

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 Appropria-

tions 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 reprogramming 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 im-

portant 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

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
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	.....
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

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
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 (LTAMID) 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	.....
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 (GFEB) .....	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—EXPEDITIONARY (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 SYSTEM .....	5,028	5,028	.....

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
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
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	.....

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
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	Countermeasure 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

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
	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
	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



[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
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
	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

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
	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 ordnance 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 dy-

namics 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 soldier, 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 HEAD-QUARTERS .....	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	.....

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
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	.....
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

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
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
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	.....

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
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
	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	.....



[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
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	.....
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 [STUASLO] .....	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 re- search .....	.....	.....	+ 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

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
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
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

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
113	Standard Missile Improvements .....	120,561	120,561	.....
	Restoring acquisition accountability: Defer Future Capability 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
	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

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
999	Improving funds management: Project 3384 funding early to need .....			- 11,045
	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 undersea 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 up-

dated 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 DE- VELOPMENT .....	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 ARCHITEC- TURES .....	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: OCS 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. In addition, the Committee designates the long range strike bomber program as a congressional special interest

item for purposes of transfer of funds and prior approval re-programming procedures.

*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 unmanned 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 sub-

mit 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.

#### SPACE PROGRAMS

*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, noting 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	.....
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	.....

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
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 PRO- GRAM .....	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 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 DEVELOP- MENT .....	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 INTER- OPERABILITY .....	23,642	23,642	.....
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	.....

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
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 [EIM]	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	.....
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	.....

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
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
	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



[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
6	Historically Black Colleges and Universities/Minority Institutions Basic research program increase .....	23,572	32,072	+ 8,500
10	Defense Technology Innovation .....	30,000	28,000	+ 8,500
	Transfer: To Line # 67 SOF Advanced Technology Development .....			- 2,000
15	Chemical and Biological Defense Program .....	188,715	193,715	- 2,000
	Program increase .....			+ 5,000
17	Tactical Technology .....	313,843	305,843	+ 5,000
	Improving funds management: Unobligated balances .....			- 8,000
18	Materials and Biological Technology .....	220,456	214,456	- 8,000
	Maintain program affordability: Unjustified growth .....			- 6,000
19	Electronics Technology .....	221,911	201,911	- 6,000
	Maintain program affordability: Unjustified growth .....			- 20,000
22	SOF Technology Development .....	37,820	42,820	- 20,000
	Program increase: Thermal signature management technology .....			+ 5,000
25	Combating Terrorism Technology Support .....	73,002	115,502	+ 5,000
	Program increase: Anti-tunneling research .....			+ 42,500
30	Weapons Technology .....	71,843	49,643	+ 42,500
	Restoring acquisition accountability: MD69 redundancy .....			- 22,200
35	Special Program—MDA Technology .....	83,745	11,795	- 22,200
	Program adjustment .....			- 71,950
37	Space Programs and Technology .....	175,240	160,240	- 71,950
	Maintain program affordability: Unjustified growth .....			- 15,000
40	Common Kill Vehicle Technology .....		71,513	- 15,000
	Transfer MOKV from line 112 .....			+ 71,513
42	Chemical and Biological Defense Program—Advanced Development .....	127,941	132,941	+ 71,513
	Program increase .....			+ 5,000
45	Joint Capability Technology Demonstrations .....	148,184	132,184	+ 5,000
	Maintain program affordability: Delayed contract award .....			- 16,000
48	Manufacturing Technology Program .....	31,259	41,259	- 16,000
	Program increase .....			+ 10,000
49	Emerging Capabilities Technology Development .....	49,895	55,895	+ 10,000
	Program increase .....			+ 6,000
50	Generic Logistics R&D Technology Demonstrations .....	11,011	25,011	+ 6,000
	Program increase .....			+ 14,000
	Program increase: National security technology accelerator .....			+ 4,000
53	Microelectronics Technology Development and Support .....	97,826	89,826	+ 10,000
	Improving funds management: Unobligated balances .....			- 8,000
54	Joint Warfighting Program .....	7,848	4,848	- 8,000
	Maintain program affordability: Unjustified growth .....			- 3,000
57	Network-Centric Warfare Technology .....	428,894	419,894	- 3,000
	Program termination: classified .....			- 9,000
61	Quick Reaction Special Projects .....	74,943	79,943	- 9,000
	Maintain program affordability: Forward financing .....			+ 5,000
	Program increase .....			- 5,000
63	Engineering Science & Technology .....	17,659	22,659	+ 10,000
	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	+ 5,000
	Transfer: From Line # 10 Defense Technology Innovation .....			+ 31,000
	Program increase .....			+ 2,000
68	Nuclear and Conventional Physical Security Equipment RDT&E ADC&P .....	28,498	26,498	+ 29,000
	Improving funds management: Unobligated balances .....			- 2,000
72	Environmental Security Technical Certification Program .....	52,491	46,491	- 2,000
	Improving funds management: Unobligated balances .....			- 6,000
74	Ballistic Missile Defense Midcourse Defense Segment .....	862,080	972,780	- 6,000
	Program increase .....			+ 110,700
				+ 110,700

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
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
	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

[In thousands of dollars]

Line	Item	2017 budget estimate	Committee recommendation	Change from budget estimate
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 Inno-

vation 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 United States.

*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 review 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.

*Third Offset and Federally Funded Research and Development Centers.*—The Committee recognizes that many government Federally Funded Research and Development Centers [FFRDCs] are developing cutting-edge technology that could be used for defense purposes in support of the Secretary of Defense’s Third Offset Strategy. The research and development investments being conducted by many FFRDCs, including the national security labs, are often classified or include contract work with small businesses that are accustomed to working with the Department of Defense and other government agencies. As the Department of Defense works to support the acceleration of the fielding or commercialization of offset technologies to counter the technological advantage of potential adversaries, the Committee urges the Department of Defense to include FFRDCs in its offset strategy and to commit to increased partnerships with FFRDCs and the small businesses which support them.

*Robotic Servicing of Geostationary Satellites.*—The Committee supports the Defense Advanced Research Project Agency’s [DARPA] efforts to work with industry to develop and demonstrate robotic satellite servicing technologies in geostationary orbit. DARPA’s work is complementary to the National Aeronautics and Space Administration [NASA] Restore-L mission to demonstrate robotic satellite servicing in low Earth orbit [LEO]. NASA’s Restore-L and DARPA’s planned Robotic Servicing of Geostationary Satellites [RSGS] will both demonstrate key technologies and enable a commercially provided sustained servicing capability to inspect, repair, relocate and add payloads to satellites. The Committee is hopeful that NASA’s Restore-L, RSGS and the subsequent commercial partners will foster a more capable and resilient space architecture for the U.S. Government and U.S. commercial satellite industry.

#### 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