839
118	COMBATING WEAPONS OF MASS DESTRUCTION (CWMD)	2,089	2,089	
119	DEFENSIVE CYBER TOOL DEVELOPMENT	33,836	33,836	
120	TACTICAL NETWORK RADIO SYSTEMS (LOW-TIER)	18,824	14,765	−4,059
121	CONTRACT WRITING SYSTEM	20,663	20,663	
122	AIRCRAFT SURVIVABILITY DEVELOPMENT	41,133	31,133	−10,000
123	INDIRECT FIRE PROTECTION CAPABILITY INC 2—BLOCK 1	83,995	83,995	
125	AMF JOINT TACTICAL RADIO SYSSTEM	5,028	5,028	
126	JOINT AIR-TO-GROUND MISSILE (JAGM)	42,972	42,972	
128	ARMY INTEGRATED AIR AND MISSILE DEFENSE (AIAMD)	252,811	282,811	+30,000
131	NATIONAL CAPABILITIES INTEGRATION	4,955	4,955	
132	JOINT LIGHT TACTICAL VEHICLE ENG AND MANUFACTURING	11,530	11,530	
133	AVIATION GROUND SUPPORT EQUIPMENT	2,142	2,142	
134	PALADIN INTEGRATED MANAGEMENT (PIM)	41,498	41,498	
135	TROJAN—RH12	4,273	4,273	
136	ELECTRONIC WARFARE DEVELOPMENT	14,425	14,425	
	TOTAL, ENGINEERING & MANUFACTURING DEVELOPMENT	2,265,094	2,155,048	−110,046
	RDT&E MANAGEMENT SUPPORT			
137	THREAT SIMULATOR DEVELOPMENT	25,675	29,675	+4,000
138	TARGET SYSTEMS DEVELOPMENT	19,122	19,122	
139	MAJOR T&E INVESTMENT	84,777	96,777	+12,000
140	RAND ARROYO CENTER	20,658	20,658	
141	ARMY KWAJALEIN ATOLL	236,648	227,451	−9,197
142	CONCEPTS EXPERIMENTATION PROGRAM	25,596	25,596	
144	ARMY TEST RANGES AND FACILITIES	293,748	293,748	
145	ARMY TECHNICAL TEST INSTRUMENTATION AND TARGETS	52,404	62,404	+10,000
146	SURVIVABILITY/LETHALITY ANALYSIS	38,571	38,571	
147	AIRCRAFT CERTIFICATION	4,665	4,665	
148	METEOROLOGICAL SUPPORT TO RDT&E ACTIVITIES	6,925	6,925	
149	MATERIEL SYSTEMS ANALYSIS	21,677	21,677	
150	EXPLOITATION OF FOREIGN ITEMS	12,415	12,415	
151	SUPPORT OF OPERATIONAL TESTING	49,684	49,684	
152	ARMY EVALUATION CENTER	55,905	55,905	
153	ARMY MODELING AND SIMULATION X-CMD COLLABORATION AND INTEG	7,959	7,959	
154	PROGRAMWIDE ACTIVITIES	51,822	51,822	
155	TECHNICAL INFORMATION ACTIVITIES	33,323	33,323	
156	MUNITIONS STANDARDIZATION, EFFECTIVENESS AND SAFETY	40,545	55,545	+15,000

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
157	ENVIRONMENTAL QUALITY TECHNOLOGY MGMT SUPPORT	2,130	2,130	
158	MANAGEMENT HEADQUARTERS (RESEARCH AND DEVELOPMENT)	49,885	49,885	
159	DEFENSE MILITARY DECEPTION INITIATIVE	2,000	2,000	
	TOTAL, RDT&E MANAGEMENT SUPPORT	1,136,134	1,167,937	+31,803
	OPERATIONAL SYSTEMS DEVELOPMENT			
161	MLRS PRODUCT IMPROVEMENT PROGRAM	9,663	9,663	
162	TRACTOR PULL	3,960	3,960	
163	ANTI-TAMPER TECHNOLOGY SUPPORT	3,638	3,638	
164	WEAPONS AND MUNITIONS PRODUCT IMPROVEMENT PROGRAMS	14,517	14,517	
165	TRACTOR SMOKE	4,479	4,479	
166	LONG RANGE PRECISION FIRES (LRPF)	39,275	37,775	−1,500
167	APACHE PRODUCT IMPROVEMENT PROGRAM	66,441	57,941	−8,500
168	BLACKHAWK RECAP/MODERNIZATION	46,765	46,765	
169	CHINOOK HELICOPTER PRODUCT IMPROVEMENT PROGRAM	91,848	91,848	
170	FIXED WING AIRCRAFT	796	796	
171	IMPROVED TURBINE ENGINE PROGRAM	126,105	96,105	−30,000
172	EMERGING TECHNOLOGIES FROM NIE	2,369	2,369	
173	LOGISTICS AUTOMATION	4,563	1,736	−2,827
174	FAMILY OF BIOMETRICS	12,098	12,098	
175	PATRIOT PRODUCT IMPROVEMENT	49,482	49,482	
176	AEROSTAT JOINT PROJECT OFFICE	45,482		−45,482
178	JOINT AUTOMATED DEEP OPERATION COORDINATION SYSTEM	30,455	30,455	
179	COMBAT VEHICLE IMPROVEMENT PROGRAMS	316,857	282,931	−33,926
180	MANEUVER CONTROL SYSTEM	4,031	4,031	
181	AIRCRAFT MODIFICATIONS/PRODUCT IMPROVEMENT PROGRAMS	35,793	27,493	−8,300
182	AIRCRAFT ENGINE COMPONENT IMPROVEMENT PROGRAM	259	259	
183	DIGITIZATION	6,483	6,483	
184	MISSILE/AIR DEFENSE PRODUCT IMPROVEMENT PROGRAM	5,122	5,122	
185	OTHER MISSILE PRODUCT IMPROVEMENT PROGRAMS	7,491	7,491	
186	TRACTOR CARD	20,333	20,333	
188	MATERIALS HANDLING EQUIPMENT	124	124	
190	LOWER TIER AIR AND MISSILE DEFENSE (AMD) SYSTEM	69,417	52,833	−16,584
191	GUIDED MULTIPLE-LAUNCH ROCKET SYSTEM (GMLRS)	22,044	22,044	
192	JOINT TACTICAL GROUND SYSTEM	12,649	12,649	
194	SECURITY AND INTELLIGENCE ACTIVITIES	11,619	11,619	
195	INFORMATION SYSTEMS SECURITY PROGRAM	38,280	38,280	
196	GLOBAL COMBAT SUPPORT SYSTEM	27,223	27,223	
197	SATCOM GROUND ENVIRONMENT (SPACE)	18,815	18,815	
198	WWMCCS/GLOBAL COMMAND AND CONTROL SYSTEM	4,718	4,718	
202	TACTICAL UNMANNED AERIAL VEHICLES	8,218	8,218	
203	AIRBORNE RECONNAISSANCE SYSTEMS	11,799	11,799	
204	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	32,284	32,284	
205	MQ-1 SKY WARRIOR A UAV (MQ-1C GRAY EAGLE UAS)	13,470	13,470	
206	RQ-11 UAV	1,613	1,613	
207	RQ-7 UAV	4,597	4,597	
209	WIN-T INCREMENT 2—INITIAL NETWORKING	4,867	4,867	
210	END ITEM INDUSTRIAL PREPAREDNESS ACTIVITIES	62,287	62,287	
	TOTAL, OPERATIONAL SYSTEMS DEVELOPMENT	1,292,329	1,145,210	−147,119
9999	CLASSIFIED PROGRAMS	4,625	4,625	
	TOTAL, RESEARCH, DEVELOPMENT, TEST & EVAL, ARMY	7,515,399	7,767,010	+251,611

COMMITTEE RECOMMENDED ADJUSTMENTS

The following table details the adjustments recommended by the Committee:

(In thousands of dollars)

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
2	Defense Research Sciences	253,116	293,116	+40,000
	Authorization adjustment: Basic research program increase			+40,000
4	University and Industry Research Centers	94,280	107,280	+13,000
	Basic research program increase			+13,000
5	Materials Technology	31,533	62,533	+31,000
	Program increase			+31,000
6	Sensors and Electronic Survivability	36,109	46,109	+10,000
	Program increase			+10,000
8	Aviation Technology	65,914	69,914	+4,000
	Program increase			+4,000
10	Missile Technology	44,313	59,313	+15,000
	Program increase			+15,000
11	Advanced Weapons Technology	28,803	43,803	+15,000
	Program increase			+15,000
12	Advanced Concepts and Simulation	27,688	30,688	+3,000
	Program increase			+3,000
13	Combat Vehicle and Automotive Technology	67,959	92,959	+25,000
	Program increase			+10,000
	Program increase: Alternative energy research			+15,000
14	Ballistics Technology	85,436	105,436	+20,000
	Program increase			+20,000
17	Weapons and Munitions Technology	53,581	83,581	+30,000
	Program increase			+30,000
18	Electronics and Electronic Devices	56,322	66,322	+10,000
	Program increase: Silicon carbide research			+10,000
20	Countermine Systems	26,497	30,497	+4,000
	Program increase			+4,000
22	Environmental Quality Technology	22,151	30,151	+8,000
	Program increase			+8,000
25	Military Engineering Technology	67,416	82,416	+15,000
	Program increase			+15,000
27	Warfighter Technology	37,403	49,103	+11,700
	Program increase			+10,000
	Program increase: Soldier protection			+1,700
29	Warfighter Advanced Technology	38,831	51,331	+12,500
	Program increase			+12,500
30	Medical Advanced Technology	68,365	76,365	+8,000
	Program increase: Peer-reviewed military burn research program			+8,000
32	Weapons and Munitions Advanced Technology	68,714	101,214	+32,500
	Program increase			+2,500
	Program increase: High energy laser research			+30,000
33	Combat Vehicle and Automotive Advanced Technology	122,132	152,132	+30,000
	Program increase			+30,000
40	Combating Terrorism—Technology Development	27,686	35,686	+8,000
	Program increase: Force protection radar development			+8,000
43	Electronic Warfare Technology	27,893	41,893	+14,000
	Program increase			+14,000
44	Missile and Rocket Advanced Technology	52,190	82,190	+30,000
	Program increase			+30,000
46	High Performance Computing Modernization Program	177,190	222,190	+45,000
	Program increase			+45,000
50	Environmental Quality Technology Demonstrations	11,137	21,137	+10,000
	Program increase			+10,000
51	Military Engineering Advanced Technology	20,684	55,684	+35,000
	Program increase			+30,000
	Program increase: Installation energy efficiency enhancements			+5,000
52	Advanced Tactical Computer Science and Sensor Technology	44,239	54,239	+10,000
	Program increase			+10,000
53	C3 Advanced Technology	35,775	37,775	+2,000

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
	Program increase			+2,000
54	Army Missile Defense Systems Integration	9,433	42,433	+33,000
	Program increase			+25,000
	Program increase: High energy laser research			+8,000
59	Soldier Support and Survivability	10,506	14,006	+3,500
	Program increase			+3,500
65	Logistics and Engineer Equipment—Adv Dev	20,834	18,126	−2,708
	Improving funds management: Prior year carryover			−2,708
67	Soldier Systems—Advanced Development	31,120	54,120	+23,000
	Program increase			+23,000
70	Technology Maturation Initiatives	70,047	36,038	−34,009
	Improving funds management: Prior year carryover			−9,009
	Restoring acquisition accountability: Ground vehicle prototyping			−25,000
73	Cyberspace Operations Forces and Force Support	40,510	3,000	−37,510
	Restoring acquisition accountability: Lack of validated requirements			−37,510
74	Aircraft Avionics	83,248	62,248	−21,000
	Improving funds management: Excess product development funding due to change in acquisition strategy			−21,000
80	Infantry Support Weapons	66,943	60,918	−6,025
	Program increase			+3,000
	Restoring acquisition accountability: Modular handgun system delay			−9,025
85	Tactical Unmanned Ground Vehicle (TUGV)	39,282	33,532	−5,750
	Restoring acquisition accountability: EMD contract delay			−5,750
88	Night Vision Systems—Eng Dev	84,519	77,944	−6,575
	Improving funds management: Soldier night vision devices prior year carryover			−6,575
90	Non-System Training Devices—Eng Dev	30,774	29,801	−973
	Budget documentation disparity: Soldier fitness program unjustified			−973
98	Logistics and Engineer Equipment—Eng Dev	75,098	70,760	−4,338
	Program increase			+2,500
	Restoring acquisition accountability: Engine driven generators schedule delay			−6,838
101	Landmine Warfare/Barrier—Eng Dev	39,630	33,354	−6,276
	Restoring acquisition accountability: Mine Neutral/Detection schedule delay			−6,276
102	Army Tactical Command & Control Hardware & Software	205,590	195,774	−9,816
	Restoring acquisition accountability: TNOM funding ahead of acquisition strategy			−9,816
105	Firefinder	9,235	6,425	−2,810
	Improving funds management: Enhanced AN/TPQ 36 carryover			−2,810
108	Information Technology Development	74,236	58,651	−15,585
	Budget documentation disparity: Army human resource system VACE unjustified			−504
	Improving funds management: Prior year execution			−15,081
109	Integrated Personnel and Pay System-Army (IPPS–A)	155,584	144,584	−11,000
	Restoring acquisition accountability: Prior year carryover due to schedule delay			−11,000
117	Common Infrared Countermeasures (CIRCM)	96,977	61,138	−35,839
	Improving funds management: Program of record prior year carryover			−35,839
120	Tactical Network Radio Systems (Low-Tier)	18,824	14,765	−4,059
	Improving funds management: Manpack operational test funding ahead of need			−4,059
122	Aircraft Survivability Development	41,133	31,133	−10,000
	Restoring acquisition accountability: Advanced missile warning system development funding			−10,000
128	Army Integrated Air and Missile Defense (AIAMD)	252,811	282,811	+30,000

(In thousands of dollars)

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
	Program increase			+15,000
	Program increase: Cybersecurity research			+15,000
137	Threat Simulator Development	25,675	29,675	+4,000
	Program increase			+4,000
139	Major T&E Investment	84,777	96,777	+12,000
	Program increase: Cyber vulnerabilities research			+12,000
141	Army Kwajalein Atoll	236,648	227,451	−9,197
	Maintain program affordability: Installation services excess growth			−9,197
145	Army Technical Test Instrumentation and Targets	52,404	62,404	+10,000
	Program increase			+10,000
156	Munitions Standardization, Effectiveness and Safety	40,545	55,545	+15,000
	Program increase			+15,000
166	Long Range Precision Fires [LRPF]	39,275	37,775	−1,500
	Improving funds management: Prior year carryover			−1,500
167	Apache Product Improvement Program	66,441	57,941	−8,500
	Restoring acquisition accountability: FOT&E II delay			−6,500
	Improving funds management: Support funding carryover			−1,000
	Improving funds management: Management services excess growth			−1,000
171	Improved Turbine Engine Program	126,105	96,105	−30,000
	Restoring acquisition accountability: PDR contract delay			−30,000
173	Logistics Automation	4,563	1,736	−2,827
	Improving funds management: Prior year carryover			−2,827
176	Aerostat Joint Project—COCOM Exercise	45,482		−45,482
	Program termination			−45,482
179	Combat Vehicle Improvement Programs	316,857	282,931	−33,926
	Restoring acquisition accountability: Abrams program support excess growth			−5,000
	Restoring acquisition accountability: Bradley ECP 3 funding ahead of need			−1,026
	Restoring acquisition accountability: Stryker ECP2 funding ahead of need			−27,900
181	Aircraft Modifications/Product Improvement Programs	35,793	27,493	−8,300
	Improving funds management: Modification funding ahead of need			−8,300
190	Lower Tier Air and Missile Defense [AMD] System	69,417	52,833	−16,584
	Improving funds management: Prior year carryover			−16,584

Improved Turbine Engine Program [ITEP].—The fiscal year 2017 budget request includes $126,105,000 for the Improved Turbine Engine Program [ITEP]. The Army's acquisition strategy for ITEP includes contracting with no less than two engine developers through Milestone B to ensure competition in the program. The Committee is fully supportive of this approach and has provided the necessary resources to fully fund this strategy; however, the Committee notes that the Preliminary Design Review contract has been delayed at least 6 months and is now scheduled to be awarded toward the end of fiscal year 2016, which leaves excess funds in the program. Therefore, the Committee recommends a reduction of $30,000,000 to the fiscal year 2017 budget request to account for this schedule slip but expects the Army to maintain its dual vendor strategy in order to reduce risk, achieve appropriate technology maturity, and set the conditions for ultimate program success.

Modular Handgun System.—The Committee understands that the Army is currently considering the acceleration of the Modular Handgun System [MHS] program. As the Army moves forward in

testing and source selection, the Committee encourages the Army to evaluate an upgraded configuration of the current handgun in addition to other available off-the-shelf handguns as cost-effective alternatives that may satisfy the requirements of the MHS program.

Material Development, Characterization, and Computational Modeling.—The Committee recognizes the importance of evaluating materials and technologies as well as designing and developing methodologies and models to enable enhanced lethality and survivability. Methods such as computational research allow for the development of models that predict the mechanical properties of materials that are used in research and development at the U.S. Army Research Laboratory [ARL]. These models and simulations, which are based on quantum mechanics, statistical mechanics principles, and thermodynamic simulations, and are tested via cold spray synthesis and mechanical testing, provide a cost savings to the Department of Defense by simulating materials prior to testing them to ensure mechanical properties will work together. Additionally, these methodologies allow for the enhanced development of technologies such as lightweight armors, protective structures, kinetic energy active protection, ballistic shock and mine blast protection, helmet technologies to prevent traumatic brain injury, and numerous other uses. The Committee encourages ARL to continue the utilization of computational modeling and simulations research to achieve greater cost savings.

Optimization of Ammunition Manufacturing.—The Committee understands that the Army is the single manager for conventional ammunition for the Department of Defense and is responsible for ensuring effective life cycle management of conventional ammunition products. This includes development and optimization of ammunition manufacturing processes as well as development and integration of new materials. The Committee believes that the manufacturing of conventional ammunition could be assisted by automating and optimizing propellant production processes and integrating new materials. These processes and materials may reduce cost, increase ammunition performance and enhance soldier safety; and the Committee encourages the Secretary of the Army to equip the national technical industrial base with new and emerging manufacturing processes and materials in order to achieve these goals.

Strategic Materials Research.—The Committee continues to recognize the importance of the Army Research Laboratory [ARL] in expanding research, education and technology development efforts in materials and metals processing science and engineering, aiming to transform the affordability, performance, and environmental sustainability of strategic materials. The Committee further notes that ARL's Open Campus concept benefits the Army, the academic community, and industry through collaboration involving ARL's research staff and facilities, leading to continued technological superiority for the U.S. warfighter. The Committee encourages the Army to consider accelerating expansion of its Open Campus approach to its Materials and Manufacturing Science laboratories to benefit strategic materials research.

Materials in Extreme Dynamic Environments Program.—The Committee recognizes the critical role of the Army's Materials in

Extreme Dynamic Environments program in strengthening the domestic capability to develop and manufacture essential protection materials and encourages the Army to continue this work, which serves the national interest.

Robotic Environmental Remediation of Army Ranges.—The Committee understands that the Army has launched a robotic-centric environmental remediation program aimed at cleaning up decades of unexploded ordinance contamination at U.S. Army ranges with tele-operated heavy equipment. The Committee encourages the Army to increase the fleet of robotic applique kits that remotely control a variety of vehicles leveraging fully modernized vehicle control systems.

Simulation Training.—The Committee acknowledges that simulation training is a cost-effective means by which military units can improve tactical decision-making skills and readiness in realistic scenarios otherwise found only in theater combat operations. The Committee encourages the Department to continue expansion of simulation training and seek the appropriate combination of government-owned and operated simulators as well as contractor support in order to maximize efficiency and effectiveness.

Assessment of Degraded Visual Environment Technology.—The Committee encourages the Army to ensure that operational testing protocols for products under development to assist flight crews during situations of degraded visual environment are of the highest quality, based on the best scientific knowledge of the complex dynamics of dust brownout and standardized, to the maximum extent possible, to fairly evaluate and test all technologies under the extreme conditions required by the Army. This will ensure that all field testing is fair to all competing vendors, increase cost-effectiveness of field testing through the development of realistic and manageable test conditions and ensure that the technology deployed for warfighters has been adequately tested for operational conditions.

Human Factors Engineering Technology.—The Committee supports the Department's continued efforts to support research into aspects of human factors engineering that impact the capabilities of soldiers. The Committee notes that the Department plans to fund Continuous Multi-Faceted Soldier Characterization for Adaptive Technologies starting in fiscal year 2017. As part of this effort, the Committee encourages the Department to prioritize development of a biosensor ecosystem capable of continuous monitoring of the solider, including the measure of hydration, stress, nutrition, body temperature, and other data needed to model soldier performance. This research should also look to enable longitudinal, long-term, real-world measurement of physiological and behavioral patterns.

Tactical Communications and Protective System [TCAPS] Lite.—The Committee is aware that the Army has been updating standards for issuing the Tactical Communications and Protective System [TCAPS] Lite to soldiers. This update will ensure the majority of soldiers who do not carry mobile tactical radios will be issued TCAPS Lite which minimizes training and battlefield hearing loss, improves overall situational awareness and increases mission effectiveness, safety, and survivability. Therefore, the Department of

the Army is encouraged to complete the update to the standards and ensure TCAPS Lite is promptly issued to soldiers.

Long-Range Threat Detection.—The Committee recognizes long-range Deep Ultraviolet Raman Spectroscopy technology provides effective threat detection of explosives and that this technology has been extended to chemical warfare agents, nuclear weapon processing chemicals, narcotics, and hazardous materials. The Army Research Laboratory is commended for developing these multiple application, cost-effective sense systems and is encouraged to continue its research in this area.

Army Test Ranges and Facilities.—The Committee supports funds used for delayed maintenance as identified as a high priority by the Army. Test and evaluation is critical to the success of warfighters' weapons and equipment, providing them an unprecedented technological advantage on the battlefield. At the core of this advantage is the ability of the Department of the Army to effectively test and retest its weapons systems and equipment which requires continuing basic maintenance of Army test ranges and facilities.

Operational Test and Evaluation Support for Yuma Proving Ground.—The Committee encourages the Army to ensure that test facilities used for operational testing of equipment for use in extreme environments have adequate characterization of key environmental variables (e.g. soil, terrain and vegetation) to support development of the next generation of military equipment. Specific efforts should include extended capabilities for collection, processing, and creation of environmental information required to increase test efficiency.

Manufacturing Technologies for Nanoscale to Microscale Materials for Armaments and Munitions.—The Committee understands that advances in manufacturing using nanoscale and microscale technologies have the potential to increase the performance of essential U.S. Army armament and munitions applications. Technological advancements in the materials, materials processing, and parts fabrication have the potential to reduce acquisition and total ownership costs for the Department of Defense. The Committee notes that Manufacturing Readiness Levels lag behind Technology Readiness Levels for advanced armament technologies and encourages the Army to continue its work in nanoscale and microscale munitions and armaments technologies.

RESEARCH, DEVELOPMENT, TEST AND EVALUATION, NAVY

Appropriations, 2016	$18,117,677,000
Budget estimate, 2017	17,276,301,000
Committee recommendation	16,877,818,000

The Committee recommends an appropriation of $16,877,818,000. This is $398,483,000 below the budget estimate.

COMMITTEE RECOMMENDED PROGRAM

The following table summarizes the budget estimate for this appropriation, the Committee recommendation, and the Committee recommended adjustments to the budget estimate:

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
	RESEARCH, DEVELOPMENT, TEST & EVAL, NAVY			
	BASIC RESEARCH			
1	UNIVERSITY RESEARCH INITIATIVES	101,714	121,714	+20,000
2	IN-HOUSE LABORATORY INDEPENDENT RESEARCH	18,508	18,508	
3	DEFENSE RESEARCH SCIENCES	422,748	422,748	
	TOTAL, BASIC RESEARCH	542,970	562,970	+20,000
	APPLIED RESEARCH			
4	POWER PROJECTION APPLIED RESEARCH	41,371	61,371	+20,000
5	FORCE PROTECTION APPLIED RESEARCH	158,745	193,745	+35,000
6	MARINE CORPS LANDING FORCE TECHNOLOGY	51,590	71,590	+20,000
7	COMMON PICTURE APPLIED RESEARCH	41,185	41,185	
8	WARFIGHTER SUSTAINMENT APPLIED RESEARCH	45,467	50,467	+5,000
9	ELECTROMAGNETIC SYSTEMS APPLIED RESEARCH	118,941	118,941	
10	OCEAN WARFIGHTING ENVIRONMENT APPLIED RESEARCH	42,618	42,618	
11	JOINT NON-LETHAL WEAPONS APPLIED RESEARCH	6,327	6,327	
12	UNDERSEA WARFARE APPLIED RESEARCH	126,313	126,313	
13	FUTURE NAVAL CAPABILITIES ADVANCED TECHNOLOGY DEV	165,103	165,103	
14	MINE AND EXPEDITIONARY WARFARE APPLIED RESEARCH	33,916	33,916	
15	SCIENCE AND TECHNOLOGY MANAGEMENT—ONR HEADQUARTERS	29,575	29,575	
	TOTAL, APPLIED RESEARCH	861,151	941,151	+80,000
	ADVANCED TECHNOLOGY DEVELOPMENT			
16	POWER PROJECTION ADVANCED TECHNOLOGY	96,406	96,406	
17	FORCE PROTECTION ADVANCED TECHNOLOGY	48,438	88,438	+40,000
18	ELECTROMAGNETIC SYSTEMS ADVANCED TECHNOLOGY	26,421	26,421	
19	MARINE CORPS ADVANCED TECHNOLOGY DEMONSTRATION [ATD]	140,416	140,416	
20	JOINT NON-LETHAL WEAPONS TECHNOLOGY DEVELOPMENT	13,117	13,117	
21	FUTURE NAVAL CAPABILITIES ADVANCED TECHNOLOGY DEV	249,092	259,092	+10,000
22	MANUFACTURING TECHNOLOGY PROGRAM	56,712	56,712	
23	WARFIGHTER PROTECTION ADVANCED TECHNOLOGY	4,789	4,789	
24	UNDERSEA WARFARE ADVANCED TECHNOLOGY	25,880	25,880	
25	NAVY WARFIGHTING EXPERIMENTS AND DEMONSTRATIONS	60,550	60,550	
26	MINE AND EXPEDITIONARY WARFARE ADVANCED TECHNOLOGY	15,167	15,167	
	TOTAL, ADVANCED TECHNOLOGY DEVELOPMENT	736,988	786,988	+50,000
	DEMONSTRATION & VALIDATION			
27	AIR/OCEAN TACTICAL APPLICATIONS	48,536	48,536	
28	AVIATION SURVIVABILITY	5,239	15,239	+10,000
30	AIRCRAFT SYSTEMS	1,519	1,519	
31	ASW SYSTEMS DEVELOPMENT	7,041	7,041	
32	TACTICAL AIRBORNE RECONNAISSANCE	3,274	3,274	
33	ADVANCED COMBAT SYSTEMS TECHNOLOGY	57,034	1,651	−55,383
34	SURFACE AND SHALLOW WATER MINE COUNTERMEASURES	165,775	108,975	−56,800
35	SURFACE SHIP TORPEDO DEFENSE	87,066	87,066	

(In thousands of dollars)

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
36	CARRIER SYSTEMS DEVELOPMENT	7,605	7,605	
37	PILOT FISH	132,068	132,068	
38	RETRACT LARCH	14,546	14,546	
39	RETRACT JUNIPER	115,435	115,435	
40	RADIOLOGICAL CONTROL	702	702	
41	SURFACE ASW	1,081	1,081	
42	ADVANCED SUBMARINE SYSTEM DEVELOPMENT	100,565	121,365	+20,800
43	SUBMARINE TACTICAL WARFARE SYSTEMS	8,782	8,782	
44	SHIP CONCEPT ADVANCED DESIGN	14,590	14,590	
45	SHIP PRELIMINARY DESIGN & FEASIBILITY STUDIES	15,805	15,805	
46	ADVANCED NUCLEAR POWER SYSTEMS	453,313	453,313	
47	ADVANCED SURFACE MACHINERY SYSTEMS	36,655	36,655	
48	CHALK EAGLE	367,016	367,016	
49	LITTORAL COMBAT SHIP (LCS)	51,630	51,630	
50	COMBAT SYSTEM INTEGRATION	23,530	23,530	
51	OHIO REPLACEMENT PROGRAM	700,811	700,811	
52	LITTORAL COMBAT SHIP (LCS) MISSION MODULES	160,058	129,187	−30,871
54	FRIGATE DEVELOPMENT	84,900	84,900	
55	CONVENTIONAL MUNITIONS	8,342	8,342	
56	MARINE CORPS ASSAULT VEHICLES	158,682	136,682	−22,000
57	MARINE CORPS GROUND COMBAT/SUPPORT SYSTEM	1,303	1,303	
58	JOINT SERVICE EXPLOSIVE ORDNANCE DEVELOPMENT	46,911	46,911	
60	OCEAN ENGINEERING TECHNOLOGY DEVELOPMENT	4,556	4,556	
61	ENVIRONMENTAL PROTECTION	20,343	20,343	
62	NAVY ENERGY PROGRAM	52,479	72,479	+20,000
63	FACILITIES IMPROVEMENT	5,458	5,458	
64	CHALK CORAL	245,860	185,860	−60,000
65	NAVY LOGISTIC PRODUCTIVITY	3,089	3,089	
66	RETRACT MAPLE	323,526	323,526	
67	LINK PLUMERIA	318,497	284,297	−34,200
68	RETRACT ELM	52,834	52,834	
69	LINK EVERGREEN	48,116	48,116	
70	SPECIAL PROCESSES	13,619	13,619	
71	NATO RESEARCH AND DEVELOPMENT	9,867	9,867	
72	LAND ATTACK TECHNOLOGY	6,015	18,015	+12,000
73	JOINT NONLETHAL WEAPONS TESTING	27,904	27,904	
74	JOINT PRECISION APPROACH AND LANDING SYSTEMS	104,144	102,722	−1,422
75	DIRECTED ENERGY AND ELECTRIC WEAPON SYSTEMS	32,700	32,700	
76	GERALD R. FORD CLASS NUCLEAR AIRCRAFT CARRIER	70,528	70,528	
77	REMOTE MINEHUNTING SYSTEM (RMS)	3,001	3,001	
78	TACTICAL AIR DIRECTIONAL INFRARED COUNTERMEASURES	34,920	34,920	
80	MH–XX	1,620	1,620	
81	LX (R)	6,354	25,354	+19,000
82	ADVANCED UNDERSEA PROTOTYPING	78,589	4,000	−74,589
84	PRECISION STRIKE WEAPONS DEVELOPMENT PROGRAM	9,910	4,910	−5,000
85	SPACE & ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINE	23,971	23,971	
86	OFFENSIVE ANTI–SURFACE WARFARE WEAPON DEVELOPMENT	252,409	300,971	+48,562
87	JOINT LIGHT TACTICAL VEHICLE ENGINEERING/MANUFACTURING	23,197	23,197	
88	ASW SYSTEMS DEVELOPMENT—MIP	9,110	9,110	
89	ELECTRONIC WARFARE DEVELOPMENT—MIP	437	437	
	TOTAL, DEMONSTRATION & VALIDATION	4,662,867	4,452,964	−209,903
	ENGINEERING & MANUFACTURING DEVELOPMENT			
90	TRAINING SYSTEM AIRCRAFT	19,938	19,938	
91	OTHER HELO DEVELOPMENT	6,268	6,268	
92	AV–8B AIRCRAFT—ENG DEV	33,664	33,664	
93	STANDARDS DEVELOPMENT	1,300	1,300	
94	MULTI–MISSION HELICOPTER UPGRADE DEVELOPMENT	5,275	5,275	
95	AIR/OCEAN EQUIPMENT ENGINEERING	3,875	3,875	
96	P–3 MODERNIZATION PROGRAM	1,909	1,909	
97	WARFARE SUPPORT SYSTEM	13,237	13,237	
98	TACTICAL COMMAND SYSTEM	36,323	36,323	
99	ADVANCED HAWKEYE	363,792	373,792	+10,000

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
100	H–1 UPGRADES	27,441	27,441	
101	ACOUSTIC SEARCH SENSORS	34,525	34,525	
102	V–22A	174,423	154,245	−20,178
103	AIR CREW SYSTEMS DEVELOPMENT	13,577	7,477	−6,100
104	EA–18	116,761	116,761	
105	ELECTRONIC WARFARE DEVELOPMENT	48,766	48,766	
106	VH–71A EXECUTIVE HELO DEVELOPMENT	338,357	302,852	−35,505
107	NEXT GENERATION JAMMER (NGJ)	577,822	577,822	
108	JOINT TACTICAL RADIO SYSTEM—NAVY (JTRS–NAVY)	2,365	2,365	
109	NEXT GENERATION JAMMER (NGJ) INCREMENT II	52,065	18,965	−33,100
110	SURFACE COMBATANT COMBAT SYSTEM ENGINEERING	282,764	282,764	
111	LPD–17 CLASS SYSTEMS INTEGRATION	580	580	
112	SMALL DIAMETER BOMB (SDB)	97,622	67,622	−30,000
113	STANDARD MISSILE IMPROVEMENTS	120,561	120,561	
114	AIRBORNE MCM	45,622	45,622	
116	NAVAL INTEGRATED FIRE CONTROL—COUNTER AIR SYSTEMS ENG	25,750	25,750	
118	ADVANCED ABOVE WATER SENSORS	85,868	79,268	−6,600
119	SSN–688 AND TRIDENT MODERNIZATION	117,476	124,476	+7,000
120	AIR CONTROL	47,404	47,404	
121	SHIPBOARD AVIATION SYSTEMS	112,158	116,158	+4,000
122	COMBAT INFORMATION CENTER CONVERSION	6,283	6,283	
123	AIR AND MISSILE DEFENSE RADAR (AMDR) SYSTEM	144,395	144,395	
124	NEW DESIGN SSN	113,013	120,013	+7,000
125	SUBMARINE TACTICAL WARFARE SYSTEM	43,160	43,160	
126	SHIP CONTRACT DESIGN/LIVE FIRE T&E	65,002	85,002	+20,000
127	NAVY TACTICAL COMPUTER RESOURCES	3,098	3,098	
128	VIRGINIA PAYLOAD MODULE (VPM)	97,920	97,920	
129	MINE DEVELOPMENT	10,490	10,490	
130	LIGHTWEIGHT TORPEDO DEVELOPMENT	20,178	20,178	
131	JOINT SERVICE EXPLOSIVE ORDNANCE DEVELOPMENT	7,369	7,369	
132	PERSONNEL, TRAINING, SIMULATION, AND HUMAN FACTORS	4,995	4,995	
133	JOINT STANDOFF WEAPON SYSTEMS	412	412	
134	SHIP SELF DEFENSE (DETECT & CONTROL)	134,619	134,619	
135	SHIP SELF DEFENSE (ENGAGE: HARD KILL)	114,475	114,475	
136	SHIP SELF DEFENSE (ENGAGE: SOFT KILL/EW)	114,211	106,211	−8,000
137	INTELLIGENCE ENGINEERING	11,029	11,029	
138	MEDICAL DEVELOPMENT	9,220	9,220	
139	NAVIGATION/ID SYSTEM	42,723	42,723	
140	JOINT STRIKE FIGHTER (JSF)—EMD	531,426	531,426	
141	JOINT STRIKE FIGHTER (JSF)	528,716	528,716	
142	JSF FOLLOW ON DEVELOPMENT—MARINE CORPS	74,227	29,691	−44,536
143	JSF FOLLOW ON DEVELOPMENT—NAVY	63,387	25,355	−38,032
144	INFORMATION TECHNOLOGY DEVELOPMENT	4,856	4,856	
145	INFORMATION TECHNOLOGY DEVELOPMENT	97,066	97,066	
146	ANTI-TAMPER TECHNOLOGY SUPPORT	2,500	2,500	
147	CH–53K	404,810	350,810	−54,000
148	MISSION PLANNING	33,570	33,570	
149	COMMON AVIONICS	51,599	51,599	
150	SHIP TO SHORE CONNECTOR (SSC)	11,088	11,088	
151	T–AO (X)	1,095	1,095	
152	CARRIER BASED AERIAL REFUELING SYSTEM (CBARS)	89,000	89,000	
153	JOINT AIR-TO-GROUND MISSILE (JAGM)	17,880	17,880	
154	MULTI-MISSION MARITIME AIRCRAFT (MMA)	59,126	59,126	
155	MULTI-MISSION MARITIME AIRCRAFT (MMA) INCREMENT 3	182,220	112,320	−69,900
156	DDG–1000	45,642	45,642	
159	TACTICAL COMMAND SYSTEM—MIP	676	676	
160	TACTICAL CRYPTOLOGIC SYSTEMS	36,747	36,747	
161	SPECIAL APPLICATIONS PROGRAM	35,002	35,002	
162	CYBER OPERATIONS TECHNOLOGY DEVELOPMENT	4,942	4,942	
	TOTAL, ENGINEERING & MANUFACTURING DEVELOPMENT	6,025,655	5,727,704	−297,951

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
	RDT&E MANAGEMENT SUPPORT			
163	THREAT SIMULATOR DEVELOPMENT	16,633	16,633	
164	TARGET SYSTEMS DEVELOPMENT	36,662	36,662	
165	MAJOR T&E INVESTMENT	42,109	42,109	
166	JOINT THEATER AIR AND MISSILE DEFENSE ORGANIZATION	2,998	2,998	
167	STUDIES AND ANALYSIS SUPPORT—NAVY	3,931	3,931	
168	CENTER FOR NAVAL ANALYSES	46,634	46,634	
169	NEXT GENERATION FIGHTER	1,200	1,200	
171	TECHNICAL INFORMATION SERVICES	903	903	
172	MANAGEMENT, TECHNICAL & INTERNATIONAL SUPPORT	87,077	87,077	
173	STRATEGIC TECHNICAL SUPPORT	3,597	3,597	
174	RDT&E SCIENCE AND TECHNOLOGY MANAGEMENT	62,811	62,811	
175	RDT&E SHIP AND AIRCRAFT SUPPORT	106,093	106,093	
176	TEST AND EVALUATION SUPPORT	349,146	349,146	
177	OPERATIONAL TEST AND EVALUATION CAPABILITY	18,160	18,160	
178	NAVY SPACE AND ELECTRONIC WARFARE (SEW) SUPPORT	9,658	9,658	
179	SEW SURVEILLANCE/RECONNAISSANCE SUPPORT	6,500	6,500	
180	MARINE CORPS PROGRAM WIDE SUPPORT	22,247	22,247	
181	MANAGEMENT HEADQUARTERS—R&D	16,254	16,254	
182	WARFARE INNOVATION MANAGEMENT	21,123	21,123	
	TOTAL, RDT&E MANAGEMENT SUPPORT	853,736	853,736	
	OPERATIONAL SYSTEMS DEVELOPMENT			
188	COOPERATIVE ENGAGEMENT CAPABILITY (CEC)	84,501	84,501	
189	DEPLOYABLE JOINT COMMAND AND CONTROL	2,970	2,970	
190	STRATEGIC SUB & WEAPONS SYSTEM SUPPORT	136,556	136,556	
191	SSBN SECURITY TECHNOLOGY PROGRAM	33,845	33,845	
192	SUBMARINE ACOUSTIC WARFARE DEVELOPMENT	9,329	9,329	
193	NAVY STRATEGIC COMMUNICATIONS	17,218	17,218	
195	F/A–18 SQUADRONS	189,125	191,125	+2,000
196	FLEET TELECOMMUNICATIONS (TACTICAL)	48,225	48,225	
197	SURFACE SUPPORT	21,156	21,156	
198	TOMAHAWK AND TOMAHAWK MISSION PLANNING CENTER (TMPC)	71,355	41,355	−30,000
199	INTEGRATED SURVEILLANCE SYSTEM	58,542	57,058	−1,484
200	AMPHIBIOUS TACTICAL SUPPORT UNITS	13,929	13,929	
201	GROUND/AIR TASK ORIENTED RADAR	83,538	83,538	
202	CONSOLIDATED TRAINING SYSTEMS DEVELOPMENT	38,593	47,593	+9,000
203	CRYPTOLOGIC DIRECT SUPPORT	1,122	1,122	
204	ELECTRONIC WARFARE (EW) READINESS SUPPORT	99,998	99,998	
205	HARM IMPROVEMENT	48,635	48,635	
206	TACTICAL DATA LINKS	124,785	124,785	
207	SURFACE ASW COMBAT SYSTEM INTEGRATION	24,583	24,583	
208	MK–48 ADCAP	39,134	39,134	
209	AVIATION IMPROVEMENTS	120,861	120,861	
210	OPERATIONAL NUCLEAR POWER SYSTEMS	101,786	101,786	
211	MARINE CORPS COMMUNICATIONS SYSTEMS	82,159	100,159	+18,000
212	COMMON AVIATION COMMAND AND CONTROL SYSTEM	11,850	9,550	−2,300
213	MARINE CORPS GROUND COMBAT/SUPPORTING ARMS SYSTEMS	47,877	41,877	−6,000
214	MARINE CORPS COMBAT SERVICES SUPPORT	13,194	13,194	
215	USMC INTELLIGENCE/ELECTRONIC WARFARE SYSTEMS (MIP)	17,171	17,171	
216	AMPHIBIOUS ASSAULT VEHICLE	38,020	29,020	−9,000
217	TACTICAL AIM MISSILES	56,285	56,285	
218	ADVANCED MEDIUM RANGE AIR-TO-AIR MISSILE (AMRAAM)	40,350	40,350	
219	GLOBAL COMBAT SUPPORT SYSTEM—MARINE CORPS (GCSS–MC)	9,128	9,128	
223	SATELLITE COMMUNICATIONS (SPACE)	37,372	37,372	
224	CONSOLIDATED AFLOAT NETWORK ENTERPRISE SERVICES	23,541	23,541	
225	INFORMATION SYSTEMS SECURITY PROGRAM	38,510	38,510	
228	JOINT MILITARY INTELLIGENCE PROGRAMS	6,019	6,019	
229	TACTICAL UNMANNED AERIAL VEHICLES	8,436	8,436	
230	UAS INTEGRATION AND INTEROPERABILITY	36,509	24,909	−11,600
231	DISTRIBUTED COMMON GROUND SYSTEMS/SURFACE SYSTEMS	2,100	2,100	
232	DISTRIBUTED COMMON GROUND SYSTEMS/SURFACE SYSTEMS	44,571	44,571	

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
233	MQ-4C TRITON	111,729	111,729	
234	MQ-8 UAV	26,518	26,518	
235	RQ-11 UAV	418	418	
236	RQ-7 UAV	716	716	
237	SMALL (LEVEL 0) TACTICAL UAS [STUASL0]	5,071	5,071	
238	RQ-21A	9,497	9,497	
239	MULTI-INTELLIGENCE SENSOR DEVELOPMENT	77,965	69,765	−8,200
240	UNMANNED AERIAL SYSTEMS [UAS] PAYLOADS [MIP]	11,181	11,181	
241	RQ-4 MODERNIZATION	181,266	131,266	−50,000
242	MODELING AND SIMULATION SUPPORT	4,709	4,709	
243	DEPOT MAINTENANCE (NON-IF)	49,322	38,277	−11,045
245	MARITIME TECHNOLOGY [MARITECH]	3,204	3,204	
	TOTAL, OPERATIONAL SYSTEMS DEVELOPMENT	2,364,474	2,263,845	−100,629
9999	CLASSIFIED PROGRAMS	1,228,460	1,288,460	+60,000
	TOTAL, RESEARCH, DEVELOPMENT, TEST & EVAL, NAVY	17,276,301	16,877,818	−398,483

COMMITTEE RECOMMENDED ADJUSTMENTS

The following table details the adjustments recommended by the Committee:

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
1	University Research Initiatives	101,714	121,714	+20,000
	Basic research program increase			+20,000
4	Power Projection Applied Research	41,371	61,371	+20,000
	Program increase			+20,000
5	Force Protection Applied Research	158,745	193,745	+35,000
	Program increase			+15,000
	Program increase: Alternative energy research			+20,000
6	Marine Corps Landing Force Technology	51,590	71,590	+20,000
	Program increase			+20,000
8	Warfighter Sustainment Applied Research	45,467	50,467	+5,000
	Program increase			+5,000
17	Force Protection Advanced Technology	48,438	88,438	+40,000
	Program increase: Autonomous unmanned vehicle research			+40,000
21	Future Naval Capabilities Advanced Technology Development	249,092	259,092	+10,000
	Program increase			+10,000
28	Aviation Survivability	5,239	15,239	+10,000
	Program increase			+10,000
33	Advanced Combat Systems Technology	57,034	1,651	−55,383
	Restoring acquisition accountability: Project 0385 Rapid Prototype Development			−40,356
	Restoring acquisition accountability: Project 0399 Unmanned Rapid Prototype Development			−15,027
34	Surface and Shallow Water Mine Countermeasures	165,775	108,975	−56,800
	Restoring acquisition accountability: Project 2094 LDUUV continue risk reduction and technology maturation efforts only			−43,000
	Budget documentation disparity: Project 1234 USV w/ AQS-20 one EDM only			−13,800
42	Advanced Submarine System Development	100,565	121,365	+20,800
	Restoring acquisition accountability: Project 2096 lack of justification			−4,200
	Program increase: Advance materials propeller research			+25,000
52	LCS Mission Modules	160,058	129,187	−30,871
	Authorization adjustment: Test delays due to mine countermeasures mission package restructure			−30,871

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
56	Marine Corps Assault Vehicles	158,682	136,682	−22,000
	Improving funds management: Forward financing			−22,000
62	Navy Energy Program	52,479	72,479	+20,000
	Program increase: Installation energy efficiency enhancements			+5,000
	Program increase: Renewable energy development			+15,000
64	CHALK CORAL	245,860	185,860	−60,000
	Program adjustment			−60,000
67	LINK PLUMERIA	318,497	284,297	−34,200
	Program adjustment			−34,200
72	Land Attack Technology	6,015	18,015	+12,000
	Program increase for fly off competition			+12,000
74	Joint Precision Approach and Landing Systems—Dem/Val	104,144	102,722	−1,422
	Improving funds management: UCLASS test support early to need			−1,422
81	LX (R)	6,354	25,354	+19,000
	Additional funding to support acceleration of LX(R) class of ships			+19,000
82	Advanced Undersea Prototyping	78,589	4,000	−74,589
	Restoring acquisition accountability: Program adjustment—lease multiple COTS vehicles for CONOPS development only			−74,589
84	Precision Strike Weapons Development Program	9,910	4,910	−5,000
	Improving funds management: NGLAW program delay			−5,000
86	Offensive Anti-Surface Warfare Weapon Development	252,409	300,971	+48,562
	Program increase: Increment I Navy identified funding shortfall			+50,600
	Improving funds management: Increment II early to need			−2,038
99	Advanced Hawkeye	363,792	373,792	+10,000
	Program increase: radar development			+10,000
102	V–22A	174,423	154,245	−20,178
	Restoring acquisition accountability: Navy variant development contract award delays			−11,927
	Restoring acquisition accountability: Aerial Refueling System development contract award delay			−8,251
103	Air Crew Systems Development	13,577	7,477	−6,100
	Restoring acquisition accountability: Enhanced Visual Acuity program delays			−6,100
106	Executive Helo Development	338,357	302,852	−35,505
	Improving funds management: Execution delays			−35,505
109	Next Generation Jammer (NGJ) Increment II	52,065	18,965	−33,100
	Restoring acquisition accountability: Unjustified growth			−33,100
112	Small Diameter Bomb (SDB)	97,622	67,622	−30,000
	Maintain program affordability: Previous congressional direction to reduce risk to H14+ integration schedule			−30,000
113	Standard Missile Improvements	120,561	120,561	
	Restoring acquisition accountability: Defer Future Capabilty Demonstration efforts until completion of program of record test events			−14,000
	Restoring acquisition accountability: Fully fund unfunded program of record test events			+14,000
118	Advanced Above Water Sensors	85,868	79,268	−6,600
	Restoring acquisition accountability: Lack of new start notification			−6,600
119	SSN–688 and Trident Modernization	117,476	124,476	+7,000
	Program increase			+7,000
121	Shipboard Aviation Systems	112,158	116,158	+4,000
	Program increase			+4,000
124	New Design SSN	113,013	120,013	+7,000
	Program increase			+7,000
126	Ship Contract Design/ Live Fire T&E	65,002	85,002	+20,000
	CVN cost reduction initiatives			+20,000
136	Ship Self Defense (Engage: Soft Kill/EW)	114,211	106,211	−8,000

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
	Restoring acquisition accountability: Project 3316 decoy development effort contract award delay			−8,000
142	Joint Strike Fighter Follow On Development—Marine Corps	74,227	29,691	−44,536
	Improving funds management: Follow-on modernization early to need			−44,536
143	Joint Strike Fighter Follow On Development—Navy	63,387	25,355	−38,032
	Improving funds management: Follow-on modernization early to need			−38,032
147	CH–53K RDTE	404,810	350,810	−54,000
	Improving funds management: Execution delays			−54,000
155	Multi-Mission Maritime (MMA) Increment III	182,220	112,320	−69,900
	Restoring acquisition accountability: Engineering change proposals 6 and 7 funding concurrent with Combat Systems Architecture early to need			−69,900
195	F/A–18 Squadrons	189,125	191,125	+2,000
	Program increase: Noise reduction research			+2,000
198	Tomahawk and Tomahawk Mission Planning Center (TMPC)	71,355	41,355	−30,000
	Restoring acquisition accountability: Maritime modernization lack of acquisition strategy			−30,000
199	Integrated Surveillance System	58,542	57,058	−1,484
	Restoring acquisition accountability: Theater anti-submarine warfare unjustified growth			−1,484
202	Consolidated Training Systems Development	38,593	47,593	+9,000
	Program increase: Project 0604 training range enhancements			+9,000
211	Marine Corps Communications Systems	82,159	100,159	+18,000
	Program increase			+6,000
	Program increase: Radar enhancements			+12,000
212	Common Aviation Command and Control System (CAC2S)	11,850	9,550	−2,300
	Improving funds management: Excess Limited Deployment Units engineering change proposals			−2,300
213	Marine Corps Ground Combat/Supporting Arms Systems	47,877	41,877	−6,000
	Improving funds management: Project 1555 prior year carryover			−6,000
216	Amphibious Assault Vehicle	38,020	29,020	−9,000
	Improving funds management: Forward financing			−9,000
230	UAS Integration and Interoperability	36,509	24,909	−11,600
	Improving funds management: Increment II increase early to need			−11,600
239	Multi-Intelligence Sensor Development	77,965	69,765	−8,200
	Improving funds management: Project 3329 increase early to need			−8,200
241	RQ–4 Modernization	181,266	131,266	−50,000
	Restoring acquisition accountability: Excess concurrency			−50,000
243	Depot Maintenance (Non-IF)	49,322	38,277	−11,045
	Improving funds management: Project 3384 funding early to need			−11,045
999	Classified Programs	1,228,460	1,288,460	+60,000
	Classified adjustment			+60,000

Large Diameter Unmanned Undersea Vehicle [LDUUV].—The fiscal year 2017 President's budget request includes $70,100,000 for continued LDUUV technology research, and $67,607,000 for the development and design of two LDUUVs. The Committee notes that following an Analysis of Alternatives in 2013, the Navy approved a Capabilities Development Document and achieved Milestone A for LDUUV in 2015. In addition, with submission of the fiscal year 2017 President's budget, the Navy changed its acquisition strategy from competing among multiple industry designs to retaining prototype fabrication of two LDUUVs in-house. The Committee further notes that while the Navy has not yet defined its autonomous un-

dersea vehicle requirements, the Navy has projected an inventory of 12 LDUUVs by 2025.

The Committee recommends full funding of $70,100,000 requested in science and technology for LDUUV technologies, an increase of $7,900,000 over amounts enacted in fiscal year 2016. In addition, the Committee recommends $24,600,000, as requested, for LDUUV experimentation, risk reduction and technology maturation, an increase of $18,000,000 over amounts enacted in fiscal year 2016. Due to concurrent science and technology, technology maturation, risk reduction and design efforts, as well as concerns with the revised acquisition strategy in light of future LDUUV requirements, the Committee does not recommend funding for prototype design of two LDUUVs, a reduction of $43,000,000 from the request.

Extra Large Unmanned Undersea Vehicle [XLUUV].—The fiscal year 2017 President's budget request includes $78,589,000 in fiscal year 2017 for the development and deployment of five XLUUV prototypes and associated technologies. The Committee is aware of an operational need for an advanced maritime mining capability and of multiple material solutions under consideration. The Committee notes the Navy's apparent intent to sole source acquisition of five XLUUVs while concurrently leasing vehicles from industry to support the development of concept of operations and tactics, training and procedures by the Fleet. The Committee recommends $4,000,000 for the lease of multiple commercial vehicles for that purpose, as requested. The Committee recommends no funds for additional activities in this program element.

Offensive Anti-Surface Warfare Weapon [OASuW].—The fiscal year 2017 President's budget request includes $250,371,000 for continued development of OASuW Increment I, and $2,038,000 to begin development of OASuW Increment II. The Committee notes that this program was initiated through an accelerated acquisition in February 2014 in response to a U.S. Pacific Fleet urgent operational need to provide an early operational capability on the B–1 in fiscal year 2018 and on the F/A–18E/F in fiscal year 2019. The Committee further notes that the Navy recently concluded an updated program cost estimate and that the Navy's fiscal year 2017 budget request places the OASuW Increment I early operational capability fielding schedule at risk by several months. Therefore, the Committee recommends an additional $50,600,000 for OASuW Increment I, the fiscal year 2017 shortfall identified by the Navy, to maintain the OASuW Increment I schedule, and recommends no funds to initiate OASuW Increment II in order to minimize program risk.

P–8A Poseidon.—The fiscal year 2017 President's budget request includes $182,220,000 for continued development of P–8A Poseidon Increment III. The Committee notes that recent estimates put the cost of P–8A Poseidon Increment III at over $1,000,000,000 and that after the fiscal year 2017 President's budget request was submitted, the Under Secretary of Defense (Acquisition, Technology and Logistics) approved, at the Navy's request, the incorporation of Increment III capabilities into the P–8A via engineering change proposals [ECPs), instead of developing these capabilities through a separate acquisition program.

The Committee understands that under this revised acquisition strategy the Navy will field Increment III capabilities in a series of four ECPs, based on technical maturity. The Committee recommends $76,300,000 for the first two ECPs, as requested, but notes that the critical enabler for the remaining two ECPs, the combat systems architecture, is being developed concurrently with these ECPs. The Committee finds this concurrent development approach to be high risk, and recommends $36,000,000 for combat systems architecture development, as requested, but no funding the last two ECPs of Increment III, a reduction of $69,900,000 from the request.

MQ–4C Triton.—The fiscal year 2017 President's budget request includes $111,729,000 for continued development of the MQ–4C Triton, an increase of $106,500,000 over amounts previously projected to be required in fiscal year 2017. In addition, the fiscal year 2017 President's budget request includes $181,266,000 for modernization of the MQ–4C Triton, an increase of $51,374,000 over amounts enacted in fiscal year 2016, and $39,800,000 for development of a multi-intelligence sensor to be incorporated onto MQ–4C Triton during its modernization. The Committee notes the continued program delays for both the baseline and modernization programs, including an extension of baseline System Development and Demonstration efforts and delays to design reviews for the modernization program. In addition, the Committee notes the deferral of certain capabilities from the baseline to the modernization program. Finally, the Committee understands that the Navy is considering a potential restructure of the MQ–4C Triton program. Therefore, the Committee recommends full funding of the baseline capability, but no increase for MQ–4C Triton modernization, a reduction of $50,000,000 from the request to reduce program concurrency. In addition, the Committee notes that the multi-intelligence sensor development has not been adjusted to reflect delays to Triton modernization, and accordingly recommends an $8,200,000 reduction to the request.

Synthetic Biology.—The Committee recognizes the potential for synthetic biology to enable the manufacture of pharmaceuticals, fuels, and industrial chemicals using environmentally low impact and cost effective processes. The Committee urges the Department of Defense, through the Office of Naval Research, to support basic research and engineering on the rapid development of cell-free biosynthesis of commercially important molecules, by combining high throughput screening methods, rapid protein production, and computational analysis.

Materials Research.—The Committee urges the Office of Naval Research to support research and development that addresses materials homogeneity and integration related to electronic and photonic technologies. The results of fundamental electronic and photonic materials research can be more rapidly translated into military and commercial applications in portable electronics and displays, such as sensors, communications systems, power systems, and enemy monitoring technology.

Navy Aircraft Fleet Readiness and Sustainment.—The Committee is aware of the Chief of Naval Operations' 2016 "Design for Maintaining Maritime Superiority," including its focus on strengthening

the Navy team, building new partnerships and maintaining global superiority in a changing and challenging environment. The Committee notes that aircraft fleet readiness and sustainment is a critical component of this plan, but is concerned about the significant safety and readiness problems that plague the Navy and Marine Corps F/A–18 fighter jet fleet. The F/A–18 remains operational, yet the Naval Air Systems Command appears to lack a comprehensive plan to address the problems that degrade the aircraft. The Committee recognizes the valuable role university research institutions can offer to the Navy to address these challenges and to rapidly respond to new technology requirements with qualified technologists and engineers, and encourages the Naval Air Systems Command to partner with university laboratories that possess leading-edge capabilities in aviation-related full-scale structures and materials testing and evaluation to address the structural problems related to the F/A–18 fighter jet. The Committee further encourages Naval Air Systems Command to explore establishing a University Affiliated Research Center partnership with an institution possessing demonstrated capabilities in enhanced structures and materials, testing and evaluation that would result in a cost-savings for the Department of Defense.

Force Protection Applied Research.—The Committee continues to support Navy efforts in force protection applied research, and recommends an increase of $15,000,000 for that purpose. The Committee notes that development and deployment of lithium-ion batteries are critical to Department of Defense missions, but that safety incidents restrict their operational use. Therefore, the Committee believes that the development and qualification of technologies to reduce the risk of thermal runaway and improve safety in lithium-ion batteries should be a research priority. In addition, the Committee remains concerned over the potential impact of an electrical grid failure on national security and recommends investments in resilient and reliable power sources and infrastructure to promote energy security and mission effectiveness.

Navy Alternative and Renewable Energy Research.—The Committee recommends an increase of $20,000,000 for Navy alternative energy research and of $15,000,000 for Navy renewable energy research. The Committee notes the fiscal and operational value of investing in alternative energy research, and encourages the Navy to: expand ocean renewable energy testing; research development and deployment of maritime security systems; support at-sea surveillance and communications systems; and explore opportunities to reduce the cost of energy and increase energy security at coastal Department of Defense facilities. Further, the Committee encourages the Navy to invest in renewable energy demonstration activities relating to Department of Defense facilities and activities in coordination with other Federal agencies and entities.

Interdisciplinary Cybersecurity Research.—The Committee notes the significant investment by the Department of Defense in basic cyber research in recent years. However, the Committee is concerned that this research does not fully consider the interdisciplinary nature of cyber systems and excludes consideration of the role of human behavior. The Committee encourages the Navy to invest in multidisciplinary research in the areas of dynamic cyber defense,

tactical cyberspace operations, signals intelligence, and user-in-the-loop testing and evaluation.

Marine Corps Asset Life Cycle Management.—The Committee supports the Marine Corps' efforts to substantially reduce costs associated with routine maintenance through further research and development in the areas of remanufacturing and vehicle and behavior monitoring. The Committee encourages the Office of Naval Research to assign adequate resources to continue its efforts in this area.

Undersea Weapons Energetics Capabilities.—The Committee recommends continued investment in the development of advanced energetics capabilities focused on undersea weapons, and the development of a database of global energetics materials activities as they apply to undersea warfare.

Flexible Sea-Based Force Projection.—Future Naval Capabilities programs include support to sea-based technologies to support operations that normally rely on shore-based infrastructure. Flexible sea based force projection technologies mitigate the impact of operating at sea and enable cargo transfers, surface connector interfaces and amphibious vehicle launch and recovery from a variety of both legacy and emerging platforms in the sea-based environment. These technologies expand operational availability both within the seabase and from seabase to shore that is critical in an A2/AD environment. The Committee recommends continued investment in these areas.

Naval Power and Energy Systems Technology Development Roadmap.—The Committee notes the recommendations in the recently updated Naval Power and Energy Systems Technology Development Roadmap for development of advanced power electronics, including silicon carbide power modules, which can reduce the size and weight of power conversion modules and other electronic systems needed to power advanced sensors and weapons systems. The Committee encourages continued investments in cost reduction initiatives and qualification of silicon carbide power modules in order to enable planned deployment of high-power, mission-critical systems on Navy platforms as early as fiscal year 2022.

Condition-Based Maintenance.—The Committee is aware of the Navy's continued development and implementation of condition-based maintenance solutions and notes that such efforts can provide demonstrable improvements in fleet readiness. The Committee encourages the Navy to adapt the lessons learned from Littoral Combat Ships combat systems condition-based maintenance efforts to other ship classes, to include weapons systems on DDG–51 Destroyers.

Jet Noise Reduction Development.—The Committee understands the difficulties near-field and far-field aircraft engine noise poses for communities surrounding military installations as well as servicemembers who work in close proximity to military aircraft. Hearing loss, in particular, is a mounting concern for servicemembers and veterans who have spent their careers in and around military aviation. The Committee is aware that the Navy has long pursued noise reduction solutions for low bypass military jet engines and is encouraged by the noise reduction potential of variable exhaust nozzle seal chevron technology currently being

pursued by the F/A–18 and EA–18G Program Office. The Committee recommends an additional $2,000,000 for jet noise reduction and urges the Navy to aggressively pursue research of this technology.

Barking Sands Tactical Underwater Range [BARSTUR].—The Committee is concerned about the state of readiness and modernization of tactical test ranges that support undersea warfare missions, particularly given the state of evolving global threats in the undersea domain and the advanced age of some of the Navy's tactical underwater ranges. The Committee notes that the Barking Sands Tactical Underwater Range [BARSTUR] is beyond its service life, has degraded capability, and is beyond repair. The Committee further notes that the Commander, Submarine Forces, U.S. Pacific Fleet, has documented concerns that test capabilities in this mission area are not on a path to support future Navy requirements. Therefore, the Secretary of the Navy is directed to submit a complete program execution plan for BARSTUR replacement and modernization to the congressional defense committees, to include full program costs, not later than 60 days after the date of enactment of this act.

U.S. Marine Corps Unmanned Rotary Aircraft.—The Committee notes the successful deployment to Afghanistan of unmanned rotary aircraft. The Committee encourages the Marine Corps to continue to leverage this capability to address capability gaps identified into the 2016 Marine Corps Aviation Plan.

Electronic Maneuver Warfare [EMW].—The Committee notes the inclusion and expanded definition of electronic maneuver warfare [EMW] concepts in the Chief, Naval Operations' 2016 Design for Maintaining Maritime Superiority. The Committee further notes the game changing capabilities electronic maneuver warfare provides in denied environments, and its contributions to the Third Offset Strategy. The Committee believes that continued investments in EMW are warranted and notes that planning, programming and budgeting for EMW through the regular budget process provides the greatest level of insight and stability into the Navy's future requirements and plan.

RESEARCH, DEVELOPMENT, TEST AND EVALUATION, AIR FORCE

Appropriations, 2016	$25,217,148,000
Budget estimate, 2017	28,112,251,000
Committee recommendation	27,490,944,000

The Committee recommends an appropriation of $27,490,944,000. This is $621,307,000 below the budget estimate.

COMMITTEE RECOMMENDED PROGRAM

The following table summarizes the budget estimate for this appropriation, the Committee recommendation, and the Committee recommended adjustments to the budget estimate:

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
	RESEARCH, DEVELOPMENT, TEST & EVAL, AIR FORCE			
	BASIC RESEARCH			
1	DEFENSE RESEARCH SCIENCES	340,812	380,812	+40,000
2	UNIVERSITY RESEARCH INITIATIVES	145,044	145,044	
3	HIGH ENERGY LASER RESEARCH INITIATIVES	14,168	14,168	
	TOTAL, BASIC RESEARCH	500,024	540,024	+40,000
	APPLIED RESEARCH			
4	MATERIALS	126,152	146,152	+20,000
5	AEROSPACE VEHICLE TECHNOLOGIES	122,831	132,831	+10,000
6	HUMAN EFFECTIVENESS APPLIED RESEARCH	111,647	111,647	
7	AEROSPACE PROPULSION	185,671	190,671	+5,000
8	AEROSPACE SENSORS	155,174	158,674	+3,500
9	SPACE TECHNOLOGY	117,915	117,915	
10	CONVENTIONAL MUNITIONS	109,649	109,649	
11	DIRECTED ENERGY TECHNOLOGY	127,163	127,163	
12	DOMINANT INFORMATION SCIENCES AND METHODS	161,650	166,650	+5,000
13	HIGH ENERGY LASER RESEARCH	42,300	42,300	
	TOTAL, APPLIED RESEARCH	1,260,152	1,303,652	+43,500
	ADVANCED TECHNOLOGY DEVELOPMENT			
14	ADVANCED MATERIALS FOR WEAPON SYSTEMS	35,137	53,137	+18,000
15	SUSTAINMENT SCIENCE AND TECHNOLOGY (S&T)	20,636	20,636	
16	ADVANCED AEROSPACE SENSORS	40,945	40,945	
17	AEROSPACE TECHNOLOGY DEV/DEMO	130,950	130,950	
18	AEROSPACE PROPULSION AND POWER TECHNOLOGY	94,594	109,594	+15,000
19	ELECTRONIC COMBAT TECHNOLOGY	58,250	58,250	
20	ADVANCED SPACECRAFT TECHNOLOGY	61,593	71,593	+10,000
21	MAUI SPACE SURVEILLANCE SYSTEM (MSSS)	11,681	11,681	
22	HUMAN EFFECTIVENESS ADVANCED TECHNOLOGY DEVELOPMENT	26,492	26,492	
23	CONVENTIONAL WEAPONS TECHNOLOGY	102,009	102,009	
24	ADVANCED WEAPONS TECHNOLOGY	39,064	49,064	+10,000
25	MANUFACTURING TECHNOLOGY PROGRAM	46,344	52,344	+6,000
26	BATTLESPACE KNOWLEDGE DEVELOPMENT & DEMONSTRATION	58,110	58,110	
	TOTAL, ADVANCED TECHNOLOGY DEVELOPMENT	725,805	784,805	+59,000
	ADVANCED COMPONENT DEVELOPMENT			
27	INTELLIGENCE ADVANCED DEVELOPMENT	5,598	5,598	
28	SPACE CONTROL TECHNOLOGY	7,534	7,534	
29	COMBAT IDENTIFICATION TECHNOLOGY	24,418	24,418	
30	NATO RESEARCH AND DEVELOPMENT	4,333	4,333	
32	SPACE PROTECTION PROGRAM (SPP)	32,399	32,399	
33	INTERCONTINENTAL BALLISTIC MISSILE	108,663	118,663	+10,000
34	POLLUTION PREVENTION (DEM/VAL)		3,500	+3,500
35	LONG RANGE STRIKE	1,358,309	1,258,309	−100,000
36	ADVANCED TECHNOLOGY AND SENSORS	34,818	34,818	

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
37	TECHNOLOGY TRANSFER	3,368	8,368	+5,000
38	HARD AND DEEPLY BURIED TARGET DEFEAT SYSTEM	74,308	74,308	
39	WEATHER SATELLITE FOLLOW-ON	118,953	118,953	
40	SPACE SITUATION AWARENESS SYSTEMS	9,901	9,901	
41	DEPLOYMENT AND DISTRIBUTION ENTERPRISE R&D	25,890	25,890	
42	OPERATIONALLY RESPONSIVE SPACE	7,921	18,421	+10,500
43	TECH TRANSITION PROGRAM	347,304	379,304	+32,000
44	GROUND BASED STRATEGIC DETERRENT	113,919	113,919	
46	NEXT GENERATION AIR DOMINANCE	20,595	20,595	
47	THREE DIMENSIONAL LONG-RANGE RADAR	49,491	49,491	
48	NAVSTAR GLOBAL POSITIONING SYSTEM (USER EQUIPMENT)	278,147	253,147	−25,000
49	COMMON DATA LINK EXECUTIVE AGENT (CDL EA)	42,338	42,338	
50	CYBER OPERATIONS TECHNOLOGY DEVELOPMENT	158,002	158,002	
51	ENABLED CYBER ACTIVITIES	15,842	15,842	
52	CONTRACTING INFORMATION TECHNOLOGY SYSTEM	5,782	5,782	
	TOTAL, ADVANCED COMPONENT DEVELOPMENT	2,847,833	2,783,833	−64,000
	ENGINEERING & MANUFACTURING DEVELOPMENT			
54	ELECTRONIC WARFARE DEVELOPMENT	12,476	8,476	−4,000
55	TACTICAL DATA NETWORKS ENTERPRISE	82,380	82,380	
56	PHYSICAL SECURITY EQUIPMENT	8,458	8,458	
57	SMALL DIAMETER BOMB (SDB)	54,838	46,938	−7,900
58	COUNTERSPACE SYSTEMS	34,394	34,394	
59	SPACE SITUATION AWARENESS SYSTEMS	23,945	23,945	
60	SPACE FENCE	168,364	158,364	−10,000
61	AIRBORNE ELECTRONIC ATTACK	9,187	9,187	
62	SPACE BASED INFRARED SYSTEM (SBIRS) HIGH EMD	181,966	181,966	
63	ARMAMENT/ORDNANCE DEVELOPMENT	20,312	20,312	
64	SUBMUNITIONS	2,503	2,503	
65	AGILE COMBAT SUPPORT	53,680	65,680	+12,000
66	JOINT DIRECT ATTACK MUNITION	9,901	9,901	
67	LIFE SUPPORT SYSTEMS	7,520	7,520	
68	COMBAT TRAINING RANGES	77,409	68,409	−9,000
69	F-35—EMD	450,467	450,467	
70	EVOLVED EXPENDABLE LAUNCH VEHICLE PROGRAM (SPACE)	296,572	396,572	+100,000
71	LONG RANGE STANDOFF WEAPON	95,604	95,604	
72	ICBM FUZE MODERNIZATION	189,751	189,751	
73	JOINT TACTICAL NETWORK CENTER (JTNC)	1,131	1,131	
74	F-22 MODERNIZATION INCREMENT 3.2B	70,290	70,290	
75	GROUND ATTACK WEAPONS FUZE DEVELOPMENT	937	937	
76	NEXT GENERATION AERIAL REFUELING AIRCRAFT KC–46	261,724	261,724	
77	ADVANCED PILOT TRAINING	12,377	12,377	
78	CSAR HH–60 RECAPITALIZATION	319,331	273,331	−46,000
80	ADVANCED EHF MILSATCOM (SPACE)	259,131	229,131	−30,000
81	POLAR MILSATCOM (SPACE)	50,815	50,815	
82	WIDEBAND GLOBAL SATCOM (SPACE)	41,632	31,632	−10,000
83	AIR AND SPACE OPS CENTER 10.2	28,911	21,911	−7,000
84	B–2 DEFENSIVE MANAGEMENT SYSTEM	315,615	268,215	−47,400
85	NUCLEAR WEAPONS MODERNIZATION	137,909	137,909	
86	F–15 EPAWSS	256,669	256,669	
87	FULL COMBAT MISSION TRAINING	12,051	12,051	
88	COMBAT SURVIVOR EVADER LOCATOR	29,253	29,253	
89	NEXTGEN JSTARS	128,019	128,019	
90	PRESIDENTIAL AIRCRAFT REPLACEMENT	351,220	312,220	−39,000
91	AUTOMATED TEST SYSTEMS	19,062	19,062	
	TOTAL, ENGINEERING & MANUFACTURING DEVELOPMENT	4,075,804	3,977,504	−98,300
	RDT&E MANAGEMENT SUPPORT			
92	THREAT SIMULATOR DEVELOPMENT	21,630	21,630	
93	MAJOR T&E INVESTMENT	66,385	66,385	
94	RAND PROJECT AIR FORCE	34,641	34,641	
96	INITIAL OPERATIONAL TEST & EVALUATION	11,529	11,529	

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
97	TEST AND EVALUATION SUPPORT	661,417	676,417	+15,000
98	ROCKET SYSTEMS LAUNCH PROGRAM (SPACE)	11,198	11,198	
99	SPACE TEST PROGRAM (STP)	27,070	42,070	+15,000
100	FACILITIES RESTORATION & MODERNIZATION—TEST & EVAL	134,111	134,111	
101	FACILITIES SUSTAINMENT—TEST AND EVALUATION SUPPORT	28,091	28,091	
102	REQUIREMENTS ANALYSIS AND MATURATION	29,100	34,100	+5,000
103	SPACE TEST AND TRAINING RANGE DEVELOPMENT	18,528	18,528	
104	SPACE AND MISSILE CENTER (SMC) CIVILIAN WORKFORCE	176,666	171,666	−5,000
105	ENTERPRISE INFORMATION SERVICES (EIS)	4,410	4,410	
106	ACQUISITION AND MANAGEMENT SUPPORT	14,613	14,613	
107	GENERAL SKILL TRAINING	1,404	1,404	
109	INTERNATIONAL ACTIVITIES	4,784	4,784	
	TOTAL, RDT&E MANAGEMENT SUPPORT	1,245,577	1,275,577	+30,000
	OPERATIONAL SYSTEMS DEVELOPMENT			
110	GPS III—OPERATIONAL CONTROL SEGMENT	393,268	163,438	−229,830
111	SPECIALIZED UNDERGRADUATE FLIGHT TRAINING	15,427	18,427	+3,000
112	WIDE AREA SURVEILLANCE	46,695	46,695	
115	AIR FORCE INTEGRATED MILITARY HUMAN RESOURCES SYSTEM	10,368	10,368	
116	ANTI-TAMPER TECHNOLOGY EXECUTIVE AGENCY	31,952	31,952	
117	FOREIGN MATERIEL ACQUISITION AND EXPLOITATION	42,960	42,960	
118	HC/MC-130 RECAP RDT&E	13,987	8,987	−5,000
119	B-52 SQUADRONS	78,267	83,267	+5,000
120	AIR-LAUNCHED CRUISE MISSILE (ALCM)	453	453	
121	B-1B SQUADRONS	5,830	5,830	
122	B-2 SQUADRONS	152,458	152,458	
123	MINUTEMAN SQUADRONS	182,958	182,958	
124	STRAT WAR PLANNING SYSTEM—USSTRATCOM	39,148	39,148	
126	WORLDWIDE JOINT STRATEGIC COMMUNICATIONS	6,042	13,042	+7,000
128	UH-1N REPLACEMENT PROGRAM	14,116	14,116	
129	REGION/SECTOR OPERATION CONTROL CENTER MODERNIZATION	10,868	10,868	
130	SERVICE SUPPORT TO STRATCOM—SPACE ACTIVITIES	8,674	8,674	
131	MQ-9 UAV	151,373	125,773	−25,600
133	A-10 SQUADRONS	14,853		−14,853
134	F-16 SQUADRONS	132,795	120,195	−12,600
135	F-15E SQUADRONS	356,717	356,717	
136	MANNED DESTRUCTIVE SUPPRESSION	14,773	14,773	
137	F-22 SQUADRONS	387,564	376,564	−11,000
138	F-35 SQUADRONS	153,045	76,713	−76,332
139	TACTICAL AIM MISSILES	52,898	52,898	
140	ADVANCED MEDIUM RANGE AIR-TO-AIR MISSILE (AMRAAM)	62,470	62,470	
143	COMBAT RESCUE—PARARESCUE	362	362	
144	AF TENCAP	28,413	28,413	
145	PRECISION ATTACK SYSTEMS PROCUREMENT	649	649	
146	COMPASS CALL	13,723	13,723	
147	AIRCRAFT ENGINE COMPONENT IMPROVEMENT PROGRAM	109,859	109,859	
148	JOINT AIR-TO-SURFACE STANDOFF MISSILE (JASSM)	30,002	30,002	
149	AIR AND SPACE OPERATIONS CENTER (AOC)	37,621	18,343	−19,278
150	CONTROL AND REPORTING CENTER (CRC)	13,292	13,292	
151	AIRBORNE WARNING AND CONTROL SYSTEM (AWACS)	86,644	86,644	
152	TACTICAL AIRBORNE CONTROL SYSTEMS	2,442	2,442	
154	COMBAT AIR INTELLIGENCE SYSTEM ACTIVITIES	10,911	10,911	
155	TACTICAL AIR CONTROL PARTY—MOD	11,843	11,843	
156	C2ISR TACTICAL DATA LINK	1,515	1,515	
157	DCAPES	14,979	14,979	
158	SEEK EAGLE	25,308	25,308	
159	USAF MODELING AND SIMULATION	16,666	16,666	
160	WARGAMING AND SIMULATION CENTERS	4,245	4,245	
161	DISTRIBUTED TRAINING AND EXERCISES	3,886	3,886	
162	MISSION PLANNING SYSTEMS	71,785	71,785	
164	AF OFFENSIVE CYBERSPACE OPERATIONS	25,025	25,025	
165	AF DEFENSIVE CYBERSPACE OPERATIONS	29,439	39,439	+10,000
168	GLOBAL SENSOR INTEGRATED ON NETWORK (GSIN)	3,470	3,470	

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
169	NUCLEAR PLANNING AND EXECUTION SYSTEM (NPES)	4,060	4,060	
175	SPACE SUPERIORITY INTELLIGENCE	13,880	13,880	
176	E–4B NATIONAL AIRBORNE OPERATIONS CENTER (NAOC)	30,948	30,948	
177	FAMILY OF ADVANCED BLoS TERMINALS (FAB–T)	42,378	42,378	
178	MINIMUM ESSENTIAL EMERGENCY COMMUNICATIONS NETWORK	47,471	47,471	
179	INFORMATION SYSTEMS SECURITY PROGRAM	46,388	37,388	−9,000
180	GLOBAL COMBAT SUPPORT SYSTEM	52	52	
181	GLOBAL FORCE MANAGEMENT—DATA INITIATIVE	2,099	2,099	
184	AIRBORNE SIGINT ENTERPRISE	90,762	90,762	
187	GLOBAL AIR TRAFFIC MANAGEMENT (GATM)	4,354	4,354	
188	SATELLITE CONTROL NETWORK (SPACE)	15,624	15,624	
189	WEATHER SERVICE	19,974	19,974	
190	AIR TRAFFIC CONTROL, APPROACH, & LANDING SYSTEM (ATC)	9,770	17,770	+8,000
191	AERIAL TARGETS	3,051	3,051	
194	SECURITY AND INVESTIGATIVE ACTIVITIES	405	405	
195	ARMS CONTROL IMPLEMENTATION	4,844	4,844	
196	DEFENSE JOINT COUNTERINTELLIGENCE ACTIVITIES	339	339	
199	SPACE AND MISSILE TEST AND EVALUATION CENTER	3,989	3,989	
200	SPACE INNOVATION, INTEGRATION AND RAPID TECHNOLOGY DEVELOPMENT	3,070	3,070	
201	INTEGRATED BROADCAST SERVICE	8,833	8,833	
202	SPACELIFT RANGE SYSTEM (SPACE)	11,867	21,867	+10,000
203	DRAGON U–2	37,217	37,217	
204	ENDURANCE UNMANNED AERIAL VEHICLES		50,000	+50,000
205	AIRBORNE RECONNAISSANCE SYSTEMS	3,841	13,841	+10,000
206	MANNED RECONNAISSANCE SYSTEMS	20,975	20,975	
207	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	18,902	18,902	
208	RQ–4 UAV	256,307	233,307	−23,000
209	NETWORK-CENTRIC COLLABORATIVE TARGET (TIARA)	22,610	22,610	
211	NATO AGS	38,904	38,904	
212	SUPPORT TO DCGS ENTERPRISE	23,084	23,084	
213	ADVANCED EVALUATION PROGRAM	116,143	116,143	
214	GPS III SPACE SEGMENT	141,888	134,388	−7,500
215	INTERNATIONAL INTELLIGENCE TECHNOLOGY AND ARCHITECTURES	2,360	2,360	
216	JSPOC MISSION SYSTEM	72,889	72,889	
217	RAPID CYBER ACQUISITION	4,280	4,280	
218	NCMC–TW/AA SYSTEM	4,951	4,951	
219	NUDET DETECTION SYSTEM (SPACE)	21,093	21,093	
220	SPACE SITUATION AWARENESS OPERATIONS	35,002	35,002	
222	SHARED EARLY WARNING (SEW)	6,366	6,366	
223	C–130 AIRLIFT SQUADRON	15,599	15,599	
224	C–5 AIRLIFT SQUADRONS	66,146	66,146	
225	C–17 AIRCRAFT	12,430	12,430	
226	C–130J PROGRAM	16,776	16,776	
227	LARGE AIRCRAFT IR COUNTERMEASURES (LAIRCM)	5,166	5,166	
229	OPERATIONAL SUPPORT AIRLIFT	13,817	13,817	
230	CV–22	16,702	16,702	
231	SPECIAL TACTICS / COMBAT CONTROL	7,164	7,164	
232	DEPOT MAINTENANCE (NON–IF)	1,518	1,518	
233	LOGISTICS INFORMATION TECHNOLOGY (LOGIT)	61,676	57,676	−4,000
238	SUPPORT SYSTEMS DEVELOPMENT	9,128	9,128	
235	OTHER FLIGHT TRAINING	1,653	1,653	
236	OTHER PERSONNEL ACTIVITIES	57	57	
237	JOINT PERSONNEL RECOVERY AGENCY	3,663	3,663	
238	CIVILIAN COMPENSATION PROGRAM	3,735	3,735	
239	PERSONNEL ADMINISTRATION	5,157	5,157	
240	AIR FORCE STUDIES AND ANALYSIS AGENCY	1,523	1,523	
242	FINANCIAL MANAGEMENT INFORMATION SYSTEMS DEVELOPMENT	10,581	10,581	
	TOTAL, OPERATIONAL SYSTEMS DEVELOPMENT	4,365,499	4,030,506	−334,993
9999	CLASSIFIED PROGRAMS	13,091,557	12,795,043	−296,514

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
	TOTAL, RESEARCH, DEVELOPMENT, TEST & EVAL, AIR FORCE	28,112,251	27,490,944	−621,307

COMMITTEE RECOMMENDED ADJUSTMENTS

The following table details the adjustments recommended by the Committee:

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
1	Defense Research Sciences	340,812	380,812	+40,000
	Authorization adjustment: Basic research program increase			+40,000
4	Materials	126,152	146,152	+20,000
	Program increase: Air Force Education and Outreach Program			+10,000
	Program increase			+10,000
5	Aerospace Vehicle Technologies	122,831	132,831	+10,000
	Program increase: Hypersonic vehicle structures			+10,000
7	Aerospace Propulsion	185,671	190,671	+5,000
	Program increase			+5,000
8	Aerospace Sensors	155,174	158,674	+3,500
	Program increase			+3,500
12	Dominant Information Sciences and Methods	161,650	166,650	+5,000
	Program increase			+5,000
14	Advanced Materials for Weapon Systems	35,137	53,137	+18,000
	Program increase: Metals affordability research			+17,000
	Program increase: Protective equipment			+1,000
18	Aerospace Propulsion and Power Technology	94,594	109,594	+15,000
	Program increase: Silicon carbide research			+15,000
20	Advanced Spacecraft Technology	61,593	71,593	+10,000
	Program increase			+10,000
24	Advanced Weapons Technology	39,064	49,064	+10,000
	Program increase			+10,000
25	Manufacturing Technology Program	46,344	52,344	+6,000
	Program increase			+6,000
33	Intercontinental Ballistic Missile—Dem/Val	108,663	118,663	+10,000
	Program increase: Solid rocket motor technology			+10,000
34	Pollution Prevention—Dem/Val		3,500	+3,500
	Program increase			+3,500
35	Long Range Strike—Bomber	1,358,309	1,258,309	−100,000
	Improving funds management: Forward financing			−100,000
37	Technology Transfer	3,368	8,368	+5,000
	Program increase			+5,000
42	Operationally Responsive Space	7,921	18,421	+10,500
	Program increase: Maintain fiscal year 2016 funding level			+10,500
43	Tech Transition Program	347,304	379,304	+32,000
	Program increase: Alternative energy research			+20,000
	Program increase: Logistics technologies			+12,000
48	NAVSTAR Global Positioning System (User Equipment) (SPACE)	278,147	253,147	−25,000
	Restoring acquisition accountability: Unjustified cost growth			−25,000
54	Electronic Warfare Development	12,476	8,476	−4,000
	Improving funds management: Forward financing			−4,000
57	Small Diameter Bomb (SDB)—EMD	54,838	46,938	−7,900
	Improving funds management: Product development forward financing			−7,900
60	Space Fence	168,364	158,364	−10,000
	Improving funds management: Prior year carryover			−10,000

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
65	Agile Combat Support	53,680	65,680	+12,000
	Program increase			+12,000
68	Combat Training Ranges	77,409	68,409	−9,000
	Improving funds management: Forward financing			−9,000
70	Evolved Expendable Launch Vehicle Program (SPACE)—EMD	296,572	396,572	+100,000
	Program increase			+100,000
78	CSAR HH–60 Recapitalization	319,331	273,331	−46,000
	Improving funds management: Forward financing			−46,000
80	Advanced EHF MILSATCOM (SPACE)	259,131	229,131	−30,000
	Improving funds management: Prior year carryover			−30,000
82	Wideband Global SATCOM (SPACE)	41,632	31,632	−10,000
	Improving funds management: Prior year carryover			−10,000
83	Air & Space Ops Center 10.2 RDT&E	28,911	21,911	−7,000
	Restoring acquisition accountability: AOC 10.2 program review underway			−7,000
84	B–2 Defensive Management System	315,615	268,215	−47,400
	Restoring acquisition accountability: Delayed contract award			−47,400
89	JSTARS Recap	128,019	128,019	[102,800]
	Funding only for EMD contract award and source selection support			[102,800]
90	Presidential Aircraft Replacement [PAR]	351,220	312,220	−39,000
	Restoring acquisition accountability: Preliminary design funding early to need			−39,000
97	Test and Evaluation Support	661,417	676,417	+15,000
	Program increase			+15,000
99	Space Test Program [STP]	27,070	42,070	+15,000
	Program increase			+15,000
102	Requirements Analysis and Maturation	29,100	34,100	+5,000
	Program increase			+5,000
104	Space and Missile Center [SMC] Civilian Workforce	176,666	171,666	−5,000
	Improving funds management: Prior year carryover			−5,000
110	Global Positioning System III—Operational Control Segment	393,268	163,438	−229,830
	Program Termination: OCX Blocks 1–2			−259,830
	Program increase: Operational M-code risk mitigation for OCS			+30,000
111	Specialized Undergraduate Flight Training	15,427	18,427	+3,000
	Program increase: Remotely piloted aircraft training			+3,000
118	HC/MC–130 Recap RDT&E	13,987	8,987	−5,000
	Improving funds management: Block 8.1 forward financing			−5,000
119	B–52 Squadrons	78,267	83,267	+5,000
	Program increase			+5,000
126	Worldwide Joint Strategic Communications	6,042	13,042	+7,000
	Program increase: Nuclear command, control and communications development			+7,000
131	MQ–9 UAV	151,373	125,773	−25,600
	Restoring acquisition accountability: Release #3 early to need			−25,600
133	A–10 Squadrons	14,853		−14,853
	Maintain program affordability: Funding excess to need			−14,853
134	F–16 Squadrons	132,795	120,195	−12,600
	Restoring acquisition accountability: Operational flight program funding excess to need			−12,600
137	F–22A Squadrons	387,564	376,564	−11,000
	Maintain program affordability: Unjustified growth			−23,000
	Program increase: F–22 software			+12,000
138	F–35 Squadrons	153,045	76,713	−76,332
	Improving funds management: Follow-on modernization early to need			−76,332
149	Air & Space Operations Center [AOC]	37,621	18,343	−19,278

(In thousands of dollars)

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
	Restoring acquisition accountability: AOC 10.2 program review underway			−7,000
	Restoring acquisition accountability: AOC weapon system modification early to need			−12,278
165	AF Defensive Cyberspace Operations	29,439	39,439	+10,000
	Program increase			+10,000
179	Information Systems Security Program	46,388	37,388	−9,000
	Improving funds management: Forward financing			−9,000
190	Air Traffic Control, Approach, and Landing System [ATCALS]	9,770	17,770	+8,000
	Program increase			+8,000
202	Spacelift Range System (SPACE)	11,867	21,867	+10,000
	Program increase: Space launch range services and capability			+10,000
204	Endurance Unmanned Aerial Vehicles		50,000	+50,000
	Program increase			+50,000
205	Airborne Reconnaissance Systems	3,841	13,841	+10,000
	Program increase: Wide-area sensor development			+10,000
208	RQ–4 UAV	256,307	233,307	−23,000
	Improving funds management: Forward financing			−23,000
214	GPS III Space Segment	141,888	134,388	−7,500
	Reduce Duplication: Funding enterprise and unique ground system			−7,500
233	Logistics Information Technology [LOGIT]	61,676	57,676	−4,000
	Restoring acquisition accountability: Contract savings			−4,000
	Classified Programs	13,091,557	12,795,043	−296,514
	Classified adjustment			−296,514

Unmanned Aerial Systems [UAS].—The Committee recognizes that unmanned aerial systems [UAS] used by rogue individuals or organizations pose an increasing threat to military installations, weapons systems, and personnel, both in the United States and overseas. The rapid proliferation of UAS requires a comprehensive effort by Department of Defense to combat their use as a weapon. The Committee encourages the Air Force Research Laboratory to continue research and development of tactics using radar systems, advanced communications, and cyber security technologies to counter UAS threats.

Long Range Strike Bomber.—The Committee notes that the Air Force recently announced the seven subcontractors that will produce various parts for the bomber program. The Committee also understands there is additional pressure on the Air Force to reveal further information, including roles of the subcontractors and the contract value for the prime contractor. The Committee recognizes that the value of additional program transparency must be balanced with the need for security protection. For example, additional details on the companies and subcontractors involved with the program could be of interest to foreign intelligence services for traditional or cyber espionage efforts. Therefore, the Committee directs the Inspector General of the Department of Defense to conduct a review of the security strategy, controls, and program protection plan and provide an assessment to the congressional defense committees on the findings not later than 60 days after enactment of this act.

Technology Transfer.—The Committee recognizes the importance of technology transfer between the Federal Government and non-Federal entities, such as academia, nonprofit organizations, and State and local governments. Technology transfer lowers the cost of new defense-related technology development and ensures that taxpayer investments in research and development benefit the economy and the industrial base. The Committee encourages the Department of Defense to continue placing an increased focus on technology transfer programs by allocating sufficient funding and leveraging the work being performed by Federal laboratories.

Air Force Alternative Energy.—The Committee recommends an additional $20,000,000 for Air Force alternative energy research. The Committee remains encouraged by the Air Force's energy conservation and efficiency initiatives, as well as its investment into promising renewable energy, such as hydrogen fuel. The Committee urges the Secretary of the Air Force to continue critical research in this field, including investments in adaptive engine technologies, biogasification and waste-to-energy, and other promising initiatives that can reduce the Air Force's reliance on conventional petroleum.

Adaptive Engine Transition Program [AETP].—The Committee continues to support research and development in the next generation of turbine engine technology. The goal of AETP is to mature fuel efficient adaptive cycle engine technologies while reducing technical and manufacturing risks. The Committee fully funds the fiscal year 2017 request and encourages the Air Force to identify current and future programs for this technology insertion.

Even though the Committee remains supportive of the program, the Committee notes that the budget justification for the program is incomplete and not transparent. While the AETP program is an early research and development and prototyping effort, the size and scope of planned investments, nearly $2,500,000,000 through fiscal year 2021, necessitate the same level of detail and transparency of an Acquisition Category [ACAT] 1D or Major Defense Acquisition Program [MDAP]. Therefore, the Committee directs the Air Force to provide more useful and complete R–2A, R–3, and R–4 budget justification documents in future budget requests, starting in fiscal year 2018, for the AETP program.

Ground Based Strategic Deterrent.—In fiscal year 2017, the Air Force will begin competitive risk reduction of flight systems technologies as well as maturation of the weapon system preliminary design with the intent to decrease integration risk. The Committee commends the Air Force in transitioning to a leaner acquisition strategy early in the program's design phase that focuses on risk reduction of the entire, integrated system. The Committee believes addressing the biggest risks early in the program, while still in competition, will result in overall cost savings and align the program for success. In support of this new strategy, the Committee fully funds the fiscal year 2017 request.

Multi-Intelligence Data Fusion.—The Committee understands that the Air Force Common Data Link Executive Agent program provides the Department of Defense standard for interoperable, multi-service, multi-agency, Intelligence, Surveillance, and Reconnaissance [ISR] datalinks for more than 10,000 manned and un-

manned airborne and ground collection platforms. The Committee encourages the Air Force to develop technologies and standards to integrate collected data across these multiple collection platforms to increase the efficiency and effectiveness of intelligence analysis and battlefield decisionmaking.

Long Range Stand-Off Weapon.—The fiscal year 2017 budget request includes $95,604,000 for the Long Range Standoff Weapon. The Committee continues to support the Air Force's program to develop a follow-on capability to the Air Launched Cruise Missile and recommends fully funding the request. The Committee directs the Secretary of Defense to cooperate with the Secretary of Energy, in conjunction with the Nuclear Weapons Council, on a report to the Committees on Appropriations of both the House and Senate on the W80 warhead and the Long Range Standoff Weapon, as delineated in Senate Report 114–236.

Advanced Pilot Training Program.—The fiscal year 2017 budget request includes $12,377,000 to develop the Advanced Trainer Replacement to replace the T–38 aircraft and the associated ground-based training system. The average age of T–38 aircraft is nearly 50 years and the fleet is reaching the end of its third service life. The Committee fully funds the fiscal year 2017 budget request and encourages the Air Force's Air Education and Training Command to accelerate Initial Operational Capability as the program moves forward. Separately, the Navy and the Air Force's Air Combat Command [ACC], who also operate T–38 aircraft, should leverage the Advanced Pilot Training Program. The Committee directs the Secretary of the Navy and the Commander of Air Combat Command to provide a business case analysis to congressional defense committees not later than 120 days after enactment of this act to begin considering alternatives for replacing their aging T–38 trainers and adversary aircraft.

F–15 Survivability.—The Committee supports the fiscal year 2017 request for the F–15 Eagle Passive/Active Warning and Survivability System [EPAWSS] program. The F–15 EPAWSS program is critical to the survivability and lethality of the fleet to counter current and future electronic warfare threats. Given the strategic importance of the program for homeland defense and overseas contingencies, the Committee encourages the Air Force to review its plan and funding through fiscal year 2021 to fully equip Air National Guard F–15 aircraft with EPAWSS.

Joint Surveillance and Target Attack Radar System [JSTARS].—The fiscal year 2017 budget request includes $128,019,000 for the JSTARS recapitalization program, of which $102,800,000 supports a new radar risk reduction phase to mature two competing radars over an 18-month period through the end of fiscal year 2017. The Department of Defense [DOD] revised the JSTARS recapitalization program schedule, delaying the start of the Engineering and Manufacturing Development [EMD] phase to fiscal year 2018, extending the EMD phase from four to five and a half years, and delaying initial operational capability [IOC] to 2024 and full operational capability [FOC] to 2028.

In the reports accompanying the Senate versions of the Department of Defense Appropriations Acts, 2015 and 2016 (Senate Reports 113–211 and 114–63), the Committee voiced its support of the

JSTARS recapitalization program and directed the Air Force to accelerate the acquisition schedule. The JSTARS recapitalization program is necessary to replace an aging, low density, and high demand E8–C fleet. From the outset, the recapitalization program was primarily intended to be an integration effort of mature technologies onto an existing platform to achieve the most cost-effective and low risk solution. Instead, the DOD has delayed EMD and requested additional funds for radar risk reduction. The Committee believes there is less risk related to available systems and mature technologies and that the greater programmatic risk associated with integration of the radar and battle management, command, and control system onto a new aircraft be addressed earlier in the program.

The Committee notes that the fiscal year 2017 request for JSTARS recapitalization does not support a timely fielding acquisition strategy. Therefore, the Committee directs that $102,800,000 of the request for radar risk reduction only be used to fund the EMD contract award or support the EMD source selection process. The Committee directs the Secretary of the Air Force and the Under Secretary of Defense for Acquisition, Technology, and Logistics to provide a briefing to the congressional defense committees not later than 90 days after enactment of this act on a compressed acquisition schedule and funding profile to achieve IOC and FOC as early as possible.

F–16 Modernization.—The Committee understands that the advance of threats on U.S. aircraft have increased to a level where the F–16 struggles to maintain air superiority. The Committee further notes that without a funding plan to modernize the F–16 fleet, which will remain in the inventory for 15–20 additional years, the aircraft will be at a serious disadvantage when operating against both air-to-air and surface-to-air threats. Therefore, the Committee encourages the Air Force to ensure that the F–16 fleet is modernized appropriately to maintain air superiority against current and future threats.

Simulation Training.—The Committee supports the Department of Defense's continued expansion of the full range of simulation training as a cost-effective means by which the military can improve tactical decision-making skills in realistic scenarios only found in theater combat operations. The Committee encourages the Department of Defense to continue developing and supporting efficient simulation training programs through a combination of both government-owned and operated simulators, as well as support from industry that can provide frequent hardware and software updates.

Arctic Domain Awareness.—The Committee remains concerned with the pace of needed development in the arctic region and specifically with arctic domain awareness. The Committee understands that the Department is still drafting a report that was due to the congressional defense committees in June 2015 outlining a plan to ensure arctic domain awareness coverage for the foreseeable future. The Committee directs the Secretary of Defense to submit the report as soon as possible, to include an assessment of the satellite communications capability in the region and potential to partner with Canada on the Canadian Weather Satellite mission.

Weather Satellite Follow-On.—The Department of Defense Appropriations Act, 2016 (Public Law 114–113) recommended that the Secretary of the Air Force focus resources on ensuring that the next generation of weather satellites meet the full spectrum of warfighter and intelligence requirements, and work with civil stakeholders to ensure that any other weather coverage gaps are met using appropriate civil or international weather assets. While the Air Force is moving forward with plans to meet key weather requirements with its Compact Ocean Wind Vector Radiometer technology demonstration and ultimately the Weather Satellite Follow-On, electro-optical/infrared needs for cloud characterization and weather forecasting, particularly in the CENTCOM theater of operations, are not addressed in the 2017 budget request. International partners have assisted in filling some coverage gaps, but as previously noted by the Committee, these are not long-term solutions and do not solve all coverage gaps. The Committee directs the Secretary of the Air Force to examine the possibility of using commercial weather data to supplement existing assets and fill coverage gaps in cloud characterization and weather forecasting. Additionally, the Committee again recommends that the Secretary of the Air Force work with military, civil, commercial, and international stakeholders to ensure that all warfighter and intelligence weather requirements are met with a long-term solution.

Operationally Responsive Space.—The Committee recommends that the Operationally Responsive Space program continue research, development, and educational programs in launching small satellites designed and built by university students. These efforts can both advance state-of-the-art technology and help build the technological workforce needed in our space industry.

Global Positioning System III Operational Control Segment.—The budget request for fiscal year 2017 includes $393,268,000 for the GPS III Operational Control Segment [OCX]. This ground system promises to provide improved accuracy, security, and anti-jamming protection and allow integration of the new GPS III satellites with the legacy GPS IIF constellation. In the Department of Defense Appropriations Act, 2016 (Public Law 114–113), Congress raised concerns about development delays, so excessive that the OCX system will not be available for several years after the Air Force begins launching GPS III satellites. This has prompted the Air Force to contract for an interim solution to upgrade the current Operational Control System [OCS] ground system so that GPS III satellites can be integrated into the legacy architecture and operate as GPS IIFs. However, this interim solution will not enable all the capabilities of three generations of satellites—IIR–M, IIF, and IIIs—including Military code [M–code] capability, a key warfighting need.

As the Air Force embarks on this interim solution, the OCX program remains in jeopardy. After several pauses, reassessments, and a joint Office of the Secretary of Defense and Air Force deep dive effort to address the root causes of the program failures, the feasibility of meeting a new 2-year schedule remains in question. Moreover, the program cost is now expected to be $2,300,000,000, a 160-percent increase over the original estimate of $886,000,000.

The Government Accountability Office [GAO] reported that as of March 2016, after the deep dive, the program was continuing to experience significant technical challenges, part of a long historical pattern that has contributed to multiple delays and cost overruns. The GAO also questioned the 2-year additional schedule delay, nothing that the contractor and Air Force believed that a more than 4-year additional delay was likely necessary.

The Committee is concerned that the program cannot correct course and meet the new schedule. Further delays and problems in the OCX program will only delay the operation of GPS III replenishment satellites and risk national security. The Committee believes the Air Force should work with the contractor to ensure that OCX Block 0, which will enable launch and checkout of GPS III satellites, is completed, and turn its focus toward ensuring that the interim OCS solution succeeds, on schedule and on budget.

The Committee, therefore, reduces funding for the OCX program by $259,830,000, terminating Blocks 1 and 2. The Committee recommends funding for completion of Block 0 and adds $30,000,000 for enhancements to the OCS ground system that will enable M-code broadcast capabilities and ensure that our warfighters have this necessary capability in the most timely manner possible.

Space Fence.—The Committee commends the Air Force for its execution of the Space Fence program and for recognition of the program by the Government Accountability Office as one of the few space programs currently on schedule and on budget. The program plans to complete installation, checkout, and test of the first radar site in fiscal year 2017 and deliver an initial operating capability in 2018 to dramatically improve identification and tracking of space objects. However, the Air Force has not yet moved forward on the second radar site, which will be essential for full operational capability. Therefore, the Committee directs the Secretary of the Air Force to conduct an analysis and report to the congressional defense committees, not later than 180 days after enactment of this act, on the requirements, site options, and necessary timelines for construction and integration of Space Fence site 2 into the Space Surveillance Network to maximize the cost effectiveness of site 2 procurement and support the necessary improvements for geostationary orbit coverage.

RESEARCH, DEVELOPMENT, TEST AND EVALUATION, DEFENSE-WIDE

Appropriations, 2016	$18,695,955,000
Budget estimate, 2017	18,308,826,000
Committee recommendation	18,478,028,000

The Committee recommends an appropriation of $18,478,028,000. This is $169,202,000 above the budget estimate.

COMMITTEE RECOMMENDED PROGRAM

The following table summarizes the budget estimate for this appropriation, the Committee recommendation, and the Committee recommended adjustments to the budget estimate:

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
	RESEARCH, DEVELOPMENT, TEST & EVAL, DEFENSE-WIDE			
	BASIC RESEARCH			
1	DTRA UNIVERSITY STRATEGIC PARTNERSHIP BASIC RESEARCH	35,436	35,436	.....
2	DEFENSE RESEARCH SCIENCES	362,297	362,297	.....
3	BASIC RESEARCH INITIATIVES	36,654	68,154	+31,500
4	BASIC OPERATIONAL MEDICAL RESEARCH SCIENCE	57,791	57,791	.....
5	NATIONAL DEFENSE EDUCATION PROGRAM	69,345	79,345	+10,000
6	HISTORICALLY BLACK COLLEGES & UNIV [HBCU]	23,572	32,072	+8,500
7	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM	44,800	44,800	.....
	TOTAL, BASIC RESEARCH	629,895	679,895	+50,000
	APPLIED RESEARCH			
8	JOINT MUNITIONS TECHNOLOGY	17,745	17,745	.....
9	BIOMEDICAL TECHNOLOGY	115,213	115,213	.....
10	DEFENSE TECHNOLOGY INNOVATION	30,000	28,000	−2,000
11	LINCOLN LABORATORY RESEARCH PROGRAM	48,269	48,269	.....
12	APPLIED RESEARCH FOR ADVANCEMENT S&T PRIORITIES	42,206	42,206	.....
13	INFORMATION AND COMMUNICATIONS TECHNOLOGY	353,635	353,635	.....
14	BIOLOGICAL WARFARE DEFENSE	21,250	21,250	.....
15	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM	188,715	193,715	+5,000
16	CYBER SECURITY RESEARCH	12,183	12,183	.....
17	TACTICAL TECHNOLOGY	313,843	305,843	−8,000
18	MATERIALS AND BIOLOGICAL TECHNOLOGY	220,456	214,456	−6,000
19	ELECTRONICS TECHNOLOGY	221,911	201,911	−20,000
20	WEAPONS OF MASS DESTRUCTION DEFEAT TECHNOLOGIES	154,857	154,857	.....
21	SOFTWARE ENGINEERING INSTITUTE	8,420	8,420	.....
22	SPECIAL OPERATIONS TECHNOLOGY DEVELOPMENT	37,820	42,820	+5,000
	TOTAL, APPLIED RESEARCH	1,786,523	1,760,523	−26,000
	ADVANCED TECHNOLOGY DEVELOPMENT			
23	JOINT MUNITIONS ADVANCED TECH INSENSITIVE MUNITIONS AD	23,902	23,902	.....
25	COMBATING TERRORISM TECHNOLOGY SUPPORT	73,002	115,502	+42,500
26	FOREIGN COMPARATIVE TESTING	19,343	19,343	.....
27	COUNTERPROLIFERATION INITIATIVES—PROLIF PREV & DEFEAT	266,444	266,444	.....
28	ADVANCED CONCEPTS AND PERFORMANCE ASSESSMENT	17,880	17,880	.....
30	WEAPONS TECHNOLOGY	71,843	49,643	−22,200
31	ADVANCED C4ISR	3,626	3,626	.....
32	ADVANCED RESEARCH	23,433	23,433	.....
33	JOINT DOD–DOE MUNITIONS TECHNOLOGY DEVELOPMENT	17,256	17,256	.....
35	SPECIAL PROGRAM—MDA TECHNOLOGY	83,745	11,795	−71,950
36	ADVANCED AEROSPACE SYSTEMS	182,327	182,327	.....
37	SPACE PROGRAMS AND TECHNOLOGY	175,240	160,240	−15,000
38	ANALYTIC ASSESSMENTS	12,048	12,048	.....
39	ADVANCED INNOVATIVE ANALYSIS AND CONCEPTS	57,020	57,020	.....
40	COMMON KILL VEHICLE TECHNOLOGY	.....	71,513	+71,513
41	TECHNOLOGY INNOVATION	39,923	39,923	.....

(In thousands of dollars)

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
42	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM—ADVANCED DEV	127,941	132,941	+ 5,000
43	RETRACT LARCH	181,977	181,977	.....
44	JOINT ELECTRONIC ADVANCED TECHNOLOGY	22,030	22,030	.....
45	JOINT CAPABILITY TECHNOLOGY DEMONSTRATIONS	148,184	132,184	− 16,000
46	NETWORKED COMMUNICATIONS CAPABILITIES	9,331	9,331	.....
47	DEFENSE-WIDE MANUFACTURING SCIENCE AND TECHNOLOGY PROG	158,398	158,398	.....
48	MANUFACTURING TECHNOLOGY PROGRAM	31,259	41,259	+ 10,000
49	EMERGING CAPABILITIES TECHNOLOGY DEVELOPMENT	49,895	55,895	+ 6,000
50	GENERIC LOGISTICS R&D TECHNOLOGY DEMONSTRATIONS	11,011	25,011	+ 14,000
52	STRATEGIC ENVIRONMENTAL RESEARCH PROGRAM	65,078	65,078	.....
53	MICROELECTRONIC TECHNOLOGY DEVELOPMENT AND SUPPORT	97,826	89,826	− 8,000
54	JOINT WARFIGHTING PROGRAM	7,848	4,848	− 3,000
55	ADVANCED ELECTRONICS TECHNOLOGIES	49,807	49,807	.....
56	COMMAND, CONTROL AND COMMUNICATIONS SYSTEMS	155,081	155,081	.....
57	NETWORK-CENTRIC WARFARE TECHNOLOGY	428,894	419,894	− 9,000
58	SENSOR TECHNOLOGY	241,288	241,288	.....
60	SOFTWARE ENGINEERING INSTITUTE	14,264	14,264	.....
61	QUICK REACTION SPECIAL PROJECTS	74,943	79,943	+ 5,000
63	ENGINEERING SCIENCE AND TECHNOLOGY	17,659	22,659	+ 5,000
64	TEST & EVALUATION SCIENCE & TECHNOLOGY	87,135	92,135	+ 5,000
65	OPERATIONAL ENERGY CAPABILITY IMPROVEMENT	37,329	42,329	+ 5,000
66	CWMD SYSTEMS	44,836	44,836	.....
67	SPECIAL OPERATIONS ADVANCED TECHNOLOGY DEVELOPMENT	61,620	92,620	+ 31,000
	TOTAL, ADVANCED TECHNOLOGY DEVELOPMENT	3,190,666	3,245,529	+ 54,863
	DEMONSTRATION & VALIDATION			
68	NUCLEAR AND CONVENTIONAL PHYSICAL SECURITY EQUIPMENT	28,498	26,498	− 2,000
69	WALKOFF	89,643	89,643	.....
71	ACQUISITION ENTERPRISE DATA AND INFORMATION SERVICES	2,136	2,136	.....
72	ENVIRONMENTAL SECURITY TECHNICAL CERTIFICATION PROGRAM	52,491	46,491	− 6,000
73	BALLISTIC MISSILE DEFENSE TERMINAL DEFENSE SEGMENT	206,834	206,834	.....
74	BALLISTIC MISSILE DEFENSE MIDCOURSE DEFENSE SEGMENT	862,080	972,780	+ 110,700
75	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM	138,187	138,187	.....
76	BALLISTIC MISSILE DEFENSE SENSORS	230,077	230,077	.....
77	BALLISTIC MISSILE DEFENSE ENABLING PROGRAMS	401,594	401,594	.....
78	SPECIAL PROGRAMS—MDA	321,607	304,677	− 16,930
79	AEGIS BMD	959,066	924,066	− 35,000
80	SPACE SURVEILLANCE & TRACKING SYSTEM	32,129	32,129	.....
81	BALLISTIC MISSILE DEFENSE SYSTEM SPACE PROGRAMS	20,690	20,690	.....
82	BALLISTIC MISSILE DEFENSE COMMAND AND CONTROL, BATTLE MANAGEMENT	439,617	443,517	+ 3,900
83	BALLISTIC MISSILE DEFENSE JOINT WARFIGHTER SUPPORT	47,776	47,776	.....
	BALLISTIC MISSILE DEFENSE INTERGRATION AND OPERATIONS			
84	CENTER (MDIOC)	54,750	54,750	.....
85	REGARDING TRENCH	8,785	8,785	.....
86	SEA BASED X-BAND RADAR (SBX)	68,787	88,787	+ 20,000
87	ISRAELI COOPERATIVE PROGRAMS	103,835	268,735	+ 164,900
88	BALLISTIC MISSILE DEFENSE TEST	293,441	296,441	+ 3,000
89	BALLISTIC MISSILE DEFENSE TARGETS	563,576	531,976	− 31,600
90	HUMANITARIAN DEMINING	10,007	10,007	.....
91	COALITION WARFARE	10,126	10,126	.....
92	DEPARTMENT OF DEFENSE CORROSION PROGRAM	3,893	13,893	+ 10,000
93	TECHNOLOGY MATURATION INITIATIVES	90,266	90,266	.....
94	MISSILE DEFEAT PROJECT	45,000	45,000	.....
95	ADVANCED INNOVATIVE TECHNOLOGIES	844,870	829,870	− 15,000
97	DOD UNMANNED AIRCRAFT SYSTEM (UAS) COMMON DEVELOPMENT	3,320	7,320	+ 4,000
99	WARGAMING AND SUPPORT FOR STRATEGIC ANALYSIS (SSA)	4,000	4,000	.....
102	JOINT C5 CAPABILITY DEVELOPMENT, INTEGRATION AND INTEROPERABILITY	23,642	23,642	.....

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
104	LONG RANGE DISCRIMINATION RADAR	162,012	162,012	
105	IMPROVED HOMELAND DEFENSE INTERCEPTORS	274,148	249,346	−24,802
106	BMD TERMINAL DEFENSE SEGMENT TEST	63,444	63,444	
107	AEGIS BMD TEST	95,012	95,012	
108	BALLISTIC MISSILE DEFENSE SENSOR TEST	83,250	88,150	+4,900
109	LAND-BASED SM-3 [LBSM3]	43,293	43,293	
110	AEGIS SM-3 BLOCK IIA CO-DEVELOPMENT	106,038	106,038	
111	BALLISTIC MISSILE DEFENSE MIDCOURSE DEFENSE SEGMENT TEST	56,481	62,781	+6,300
112	MULTI-OBJECT KILL VEHICLE	71,513		−71,513
114	JOINT ELECTROMAGNETIC TECHNOLOGY [JET] PROGRAM	2,636	2,636	
115	CYBER SECURITY INITIATIVE	969	969	
	TOTAL, DEMONSTRATION & VALIDATION	6,919,519	7,044,374	+124,855
	ENGINEERING & MANUFACTURING DEVELOPMENT			
116	NUCLEAR AND CONVENTIONAL PHYSICAL SECURITY EQUIPMENT	10,324	10,324	
117	PROMPT GLOBAL STRIKE CAPABILITY DEVELOPMENT	181,303	101,303	−80,000
118	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM	266,231	281,231	+15,000
120	JOINT TACTICAL INFORMATION DISTRIBUTION SYSTEM [JTIDS]	16,288	16,288	
121	WEAPONS OF MASS DESTRUCTION DEFEAT CAPABILITIES	4,568	4,568	
122	INFORMATION TECHNOLOGY DEVELOPMENT	11,505	11,505	
123	HOMELAND PERSONNEL SECURITY INITIATIVE	1,658	1,658	
124	DEFENSE EXPORTABILITY PROGRAM	2,920	2,920	
126	DOD ENTERPRISE SYSTEMS DEVELOPMENT AND DEMONSTRATION	12,631	12,631	
128	DEFENSE AGENCY INITIATIVES FINANCIAL SYSTEM	26,657	26,657	
129	DEFENSE RETIRED AND ANNUITANT PAY SYSTEM [DRAS]	4,949	4,949	
130	TRUSTED FOUNDRY	69,000	69,000	
131	DEFENSE-WIDE ELECTRONIC PROCUREMENT CAPABILITY	9,881	8,681	−1,200
132	GLOBAL COMBAT SUPPORT SYSTEM	7,600	7,600	
133	DOD ENTERPRISE ENERGY INFORMATION MANAGEMENT [EEIM]	2,703	2,703	
	TOTAL, ENGINEERING & MANUFACTURING DEVELOPMENT	628,218	562,018	−66,200
	RDT&E MANAGEMENT SUPPORT			
134	DEFENSE READINESS REPORTING SYSTEM [DRRS]	4,678	4,678	
135	JOINT SYSTEMS ARCHITECTURE DEVELOPMENT	4,499	3,099	−1,400
136	CENTRAL TEST AND EVALUATION INVESTMENT DEVELOPMENT	219,199	219,199	
137	ASSESSMENTS AND EVALUATIONS	28,706	28,706	
138	MISSION SUPPORT	69,244	63,044	−6,200
139	JOINT MISSION ENVIRONMENT TEST CAPABILITY [JMETC]	87,080	42,080	−45,000
140	TECHNICAL STUDIES, SUPPORT AND ANALYSIS	23,069	21,469	−1,600
142	JOINT INTEGRATED AIR AND MISSILE DEFENSE ORGANIZATION	32,759	32,759	
143	CLASSIFIED PROGRAM USD(P)		130,000	+130,000
144	SYSTEMS ENGINEERING	32,429	32,429	
145	STUDIES AND ANALYSIS SUPPORT	3,797	2,797	−1,000
146	NUCLEAR MATTERS—PHYSICAL SECURITY	5,302	5,302	
147	SUPPORT TO NETWORKS AND INFORMATION INTEGRATION	7,246	7,246	
148	GENERAL SUPPORT TO USD (INTELLIGENCE)	1,874	1,874	
149	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM	85,754	85,754	
158	SMALL BUSINESS INNOVATION RESEARCH/TECHNOLOGY TRANSFER	2,187	2,187	
159	DEFENSE TECHNOLOGY ANALYSIS	22,650	25,650	+3,000
160	DEFENSE TECHNICAL INFORMATION CENTER [DTIC]	43,834	43,834	
161	R&D IN SUPPORT OF DOD ENLISTMENT, TESTING & EVALUATION	22,240	15,240	−7,000
162	DEVELOPMENT TEST AND EVALUATION	19,541	19,541	
163	MANAGEMENT HEADQUARTERS (RESEARCH & DEVELOPMENT)	4,759	4,759	
164	MANAGEMENT HEADQUARTERS DEFENSE TECHNICAL INFORMATION CENTER [DTIC]	4,400	4,400	
165	BUDGET AND PROGRAM ASSESSMENTS	4,014	4,014	
166	OPERATIONS SECURITY [OPSEC]	2,072	2,072	
167	JOINT STAFF ANALYTICAL SUPPORT	7,464	5,464	−2,000
170	SUPPORT TO INFORMATION OPERATIONS [IO] CAPABILITIES	857	857	

(In thousands of dollars)

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
171	DEFENSE MILITARY DECEPTION PROGRAM OFFICE	916	916	
172	COMBINED ADVANCED APPLICATIONS	15,336	15,336	
173	CYBER INTELLIGENCE	18,523	13,523	−5,000
175	COCOM EXERCISE ENGAGEMENT AND TRAINING TRANSFORMATION	34,384	34,384	
176	MANAGEMENT HEADQUARTERS—MDA	31,160	56,160	+25,000
179	JOINT SERVICE PROVIDER (JSP)	827	827	
9999	CLASSIFIED PROGRAMS	56,799	56,799	
	TOTAL, RDT&E MANAGEMENT SUPPORT	897,599	986,399	+88,800
	OPERATIONAL SYSTEMS DEVELOPMENT			
181	ENTERPRISE SECURITY SYSTEM (ESS)	4,241	3,541	−700
182	REGIONAL INTERNATIONAL OUTREACH & PARTNERSHIP FOR PEAC	1,424	1,424	
183	OVERSEAS HUMANITARIAN ASSISTANCE SHARED INFORMATION SY	287	287	
184	INDUSTRIAL BASE ANALYSIS AND SUSTAINMENT SUPPORT	16,195	31,195	+15,000
185	OPERATIONAL SYSTEMS DEVELOPMENT	4,194	4,194	
186	GLOBAL THEATER SECURITY COOPERATION MANAGEMENT	7,861	7,861	
187	CHEMICAL AND BIOLOGICAL DEFENSE (OPERATIONAL SYSTEMS D)	33,361	33,361	
189	PLANNING AND DECISION AID SYSTEM	3,038	3,038	
190	C4I INTEROPERABILITY	57,501	57,501	
192	JOINT/ALLIED COALITION INFORMATION SHARING	5,935	5,509	−426
196	NATIONAL MILITARY COMMAND SYSTEM-WIDE SUPPORT	575	575	
197	DEFENSE INFO INFRASTRUCTURE ENGINEERING & INTEGRATION	18,041	18,041	
198	LONG HAUL COMMUNICATIONS (DCS)	13,994	13,994	
199	MINIMUM ESSENTIAL EMERGENCY COMMUNICATIONS NETWORK	12,206	12,206	
200	PUBLIC KEY INFRASTRUCTURE (PKI)	34,314	34,314	
201	KEY MANAGEMENT INFRASTRUCTURE (KMI)	36,602	36,602	
202	INFORMATION SYSTEMS SECURITY PROGRAM	8,876	8,876	
203	INFORMATION SYSTEMS SECURITY PROGRAM	159,068	159,068	
204	GLOBAL COMMAND AND CONTROL SYSTEM	24,438	21,438	−3,000
205	JOINT SPECTRUM CENTER (DEFENSE SPECTRUM ORGANIZATION)	13,197	13,197	
207	JOINT INFORMATION ENVIRONMENT (JIE)	2,789	2,789	
209	FEDERAL INVESTIGATIVE SERVICES INFORMATION TECHNOLOGY	75,000	75,000	
210	TELEPORT PROGRAM	657	657	
215	CYBER SECURITY INITIATIVE	1,553	1,553	
220	POLICY R&D PROGRAMS	6,204	3,204	−3,000
221	NET CENTRICITY	17,971	17,971	
223	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	5,415	5,415	
226	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	3,030	3,030	
229	INSIDER THREAT	5,034	5,034	
230	HOMELAND DEFENSE TECHNOLOGY TRANSFER PROGRAM	2,037	7,037	+5,000
236	INTELLIGENCE MISSION DATA (IMD)	13,800		−13,800
238	PACIFIC DISASTER CENTERS	1,754	1,754	
239	DEFENSE PROPERTY ACCOUNTABILITY SYSTEM	2,154	2,154	
240	MANAGEMENT HEADQUARTERS (JCS)	826	826	
241	MQ-9 UAV	17,804	17,804	
244	SPECIAL OPERATIONS AVIATION SYSTEMS ADVANCED DEV	159,143	151,453	−7,690
245	SPECIAL OPERATIONS INTELLIGENCE SYSTEMS DEVELOPMENT	7,958	5,958	−2,000
246	SOF OPERATIONAL ENHANCEMENTS	64,895	54,895	−10,000
247	WARRIOR SYSTEMS	44,885	59,885	+15,000
248	SPECIAL PROGRAMS	1,949	1,949	
249	UNMANNED ISR	22,117	22,117	
250	SOF TACTICAL VEHICLES	3,316	3,316	
251	SOF MARITIME SYSTEMS	54,577	54,577	
252	SOF GLOBAL VIDEO SURVEILLANCE ACTIVITIES	3,841	3,841	
253	SOF OPERATIONAL ENHANCEMENTS INTELLIGENCE	11,834	11,834	
	TOTAL, OPERATIONAL SYSTEMS DEVELOPMENT	985,891	980,275	−5,616
999	CLASSIFIED PROGRAMS	3,270,515	3,219,015	−51,500

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
	TOTAL, RESEARCH, DEVELOPMENT, TEST & EVAL, DEF-WIDE	18,308,826	18,478,028	+169,202

COMMITTEE RECOMMENDED ADJUSTMENTS

The following table details the adjustments recommended by the Committee:

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
3	Basic Research Initiatives	36,654	68,154	+31,500
	Basic research program increase			+31,500
5	National Defense Education Program	69,345	79,345	+10,000
	Program increase: Manufacturing initiative			+10,000
6	Historically Black Colleges and Universities/Minority Institutions	23,572	32,072	+8,500
	Basic research program increase			+8,500
10	Defense Technology Innovation	30,000	28,000	−2,000
	Transfer: To Line # 67 SOF Advanced Technology Development			−2,000
15	Chemical and Biological Defense Program	188,715	193,715	+5,000
	Program increase			+5,000
17	Tactical Technology	313,843	305,843	−8,000
	Improving funds management: Unobligated balances			−8,000
18	Materials and Biological Technology	220,456	214,456	−6,000
	Maintain program affordability: Unjustified growth			−6,000
19	Electronics Technology	221,911	201,911	−20,000
	Maintain program affordability: Unjustified growth			−20,000
22	SOF Technology Development	37,820	42,820	+5,000
	Program increase: Thermal signature management technology			+5,000
25	Combating Terrorism Technology Support	73,002	115,502	+42,500
	Program increase: Anti-tunneling research			+42,500
30	Weapons Technology	71,843	49,643	−22,200
	Restoring acquisition accountability: MD69 redundancy			−22,200
35	Special Program—MDA Technology	83,745	11,795	−71,950
	Program adjustment			−71,950
37	Space Programs and Technology	175,240	160,240	−15,000
	Maintain program affordability: Unjustified growth			−15,000
40	Common Kill Vehicle Technology		71,513	+71,513
	Transfer MOKV from line 112			+71,513
42	Chemical and Biological Defense Program—Advanced Development	127,941	132,941	+5,000
	Program increase			+5,000
45	Joint Capability Technology Demonstrations	148,184	132,184	−16,000
	Maintain program affordability: Delayed contract award			−16,000
48	Manufacturing Technology Program	31,259	41,259	+10,000
	Program increase			+10,000
49	Emerging Capabilities Technology Development	49,895	55,895	+6,000
	Program increase			+6,000
50	Generic Logistics R&D Technology Demonstrations	11,011	25,011	+14,000
	Program increase			+4,000
	Program increase: National security technology accelerator			+10,000
53	Microelectronics Technology Development and Support	97,826	89,826	−8,000
	Improving funds management: Unobligated balances			−8,000
54	Joint Warfighting Program	7,848	4,848	−3,000
	Maintain program affordability: Unjustified growth			−3,000
57	Network-Centric Warfare Technology	428,894	419,894	−9,000
	Program termination: classified			−9,000
61	Quick Reaction Special Projects	74,943	79,943	+5,000
	Maintain program affordability: Forward financing			−5,000
	Program increase			+10,000
63	Engineering Science & Technology	17,659	22,659	+5,000
	Program increase			+5,000
64	Test & Evaluation Science & Technology	87,135	92,135	+5,000
	Program increase			+5,000
65	Operational Energy Capability Improvement	37,329	42,329	+5,000
	Program increase			+5,000
67	SOF Advanced Technology Development	61,620	92,620	+31,000

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
	Transfer: From Line # 10 Defense Technology Innovation			+2,000
	Program increase			+29,000
68	Nuclear and Conventional Physical Security Equipment RDT&E ADC&P	28,498	26,498	−2,000
	Improving funds management: Unobligated balances			−2,000
72	Environmental Security Technical Certification Program	52,491	46,491	−6,000
	Improving funds management: Unobligated balances			−6,000
74	Ballistic Missile Defense Midcourse Defense Segment	862,080	972,780	+110,700
	Program increase			+110,700
78	Special Programs—MDA	321,607	304,677	−16,930
	Program adjustment			−16,930
79	AEGIS BMD	959,066	924,066	−35,000
	Restoring acquisition accountability: SM–3 Block IIA FTM–29 flight test integration not required due to program delays			−10,000
	Maintain program affordability: SM–3 Block IIA excess cost growth			−25,000
82	Ballistic Missile Defense Command and Control, Battle Management and Communication	439,617	443,517	+3,900
	Program increase: FTG–11 Test acceleration			+3,900
86	Sea Based X–Band Radar (SBX)	68,787	88,787	+20,000
	Reliability improvements and maintenance			+20,000
87	Israeli Cooperative Programs	103,835	268,735	+164,900
	Israeli Upper tier			+29,100
	Israeli Arrow Program			+56,500
	Short range ballistic missile defense			+79,300
88	Ballistic Missile Defense Test	293,441	296,441	+3,000
	Tech refresh			+3,000
89	Ballistic Missile Defense Targets	563,576	531,976	−31,600
	Restoring acquisition accountability: MRBM T3C2 contract award delay			−40,900
	Program increase: FTG–11 Test acceleration			+9,300
92	Department of Defense Corrosion Program	3,893	13,893	+10,000
	Program increase			+10,000
95	Advanced Innovative Technologies	844,870	829,870	−15,000
	Maintain program affordability: Program efficiencies			−15,000
97	Department of Defense (DOD) Unmanned System Common Development	3,320	7,320	+4,000
	Program increase			+4,000
105	Improved Homeland Defense Interceptors	274,148	249,346	−24,802
	Restoring acquisition accountability: MD97 FTG–18 RKV flight test unit long lead materials early to need			−4,000
	Restoring acquisition accountability: MD97 C3 booster lack of requirements and acquisition strategy			−20,802
108	Ballistic Missile Defense Sensor Test	83,250	88,150	+4,900
	Program increase: FTG–11 Test acceleration			+4,900
111	Ballistic Missile Defense Midcourse Segment Test	56,481	62,781	+6,300
	Program increase: FTG–11 Test acceleration			+6,300
112	Multi-Object Kill Vehicle	71,513		−71,513
	Transfer MOKV to line 40			−71,513
117	Prompt Global Strike Capability Development	181,303	101,303	−80,000
	Maintain program affordability: Rephase due to schedule slip			−80,000
118	Chemical and Biological Defense Program—EMD	266,231	281,231	+15,000
	Program increase: Chemical Weapon detection			+15,000
131	Defense-Wide Electronic Procurement Capabilities	9,881	8,681	−1,200
	Improving funds management: Prior year carryover			−1,200
135	Joint Systems Architecture Development	4,499	3,099	−1,400
	Improving funds management: Prior year carryover			−1,400
138	Mission Support	69,244	63,044	−6,200
	Improving funds management: Prior year carryover			−6,200
139	Joint Mission Environment Test Capability (JMETC)	87,080	42,080	−45,000
	Maintain program affordability: Eliminate program growth			−45,000
140	Technical Studies, Support and Analysis	23,069	21,469	−1,600

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
	Improving funds management: Prior year carryover			−1,600
143	Classified Program USD(P)		130,000	+130,000
	Classified Adjustment			+130,000
145	Studies and Analysis Support—OSD	3,797	2,797	−1,000
	Maintain program affordability: Eliminate program growth			−1,000
159	Defense Technology Analysis	22,650	25,650	+3,000
	Program increase			+3,000
161	R&D in Support of DOD Enlistment, Testing and Evaluation	22,240	15,240	−7,000
	Maintain program affordability: Eliminate program growth			−7,000
167	Joint Staff Analytical Support	7,464	5,464	−2,000
	Improving funds management: Prior year carryover			−2,000
173	Cyber Intelligence	18,523	13,523	−5,000
	Maintain program affordability: Eliminate program growth			−5,000
176	Management HQ—MDA	31,160	56,160	+25,000
	Cyber training and enhancements			+25,000
181	Enterprise Security System (ESS)	4,241	3,541	−700
	Improving funds management: Prior year carryover			−700
184	Industrial Base Analysis and Sustainment Support	16,195	31,195	+15,000
	Program increase: National security technology accelerator			+15,000
192	Joint/Allied Coalition Information Sharing	5,935	5,509	−426
	Improving funds management: Prior year carryover			−426
204	Global Command and Control System	24,438	21,438	−3,000
	Maintain program affordability: Eliminate program growth			−3,000
220	Policy R&D Programs	6,204	3,204	−3,000
	Improving funds management: Prior year carryover			−3,000
230	Homeland Defense Technology Transfer Program	2,037	7,037	+5,000
	Program increase			+5,000
236	Intelligence Mission Data (IMD)	13,800		−13,800
	Program Termination			−13,800
244	Aviation Systems	159,143	151,453	−7,690
	Maintain program affordability: RF Countermeasures MSB slip 6 months, excess test money			−6,800
	Improving funds management: Prior year carryover for Special Operation mission planning environment			−890
245	Intelligence Systems Development	7,958	5,958	−2,000
	Maintain program affordability: Contract award delay			−2,000
246	Operational Enhancements	64,895	54,895	−10,000
	Improving funds management: Prior year carryover			−10,000
247	Warrior Systems	44,885	59,885	+15,000
	Program increase			+12,000
	Program increase: Visual augmentation devices			+3,000
	Classified Programs	3,270,515	3,219,015	−51,500
	Classified Adjustment			−51,500

Quantum Computing.—The Committee is aware of the National Institute of Standards and Technology [NIST] report on quantum computing technology. Additionally, the Committee is conscious of the work done by the Defense Advanced Research Projects Agency [DARPA] in the Quantum Information Science and Technology [QuIST] program to establish the first quantum key distribution network. The Committee believes more research and development by our defense national research organizations is warranted. The Committee encourages the Director of DARPA and the Secretary of Defense to work with the research labs to implement a university-based cybersecurity laboratory and photonics foundry with close involvement with industry partners, State government and the Federal Government to continue development of quantum computing capability.

High Energy Laser.—The Committee is concerned with the funding levels for the primary test and evaluation facility for high energy laser [HEL] systems across the Department of Defense. With directed energy interest and work increasing in the third offset strategy, the Committee recommends the Department review the funding levels, identify, and correct shortfalls as necessary.

Defense Innovation Unit-Experimental office [DIUX].—The Committee recommends $28,000,000 for the Defense Technology Innovation program to strengthen and build relationships with Silicon Valley technology firms with expertise in technology innovation. The Committee understands this is a high priority program for the Secretary of Defense. In order to insure visibility and transparency of the execution of these funds, the Committee requests quarterly updates on the Defense Innovation Unit-Experimental office and their efforts in leveraging innovation for the Department of Defense.

Manufacturing Technology Program.—The Committee understands that metal castings play a significant role in ensuring Warfighter preparedness and that investment is needed in castings technology to maintain technological superiority in this advanced manufacturing industry. Therefore, the Committee recommends an additional $10,000,000 to support this program.

Cloud-based Information Technology Solutions.—The Committee is encouraged by the Department Chief Information Officer's decision to pursue commercial, cloud-based solutions and systems. However, the Department of Defense Inspector General report (Report No. DODIG–2016–038) identified several concerns. The Committee directs the Department Chief Information Officer to complete a report and submit it to the congressional defense committees 120 days after enactment of this act. This report shall include current plans for the expansion of commercial cloud computing to leverage paying for only the services consumed, plans for developing security guidelines that encourage partnerships with commercial cloud providers, any factors delaying or inhibiting the expansion of commercial cloud computing usage, and the cost savings achieved in fiscal year 2016 by the utilization of commercial cloud computing services.

Conventional Prompt Global Strike.—The Committee supports the Department of Defense program to develop and demonstrate technologies that advance the conventional prompt global strike capability. The Committee is aware of ongoing test review efforts and understands that the Department of Defense plans to complete additional testing in the near term. The Committee further notes that Congress has appropriated $1,073,276,000 through fiscal year 2016 and the Committee recommends $101,303,000 in fiscal year 2017, a $12,643,000 increase above fiscal year 2016 enacted amounts. The Committee encourages the Department of Defense to maintain the currently programmed funding profile of $881,620,000 from fiscal years 2018 through 2020, given the strategic importance of the program, and urges the Department of Defense to finalize manufacturing and testing of the hypersonic glide body and booster.

Trusted Microelectronics Development and Support.—The Committee is concerned with maintaining supply chain assurance against counterfeit parts and ensuring ready access to trusted

microelectronics. In April 2016, the Department of Defense and Global Foundries agreed to a 3-year procurement strategy for trusted parts; the Committee does not have confidence in the long-term roadmap to establish a future trusted microelectronics solution. While the fiscal year 2017 budget request includes $47,800,000 to establish a new trust approach in this arena, the Committee is concerned with this insufficient level of funding and the time needed to validate potential solutions. Therefore, the Committee directs the Secretary of Defense to provide a quarterly updates on efforts to maintain a trusted microelectronics capability within the U.S.

Unmanned Aircraft System [UAS] Common Development.—The Committee notes the designation by the Federal Aviation Administration [FAA] of the UAS national test sites and selection of the FAA UAS Center of Excellence to expand the use of UAS in the National Airspace System [NAS]. The Committee recognizes that research activities will lead to policies and standards governing future domestic UAS operations, including Department of Defense operations. The Committee recommends an additional $4,000,000 for Unmanned Aircraft System Common Development and urges the Secretary of Defense to coordinate with the Administrator of Federal Aviation Administration in the development and demonstration of common UAS standards, architectures and technologies to ensure a consistent, nationwide approach to airspace integration across both civil and public sectors.

Department of Defense Small Business Innovation Research [SBIR].—The Committee recognizes the importance of the Small Business Innovation Research [SBIR] program and its success in commercialization from federally funded research and development projects. The SBIR program creates opportunities for domestic small businesses to engage in Federal research and development in an effort to create new jobs and markets for advanced technologies. The Committee encourages the Department of Defense to continue placing an increased focus on firms new to the SBIR program and those companies that employ fewer than 50 people. The Committee also believes that SBIR should provide resources to assist these firms, especially in the area of government contracting and business accounting. The Committee believes the Department of the Navy's SBIR program is a successful model, especially the Navy Program Executive Office Submarine, which could be used as a benchmark for SBIRs programs across the Department of Defense enterprise.

Office of Personnel Management [OPM] Breach.—The Committee supports the Department of Defense's request of $75,000,000 for the Federal Investigative Services Information Technology program to develop a new database to respond to the theft of Federal workers personal data as a result of the security breach at OPM. The Committee encourages the Secretary of Defense to invest in a new Background Investigation Information Technology System to ensure that the privacy and personal data of Federal employees is protected from current and future vulnerabilities. The Committee directs the Secretary of Defense to provide quarterly updates on the future technology development program and its follow on acquisition effort.

Sustained-Release Drug Delivery.—The Committee is aware of ongoing efforts to develop technologies to enable ultra-long acting pharmacokinetics to respond to threats and improve individual readiness and total force health protection. The Committee encourages the Defense Advanced Research Projects Agency [DARPA] to prioritize research into delivery systems to increase access to treatment though the development of long-acting oral therapies to improve healthcare access, delivery, and outcomes. A system that could administer therapies once monthly to once every 6 months would greatly improve patient adherence and optimize the pharmacokinetics of therapies currently provided once or more per day. Oral long-acting therapies are particularly advantageous in resource-constrained environments and likely to include significant operational, logistics, and cost benefits.

Cybersecurity Research Automated Cyber Exploitation and Defense.—The Committee is concerned that current approaches to identify cybersecurity vulnerabilities in software and systems are largely manual, slow and costly, and leave our military and intelligence systems at risk. The Committee recognizes the value of automated exploit generation and vulnerability identification technologies for rapidly identifying security-critical vulnerabilities in off-the-shelf systems, such as those exemplified in the Cyber Grand Challenge. Therefore, the Committee directs funding within the Cyber Security Research program to support research in automated exploit generation, exploit hardening, and vulnerability identification capabilities of systems when source code is not available, and to focus on implementation, integration, and software tooling.

Secure Networks of Systems.—The Committee recognizes that the Department's aircraft, ships, submarines, vehicles, and energy systems are computer-networked systems of systems that are increasingly autonomous in these complex systems. Every piece of software, hardware, and network is a potential cybersecurity attack point. The Committee notes that attackers will target all components to achieve their objective, and that effective defenses require interdisciplinary expertise in cybersecurity offense and defense in hardware, software, networks, and autonomous systems covering both traditional computing devices and cyber-physical systems that interact with the physical world. Therefore, the Committee directs the Secretary of Defense to use funds previously appropriated in the Department of Defense Appropriations Act, 2016 (Public Law 114–113) within the Defense Technology Analysis program to support institutions with strong cybersecurity, cyber-physical, and networks of systems research programs that will develop methods to identify vulnerabilities in large networked systems, rapidly prototype and build security prototypes and tools, and with institutional capabilities to transfer basic research into Department of Defense mission areas and platforms.

Cyber Data Protection.—As a result of the recent OPM breach, the Committee is concerned with threats accessing classified data and personally identifiable information [PII]. The Committee is concerned that traditional network defense actions are insufficient to protect data assets from unauthorized or malicious access, manipulation, destruction, and exfiltration. Therefore, the Committee directs the Secretary of Defense to undertake a comprehensive re-

view of classified systems and systems that have PII information, and validate that protection measures are in place to insure data integrity and appropriate access. The review should include an examination of measures to defeat deletion and exfiltration. Not more than 30 days after completing the review, the Secretary of Defense shall report to the congressional defense committees on the findings.

MISSILE DEFENSE AGENCY

Integrated Master Test Plan.—The fiscal year 2017 President's budget request includes $1,232,784,000 for Missile Defense Agency [MDA] test events, an increase of $82,526,000 over amounts enacted in fiscal year 2016. The Committee recognizes the importance of a fully integrated test program to MDA's mission and continues to support a robust test program to credibly demonstrate and validate the ballistic missile defense system performance. Therefore, the Committee is concerned by MDA's proposal to defer the operational test for the Ground-based Midcourse Defense System until fiscal year 2018, and recommends an additional $24,400,000 to accelerate that flight test, FTG–11, into fiscal year 2017, as previously planned.

Further, the Committee is concerned by the continued volatility in MDA's test schedule, and the discrepancies between planned and actually executed test events. The Committee understands that numerous factors can impact the execution of test events in any given year, but strongly believes that a stronger synchronization between allocation of budgetary resources and management of the test plan would lead to greater stability, demonstrated performance and cost savings. The Committee notes that 3 months after submission of the fiscal year 2017 President's budget, the final Integrated Master Test Plan had not been approved. The Committee directs that not more than 75 percent for funds requested for testing in fiscal year 2017 may be obligated or expended until the Director, Missile Defense Agency, in conjunction with the Director, Operational Test and Evaluation, submits a plan to the congressional defense committees delineating steps to ensure greater synchronization between the budget and the Integrated Master Test Plan.

Redesigned Kill Vehicle [RKV].—The fiscal year 2017 President's budget request includes $181,900,000 for continued development of the Redesigned Kill Vehicle. The Committee recommends full funding of this request and notes its previous strong support for this program. The Committee notes that with submission of the fiscal year 2017 President's budget, the Missile Defense Agency [MDA] changed its acquisition strategy for the RKV from a deliberately sequenced acquisition using research and development and procurement funding to a schedule-driven acquisition using only research and development funding and incremental funding authorities. Based on past experience, the Committee has significant concerns with this approach as it eschews best acquisition practices and relinquishes transparency, auditability, accountability, and affordability for the sake of expedience.

In addition, the Committee notes MDA's stated intent to compete follow-on production of the RKV, but questions MDA's ability to do so given the significant number of RKVs MDA plans to award with

existing contract vehicles, to include seven Inert Operating Kill Vehicles, three test articles, and eight initial production RKVs. The Committee notes that the purpose of initial production is to establish an initial production base for a system and to provide an efficient ramp to full rate production, and is concerned that the RKV acquisition strategy jeopardizes this by delaying the transition to full rate production through competition.

The Committee supports the development of seven Inert Operating Kill Vehicles, three test articles and no more than four initial production RKVs, consistent with previously established thresholds for initial production. The Committee does not support the use of research and development funds for additional RKV production rounds. To support transition to competition for the RKV, the Committee recommends $50,000,000 in Procurement, Defense-wide above the budget request only for RKV advanced procurement and expects MDA to program procurement funds for RKV production accordingly.

Directed Energy.—The fiscal year 2017 President's budget request includes $23,744,000 for the competitive development of two prototype airborne laser demonstrator platforms with a flight demonstration planned by fiscal year 2020. The Committee notes the potential ability of directed energy concepts to augment the kinetic capability of the ballistic missile defense system and recommends full funding for this effort. However, the Committee is aware of the size, weight and power challenges of integrating a laser onto an airborne platform, as well as of questions surrounding the concept of operations of such a platform. Therefore, the Committee directs that funds be limited to this demonstrator effort only, and that no funds may be obligated or expended for follow-on development efforts or programs.

SM–3 Block IIA Interceptor.—The fiscal year 2017 President's budget request includes $254,700,000 for the continued manufacturing of seventeen SM–3 Block IIA interceptors as well as $213,300,000 for continued SM–3 Block IIA development and $106,038,000 for SM–3 Block IIA co-development with the Government of Japan. The Committee notes that since the previous budget request, programmed costs for manufacturing of the initial SM–3 Block IIA interceptors have increased 40 percent and costs for SM–3 Block IIA development have increased 29 percent. Further, delivery of SM–3 Block IIA interceptors has been delayed by over three fiscal quarters, resulting in at least one missed flight test.

As previously stated in Senate Report 114–63 and in Senate Report 113–211, the Committee has grave reservations with MDA's acquisition approach for SM–3 Block IIA interceptors and its inability to control costs for this program, which are in direct contradiction to MDA's stated goals of "getting ahead of the cost curve," as the Director, MDA testified before the Committee. The Committee recognizes the importance of the SM–3 Block IIA to the European Phased Adaptive Approach and continues to support the program; however, the Committee believes that greater acquisition rigor is required to contain program costs and manage the industrial base, which produces the SM–3 Block IIA interceptor concurrently with the SM–3 Block IB interceptor. Therefore, the Committee directs the Director, Missile Defense Agency, in coordination

with the Assistant Secretary of the Navy (Research, Development and Acquisition), to provide with the fiscal year 2018 President's budget request an acquisition objective for the SM–3 Block IB and Block IIA programs, as well as a report on steps taken by MDA and the Department of the Navy to control costs while improving program performance.

Availability of Solid Rocket Motors for Testing.—The Committee notes the Missile Defense Agency's reliance on solid rocket motors [SRM] for target vehicles used in tests and is concerned with potential cost increases for these motors. Therefore, the Committee directs the Assistant Secretary of the Air Force (Acquisition) in conjunction with the Director, Missile Defense Agency [MDA], to provide a report to the congressional defense committees, not later than 90 days after enactment of this act, detailing costs of refurbished strategic solid rocket motors for MDA target vehicles and evaluating options to control costs. The report should include an evaluation of the potential development of a modern first stage solid rocket motor for use in these targets and disclose whether such a development could lower the cost of future target vehicles, strengthen the strategic SRM industrial base and reduce risk in the Ground-Based Strategic Deterrent program.

OPERATIONAL TEST AND EVALUATION, DEFENSE

Appropriations, 2016	$188,558,000
Budget estimate, 2017	178,994,000
Committee recommendation	186,994,000

The Committee recommends an appropriation of $186,994,000. This is $8,000,000 above the budget estimate.

COMMITTEE RECOMMENDED PROGRAM

The following table summarizes the budget estimate for this appropriation, the Committee recommendation, and the Committee recommended adjustments to the budget estimate:

(In thousands of dollars)

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
	RDT&E Management Support			
1	Operational Test and Evaluation	78,047	78,047	
2	Live Fire Test and Evaluation	48,316	48,316	
3	Operational Test Activities and Analyses	52,631	60,631	+8,000
	Program increase: Threat resource analysis	.....	.....	+8,000
	Total, Operational Test and Evaluation, Defense	178,994	186,994	+8,000

TITLE V

REVOLVING AND MANAGEMENT FUNDS

DEFENSE WORKING CAPITAL FUNDS

Appropriations, 2016	$1,738,768,000
Budget estimate, 2017	1,371,613,000
Committee recommendation	1,561,613,000

The Committee recommends an appropriation of $1,561,613,000. This is $190,000,000 above the budget estimate.

COMMITTEE RECOMMENDED PROGRAM

The following table summarizes the budget estimate for this appropriation, the Committee recommendation, and the Committee recommended adjustments to the budget estimate:

[In thousands of dollars]

Item	2017 budget estimate	Committee recommendation	Change from budget estimate
Supply Management	56,469	56,469	
Arsenal Initiative		140,000	+140,000
Total, Defense Working Capital Fund, Army	56,469	196,469	+140,000
Supplies and Materials	63,967	63,967	
Total, Defense Working Capital Fund, Air Force	63,967	63,967	
Defense Logistics Agency	37,132	37,132	
Total, Defense Working Capital Fund, Defense-wide	37,132	37,132	
Commissary Operations	1,214,045	1,264,045	+50,000
Commissary Increase			+50,000
Total, Defense Working Capital Fund, Defense-wide, DECA	1,214,045	1,264,045	+50,000
Grand Total, Defense Working Capital Funds	1,371,613	1,561,613	+190,000

Meals Ready-to-Eat.—The Committee recommends full funding for the Defense Logistics Agency's request of 2.5 million cases of Meals Ready to Eat and reaffirms its support for the War Reserve stock objective of 5.0 million cases and the minimum sustainment rate for the industrial base.

Commissary Funding.—The Committee recognizes the significant and lasting benefits that commissaries provide in support of servicemembers and their families. Commissaries help promote healthy base communities by guaranteeing access to fresh foods, including fruits and vegetables, at low prices to military families. Better nutrition and food choices are the first steps toward improved health outcomes and lower healthcare costs. Commissaries also help military families stretch their budgets and provide stable employment for servicemembers' families and veterans.

It is understood that the Department of Defense would like to make commissaries more self-sustaining. The Committee supports finding efficiencies to lower the operational cost of commissaries,

and is willing to review and consider new ways to administer the commissaries. However, any reduction should not impact hours of service, the number of stores, or savings to customers. The Committee strongly believes that commissaries must be kept open, affordable, and accessible to military families.

NATIONAL DEFENSE SEALIFT FUND

Appropriations, 2016	$474,164,000
Budget estimate, 2017	
Committee recommendation	

The Committee recommends no appropriation for the National Defense Sealift Fund. This is equal to the budget estimate since the Secretary of the Navy realigned funding from this account into Operation and Maintenance, Navy, and Research, Development, Test and Evaluation, Navy in the request.

TITLE VI

OTHER DEPARTMENT OF DEFENSE PROGRAMS

DEFENSE HEALTH PROGRAM

Appropriations, 2016	$32,329,490,000
Budget estimate, 2017	33,467,516,000
Committee recommendation	33,989,723,000

The Committee recommends an appropriation of $33,989,723,000. This is $522,207,000 above the budget estimate.

COMMITTEE RECOMMENDED PROGRAM

The following table summarizes the budget estimate for this appropriation, the Committee recommendation, and the Committee recommended adjustments to the budget estimate:

(In thousands of dollars)

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
	DEFENSE HEALTH PROGRAM			
	OPERATION AND MAINTENANCE			
10	IN-HOUSE CARE	9,240,160	9,168,329	−71,831
20	PRIVATE SECTOR CARE	15,738,759	15,581,371	−157,388
30	CONSOLIDATED HEALTH SUPPORT	2,367,759	2,274,627	−93,132
40	INFORMATION MANAGEMENT	1,743,749	1,743,749	
50	MANAGEMENT ACTIVITIES	311,380	309,148	−2,232
60	EDUCATION AND TRAINING	743,231	692,341	−50,890
70	BASE OPERATIONS/COMMUNICATIONS	2,086,352	2,079,352	−7,000
	SUBTOTAL, OPERATION AND MAINTENANCE	32,231,390	31,848,917	−382,473
	PROCUREMENT			
150	INITIAL OUTFITTING	20,611	20,611	
160	REPLACEMENT AND MODERNIZATION	360,727	358,007	−2,720
180	JOINT OPERATOINAL MEDICINE INFORMATION SYSTEM	2,413	2,413	
200	DOD HEALTH MANAGEMENT SYSTEM MODERNIZATION	29,468	29,468	
	SUBTOTAL, PROCUREMENT	413,219	410,499	−2,720
	RESEARCH DEVELOPMENT TEST AND EVALUATION			
80	RESEARCH	9,097	9,097	
90	EXPLORATORY DEVELOPMENT	58,517	58,517	
100	ADVANCED DEVELOPMENT	221,226	221,226	
110	DEMONSTRATION/VALIDATION	96,602	96,602	
120	ENGINEERING DEVELOPMENT	364,057	364,057	
130	MANAGEMENT AND SUPPORT	58,410	58,410	
140	CAPABILITIES ENHANCEMENT	14,998	14,998	
150	UNDISTRIBUTED MEDICAL RESEARCH		907,400	+907,400
	SUBTOTAL, RESEARCH DEVELOPMENT TEST AND EVALUATION	822,907	1,730,307	+907,400
	TOTAL, DEFENSE HEALTH PROGRAM	33,467,516	33,989,723	+522,207

COMMITTEE RECOMMENDED ADJUSTMENTS

The following table details the adjustments recommended by the Committee:

[In thousands of dollars]

Item	2017 budget estimate	Committee recommendation	Change from budget estimate
Operation and Maintenance	32,231,390	31,848,917	−382,473
In-House Care	9,240,160	9,168,329	−71,831
Improving funds management: Overestimation of MTF utilization	.....	.....	−63,200
Improving funds management: Printing and reproduction excess growth	.....	.....	−2,500
Improving funds management: Travel unjustified growth	.....	.....	−6,131
Private Sector Care	15,738,759	15,581,371	−157,388
Improving funds management: Historical underexecution	.....	.....	−157,388
Consolidated Health Care	2,367,759	2,274,627	−93,132
Improving funds management: Historical underexecution	.....	.....	−93,132
Information Management/IT	1,743,749	1,743,749	.....
Management Activities	311,380	309,148	−2,232
Improving funds management: Travel excess growth	.....	.....	−2,232
Education and Training	743,231	692,341	−50,890
Improving funds management: Historical underexecution	.....	.....	−25,517
Budget documentation disparity: HPSP reduction not accounted for	.....	.....	−25,373
Base Operations and Communications	2,086,352	2,079,352	−7,000
Improving funds management: Visual information systems underexecution	.....	.....	−2,000
Improving funds management: Telecommunications contract requirements unjustified growth	.....	.....	−5,000
Procurement	413,219	410,499	−2,720
Restoring acquisition accountability: Excess price growth	.....	.....	−2,720
Research and Development	822,907	1,730,307	+907,400
Restore core funding reduction	.....	.....	+225,900
Peer-reviewed breast cancer research	.....	.....	+120,000
Peer-reviewed cancer research	.....	.....	+60,000
Peer-reviewed epilepsy research	.....	.....	+7,500
Peer-reviewed medical research	.....	.....	+300,000
Peer-reviewed ovarian cancer research	.....	.....	+10,000
Peer-reviewed prostate cancer research	.....	.....	+64,000
Peer-reviewed traumatic brain injury and psychological health research	.....	.....	+60,000
Joint warfighter medical research	.....	.....	+50,000
Orthotics and prosthetics outcomes research	.....	.....	+10,000
Total	33,467,516	33,989,723	+522,207

Defense Health Program Reprogramming Procedures.—The Committee remains concerned regarding the transfer of funds from the In-House Care budget sub-activity to pay for contractor-provided medical care. To limit such transfers and improve oversight within the Defense Health Program operation and maintenance account, the Committee includes a provision which caps the funds available for Private Sector Care under the TRICARE program subject to prior approval reprogramming procedures. The provision and accompanying report language should not be interpreted by the Department as limiting the amount of funds that may be transferred to the Direct Care System from other budget activities within the Defense Health Program. In addition, the Committee continues to designate the funding for the In-House Care budget sub-activity as a special interest item. Any transfer of funds from the In-House Care budget sub-activity into the Private Sector Care budget sub-activity or any other budget sub-activity will require the Secretary of Defense to follow prior approval reprogramming procedures for operation and maintenance funds.

The Committee directs the Secretary of Defense to provide written notification to the congressional defense committees of cumulative transfers in excess of $10,000,000 out of the Private Sector Care budget sub-activity not later than fifteen days after such a transfer. The Committee further directs the Assistant Secretary of Defense (Health Affairs) to provide quarterly reports to the congressional defense committees on budget execution data for all of the Defense Health Program budget activities and to adequately reflect changes to the budget activities requested by the services in future budget submissions.

Carryover.—For fiscal year 2017, the Committee recommends 1 percent carryover authority for the operation and maintenance account of the Defense Health Program. The Committee directs the Assistant Secretary of Defense (Health Affairs) to submit a detailed spending plan for any fiscal year 2016 designated carryover funds to the congressional defense committees not less than 30 days prior to executing the carryover funds.

Electronic Health Record.—The Committee remains concerned about the progress being made by the Departments of Defense and Veterans Affairs to develop fully interoperable electronic health records. The ultimate goal of the efforts of both Departments is to have systems that can exchange data in a meaningful way and be used in a dynamic environment to improve patient care and facilitate smoother transitions for servicemembers from military service to veteran status.

The Committee appreciates the Department's improvements in providing information on prior year budgets and expenditures on its electronic health record as well as an equivalent level of detail for the fiscal year 2017 budget request. The Committee directs the Program Executive Officer [PEO] for the Defense Healthcare Management Systems Modernization [DHMSM] program to provide quarterly reports to the congressional defense committees and the Government Accountability Office on the cost and schedule of the program, to include milestones, knowledge points, and acquisition timelines, as well as quarterly obligation reports. These reports should also include the following: (1) any changes to the deployment timeline, including benchmarks, for full operating capability; (2) any refinements to the cost estimate for full operating capability and the total life cycle cost of the project; (3) an assurance that the acquisition strategy will comply with the acquisition rules, requirements, guidelines, and systems acquisition management practices of the Federal Government; (4) the status of the effort to achieve interoperability between the electronic health record systems of the Department of Defense and the Department of Veterans Affairs, including the scope, cost, schedule, mapping to health data standards, and performance benchmarks of the interoperable record; and (6) the progress toward developing, implementing, and fielding the interoperable electronic health record throughout the two Departments' medical facilities. The Committee further directs the PEO DHMSM to continue briefing the House and Senate Defense Appropriations Subcommittees on a quarterly basis, coinciding with the report submission. Given that full deployment of the new electronic health record is not scheduled until fiscal year 2022, the Committee expects the Department to continue working on interim

modifications and enhancements to the current system to improve interoperability in the short-term.

The Committee also directs the Department of Defense to provide written notification to the Committees on Appropriations of the House and Senate prior to obligating any contract or combination of contracts in excess of $5,000,000.

Finally, the Committee directs the Interagency Program Office to continue to provide quarterly briefings to the House and Senate Subcommittees on Appropriations for Defense and Military Construction, Veterans Affairs, and Related Agencies regarding standards development, how those standards are being incorporated by both DOD and VA and the progress of interoperability between the two Departments. In an effort to ensure government-wide accountability, the Committee also directs the DOD in coordination with the VA to provide the Federal Chief Information Officer of the United States with monthly updates on progress made by the two Departments to reach interoperability and modernize their respective electronic health records.

Traumatic Brain Injury [TBI]/Psychological Health.—The Committee recommends $60,000,000 above the fiscal year 2017 budget request for continued research into treatment, prevention, and detection of traumatic brain injuries and improved psychological health. The Committee directs the Assistant Secretary of Defense (Health Affairs) to submit a report to the congressional defense committees within 180 days of enactment of this act on expenditure and obligation data of additional funding added by Congress for psychological health and traumatic brain injury. This report should include information on agreements made with other government agencies.

Additionally, the Committee is aware of recent medical advances in drug development for neurodegenerative diseases and encourages the Department to further its research into developing drugs that reverse, halt, or slow the neurodegenerative process associated with traumatic brain injury. The Committee is also aware of advances in diagnostic and mapping tools developed to better understand the cellular extent of TBI. These advances could lead to more effective protective gear that minimizes or eliminates the damage associated with TBI, and the Committee encourages the Department to continue its research in these areas.

Peer-Reviewed Medical Research Program.—The Committee recommends $300,000,000 for the Peer-Reviewed Medical Research Program. The Committee directs the Secretary of Defense, in conjunction with the Service Surgeons General, to select medical research projects of clear scientific merit and direct relevance to military health. Research areas considered under this funding are restricted to: acute lung injury, amyotrophic lateral sclerosis, antimicrobial resistance, arthritis, autism, burn pit exposure, chronic migraine and post-traumatic headache, congenital heart disease, constrictive bronchiolitis, diabetes, diarrheal diseases, dystonia, early trauma thermal regulation, eating disorders, emerging infectious diseases, focal segmental glomerulosclerosis, Fragile X, Guillain-Barré syndrome, gulf war illness, hearing restoration, hepatitis B and C, hereditary angioedema, hydrocephalus, immunomonitoring of intestinal implants, inflammatory bowel dis-

eases, influenza, integrative medicine, interstitial cystitis, malaria, metals toxicology, mitochondrial disease, multiple sclerosis, musculoskeletal disorders, nanomaterials for bone regeneration, neurofibromatosis, non-opioid pain management, orthopedics, pancreatitis, Parkinson's, pathogen-inactivated dried cryoprecipitate, polycystic kidney disease, post-traumatic osteoarthritis, pulmonary fibrosis, reconstructive transplantation, respiratory health, Rett syndrome, rheumatoid arthritis, scleroderma, sleep disorders, spinal cord injury, spinal muscular atrophy, sustained-release drug delivery, tinnitus, tuberculosis, tuberous sclerosis complex, vaccine development for infectious disease, vascular malformations, vision, and women's heart disease. The Committee emphasizes that the additional funding provided under the Peer-Reviewed Medical Research Program shall be devoted only to the purposes listed above.

Joint Warfighter Medical Research Program.—The Committee recommends $50,000,000 for the Joint Warfighter Medical Research Program. Funds shall be used to augment and accelerate high priority Department of Defense and service medical requirements and to continue prior year initiatives that are close to achieving their objectives and yielding a benefit to military medicine. These funds shall not be used for new projects or basic research, and they shall be awarded at the discretion of the Secretary of Defense following a review of medical research and development gaps, as well as unfinanced medical requirements of the services. Further, the Committee directs the Assistant Secretary of Defense (Health Affairs) to provide a report not later than 180 days after the enactment of this act to the congressional defense committees, which lists the projects that receive funding. The report should include the funding amount awarded to each project, a thorough description of each project's research, and the benefit the research, will provide to the Department of Defense.

Peer-Reviewed Cancer Research Programs.—The Committee recommends $120,000,000 for the peer-reviewed breast cancer research program, $64,000,000 for the peer-reviewed prostate cancer research program, $10,000,000 for the peer-reviewed ovarian cancer research program, and $60,000,000 for the peer-reviewed cancer research program that would research cancers not addressed in the aforementioned programs currently executed by the Department of Defense.

The funds provided in the peer-reviewed cancer research program are directed to be used to conduct research in the following areas: brain cancer, colorectal cancer, immunotherapy, kidney cancer, listeria-based regimens for cancer, liver cancer, melanoma, mesothelioma, neuroblastoma, pancreatic cancer, pediatric brain tumors, and stomach cancer.

The funds provided under the peer-reviewed cancer research program shall be used only for the purposes listed above. The Committee directs the Assistant Secretary of Defense (Health Affairs) to provide a report not later than 180 days after the enactment of this act to the congressional defense committees on the status of the peer-reviewed cancer research program. For each research area, the report should include the funding amount awarded, the progress of the research, and the relevance of the research to servicemembers.

The Committee commends the Department for ensuring that projects funded through the various peer-reviewed cancer research programs maintain a focus on issues of significance to military populations and the warfighter. This includes promoting collaborative research proposals between Department of Defense researchers and non-military research institutions. These collaborations leverage the knowledge, infrastructure, and access to clinical populations that the partners bring to the research effort. Additionally, promoting these collaborations provides a valuable recruitment and retention incentive for military medical and research personnel. The Committee encourages the Department to emphasize the importance of these collaborations between military and non-military researchers throughout the peer-review process.

Collaboration on Cancer Research.—The Committee recognizes that the close cooperation between the John P. Murtha Cancer Center at Walter Reed National Military Medical Center and the Assistant Secretary of Defense (Health Affairs) has enabled partnerships which allow access to cancer tissue repositories and shareable data to improve the treatment and outcomes of patients in the military health system. These partnerships will further advance research through the enhanced use of patient data derived from large patient studies that include long-term health records, specimen repositories and collaborations involving major academic cancer centers. The Committee strongly encourages increased support to allow for rapid enrollment of patients and collaboration on research initiatives toward the goal of enhanced cancer treatment for all service members and their families.

Orthotics and Prosthetics Outcomes Research.—The Committee recommends $10,000,000 in support of orthotics and prosthetics outcomes research. The focus of this research should be on outcomes-based best practices through analysis of the merits of clinical options currently available, not on the development or improvement of new and existing technology. The Committee directs the Assistant Secretary of Defense (Health Affairs) to provide a report not later than 180 days after the enactment of this act to the congressional defense committees on the peer-reviewed projects that receive funding. The report should include the funding amount awarded to each project and the anticipated effect on patient care.

Advanced Orthopedic Surgical Training.—The Committee encourages the Department of Defense to provide advanced surgical training in arthroscopic techniques from within appropriated funds. The Defense Health Agency is encouraged to partner with medical professional societies that maintain best practices relating to orthopedic procedures, including orthopedic training protocols and learning centers.

Collaboration on Medical Research.—The Committee understands that the Department is continuing to work with the National Institutes of Health [NIH] on furthering a pilot program to share Department of Defense research data into Federal Research Portfolio Online Reporting Tools Expenditures and Results [RePORTER]. The Committee continues to support this effort to share medical research data across Federal agencies and encourages the Department to require its use across the services to ensure all Department research data is entered into Federal RePORTER. Addi-

tionally, the Department should provide appropriate resources, both in amount and type of appropriation, in future budget submissions to carry out this effort.

In fiscal year 2015, the Committee directed the Department to contract with the Institute of Medicine to evaluate the Congressionally Directed Medical Research Program and provide a report to the congressional defense committees within 12 months. This report will include an evaluation of the Congressionally Directed Medical Research Program's two-tiered peer review process, its coordination of research priorities with NIH and recommendations for how the process can be improved. The Committee is aware that work on this report is ongoing and looks forward to receiving the report as part of its efforts to continue to ensure that government investments in medical research are maximized.

Mental Health Professionals.—The Committee recognizes that servicemembers and their families face unique stresses beyond those of everyday life. After over a decade of war, the need for mental health professionals in the Department is at an all-time high, and the Committee believes that every beneficiary of the Military Health System should have timely access to mental health services. However, the Committee is concerned with the Department's inability to recruit and retain enough psychiatrists, psychologists, social workers, nurse practitioners, and registered nurses to provide adequate mental healthcare.

The Government Accountability Office [GAO] review of this issue found that progress is being made regarding the annual reporting of mental health professional staffing needs. However, GAO also noted that the services need to accurately report any additional measures used to supplement the Psychological Health Risk-Adjusted Model for Staffing [PHRAMS] as well as report their PHRAMS-generated estimates in the requirements fields of the Defense Health Agency's [DHA] quarterly mental health staffing reports.

The Committee encourages the Assistant Secretary of Defense (Health Affairs), the Director of the Defense Health Agency, and the Service Surgeons General to continue to work together to ensure annual estimates of mental health professionals meet the needs of all beneficiaries in the military health system. In addition, the Assistant Secretary of Defense (Health Affairs) is directed to prepare as part of DHA's fiscal year 2018 budget submission a review of these estimates as well as an outline of current challenges in recruiting and retaining mental health professionals by the Department of Defense.

Brain Tissue Repository.—The Committee applauds the Department's recent efforts in advancing the study and treatment of traumatic brain injury in servicemembers by partnering with the National Institutes of Health to create the world's first human brain tissue repository for military personnel at the Uniformed Services University of the Health Sciences. In fiscal year 2015, the Committee directed the Assistant Secretary of Defense (Health Affairs) to provide a report outlining strategies for overcoming roadblocks to post-mortem brain donation in the military. The Committee has received this report and appreciates the progress that the Department is making with Organ Procurement Organizations and the

National Disease Research Interchange to increase donations. The Committee encourages the Department to continue these efforts to advance research to improve the protection and care of servicemembers.

Operation Live Well, Healthy Base Initiative, and Total Force Fitness.—The Committee understands that there is considerable evidence of an emerging nutrition problem within the Armed Forces. A November 2015 report by the Army Surgeon General, "Health of the Force," found that nutrition has a direct bearing on readiness. Additionally, a September 2014 report by Mission Readiness, "Retreat is Not an Option," found that the military spends over $1,000,000,000 per year to treat weight-related health problems through TRICARE. Another report found that the Navy is losing between $200,000,000 and $300,000,000 in annual training investments because sailors fail to pass physical fitness tests.

To address this and other health issues, the Committee has appropriated $3,000,000 each year since fiscal year 2014 to advance the Department's Healthy Base Initiative [HBI] pilot program and Total Force Fitness [TFF] Program. These initiatives have shown the potential to dramatically enhance recruitment, retention, readiness and resilience for the entire military community by improving and expanding healthier food offerings across all bases, including mission dining facilities, morale, welfare and recreation programs, exchange food offerings, and commissaries.

Going forward, these efforts will be part of the Operation Live Well program, which has subsumed both HBI and TFF, and will continue its focus on healthy options while paying particular attention to those service personnel and their families living off of military installations. The Committee again recommends an additional $3,000,000 to support these initiatives. It also notes that the Department has established the Office of the Executive Director, Force Resiliency, within the office of the Under Secretary of Defense for Personnel and Readiness, to oversee these efforts.

Reconstructive Transplantation.—Reconstructive transplantation is a rapidly growing discipline that greatly benefits from collaboration among institutions, surgeons, and investigators working to improve the lives of servicemembers who suffer significant injuries due to combat related injuries often caused by improvised explosive devices. The Department's continued research into reconstructive transplantation will allow surgeons and investigators to refine approaches for hand, face and other vascularized composite tissue allografts including the transplants of skin, muscle, tendon, nerves, bone, and blood vessels. The Committee strongly supports the basic, translational and clinical research needed to improve access to reconstructive transplants and state-of-the-art immunotherapy. The Committee encourages the Department to promote multi-institutional and intra-institutional, multidisciplinary collaborations among clinicians and research scientists to help advance promising ideas in reconstructive composite tissue transplantation into clinical applications.

Improving Military Medicine's Management of Pain.—The Committee has supported the Department's efforts to address the needs of servicemembers, especially those that have served multiple times in Iraq and Afghanistan, who are living with chronic pain re-

lated to military service and deployments. The Committee has previously supported the Department's strengthening of the Uniformed Services University of the Health Sciences' Defense and Veterans Center for Integrative Pain Management [DVCIPM] as the proponent for consensus recommendations for Department-wide improvements in pain medicine policies, practice, education, and research. The DVCIPM is also responsible for addressing the recommendations of the Army Pain Management Task Force for state of the art science modalities and technologies to address acute and chronic pain of service members and other patients. The Committee acknowledges the work that has been accomplished by the DVCIPM and encourages continued investment in these vital efforts.

Global Health.—The Committee recognizes the critical contribution that the Department of Defense research and development [R&D] portfolio makes in protecting servicemembers from infectious diseases they may encounter on missions around the world and the need to sustain and support U.S. investment in this area by fully funding R&D programs that carry out this work within the Department of Defense Health Program, Department of the Army and Department of the Navy Research, Development, Test and Evaluation budgets.

Medical Defense against Infectious Disease.—The Committee recognizes the importance of prevention and treatment of naturally occurring infectious diseases and tropical infectious diseases, such as malaria, Dengue, and Chikungunya viruses. These diseases pose a significant threat to the strategic access and operational effectiveness of forces deployed outside the United States. The Committee is concerned with the Department's decisions over recent years to precipitously decrease funding for malaria research and encourages the Department to address these diseases of military importance and invest in research for chemoprophylaxis, surveillance, novel approaches to vaccine development, and other countermeasures. The Committee urges the Department to partner with colleges and universities that have strong research programs in infectious diseases, as well as other Federal agencies, foreign governments, international agencies, and nonprofit organizations to mitigate duplication of effort and maximize the use of Department resources.

Additionally, several emerging infectious diseases have taken the global community by surprise over the last few decades, including SARS, H1N1, Ebola, and Zika. Disease surveillance, rapid detection, outbreak response, and epidemiology are essential to providing an early warning of emerging infectious disease threats to servicemembers abroad and global health security in general. The Committee recommends $225,900,000 for core Defense Health Program research and encourages the Department to continue its investments in neglected and infectious diseases.

Trauma Clinical Research Network.—The Committee acknowledges that the last 15 years of war in Afghanistan and Iraq have enabled the U.S. military to learn vital lessons in combat casualty care. The Committee encourages the Assistant Secretary of Defense (Health Affairs), the Director of the Defense Health Agency, and the Commander of the U.S. Army Institute of Surgical Research to work with other Federal agencies focused on tactical combat cas-

ualty care [TCCC]. TCCC has become the gold standard in combat care and has achieved the best casualty outcomes in the history of modern warfare. It is imperative that we sustain these advances and ensure that lessons learned are being incorporated into best practice trauma care guidelines throughout the military. The Committee encourages the Department to ensure that military advances in combat casualty care are rapidly, uniformly, and permanently implemented throughout the U.S. military. Further, the Committee encourages the Department to continue allocating sufficient resources for these efforts in future budget submissions.

Warfighter Respiratory Health.—The Committee understands that respiratory diseases affect more than 100,000 servicemembers each year and is concerned about respiratory ailments among deployed and returning servicemembers. Beyond the decreased quality of life for affected servicemembers, respiratory diseases result in almost 27,000 lost workdays per year. The Committee encourages the Department to provide adequate resources for research on respiratory health.

Epilepsy Research.—The Committee is concerned about the large number of service men and women returning from combat zones who have sustained traumatic brain injuries [TBI] and the long term consequences of TBI. These wounded warriors are at high risk for developing post-traumatic epilepsy, depression, cognitive difficulties, and post-traumatic stress disorder, which may be interconnected. As current TBI longitudinal studies have not included epilepsy, the Committee encourages the Department to place greater priority and invest more funding in longitudinal epidemiological research, including epilepsy surveillance, to better understand the magnitude of the problem and improve patient care and outcomes. To assist in these efforts, the Committee recommends $7,500,000 in support of epilepsy research. Additionally, the Committee urges the Department to expand research into the mechanisms by which brain injury produces epilepsy and research directed at the prevention of epilepsy and concomitant comorbidities in those known to be at high risk.

Melanoma Research.—The Committee understands that melanoma diagnoses are increasing among active duty servicemembers and that melanoma is the fifth most common cancer among veterans. Recent research suggests that exposure to high levels of solar radiation in young adulthood is associated with a higher risk of melanoma mortality. Given the extreme and harsh conditions servicemembers face in theater and the rise of this aggressive and frequently deadly form of cancer, the Committee encourages the Department to continue its investments in melanoma research.

Sleep Disorder Research.—The Committee recognizes that sleep disorders are increasingly prevalent among servicemembers and that such disruptions have been associated with diverse mental and physical disorders, including traumatic brain injury and post-traumatic stress. The Committee applauds the Army for acknowledging the importance of sleep in achieving optimal physical, mental, and emotional health and including sleep as a focus in the Performance Triad. In support of this effort, the Committee urges the Department to support basic, translational, and clinical research on how the disruption of normal sleep and circadian biological