Problem Discovery Affecting OT&E

Operational testing of acquisition programs frequently identifies new and significant problems missed in earlier phases of program development, but it can also find problems known prior to operational testing that were unaddressed. The latter is especially problematic, as delays in addressing these problems only exacerbate the cost and time required to fix them. Since 2011, my annual reports have documented both types of problems and the extent to which they exist in programs undergoing operational tests. This year, as in previous years, examples of both were present. Highlighting each of these types of problems is valuable, as the different natures of these types offer insights into the actions needed to field weapons that work.

Discovering problems during operational testing is crucial so they can be fixed prior to system deployment and use in combat. In many cases, an operational environment or user is necessary to uncover the problem. For example, operational aircraft were necessary for the Integrated Defensive Electronic Countermeasures (IDECM) program to discover an unknown hardware problem with the environmental control system, which led to cabin pressurization problems in operationally representative F/A-18C/D aircraft. This problem could not have been discovered in earlier test phases because they used modified developmental aircraft that did not have fully representative hardware. In contrast, the Littoral Combat Ship (LCS) has known problems with the propulsion and power generation systems installed on both variants that continue to affect LCS reliability. The Navy observed these problems again during operational testing and, in the case of the *Freedom* variant, caused the testing to be delayed.

The following discussion provides a summary of the significant problems discovered in FY16 during analyses of operational test events.

Detailed accounts of the problems can be found in the corresponding individual program articles in this report. I also list 45 programs that presented significant problems during early testing of systems that have a scheduled operational test in the next two fiscal years. If left uncorrected, these problems could negatively affect my evaluation of operational effectiveness, operational suitability, or survivability. At the conclusion of this section, I report on the progress of the significant problems reported in my FY15 Annual Report.

The results of problem discovery in FY16 are shown in Figure 1. There were 131 programs on the DOT&E oversight list with operational test activity conducted and/or planned between FY16 and FY18. Of those, 74 programs had a total of 83 operational tests or DOT&E reports issued in FY16 (some programs had more than one phase of operational testing this year). Almost one-third (25/83) of the operational tests had no significant problems, while more than two-thirds (58/83) revealed problems significant enough to adversely affect my determination of whether the systems were operationally effective, suitable, or survivable. More than 35 percent (30/83) of these operational tests discovered significant problems that were unknown prior to operational testing.

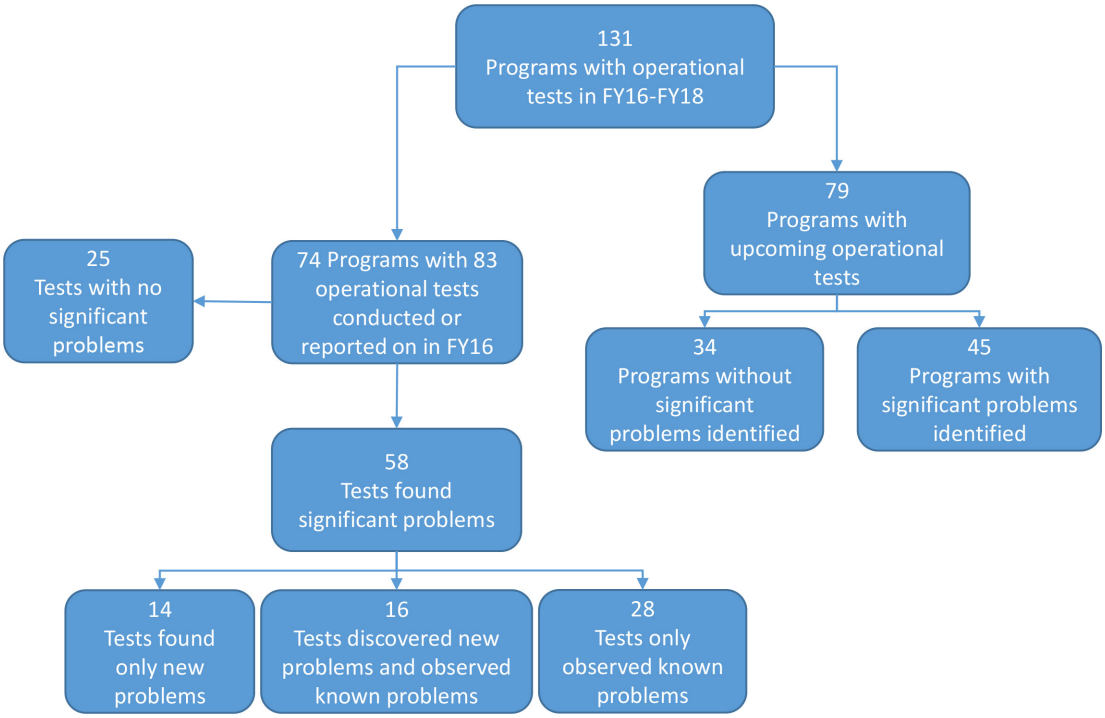

FIGURE 1. PROGRAMS UNDER OVERISGHT WITH OPERATIONAL TESTS IN FY16-FY18
(Note: Programs may have more than one test event between FY16-FY18.)

This year, I identified 179 significant problems across three operational testing areas: effectiveness, suitability, and survivability. Figure 2 shows the distribution of the significant problems found during operational testing by area and whether the problem was known prior to the operational test. Approximately two-thirds of problems (130/179) were known before operational testing. There are several reasons for this. Sometimes the Program Office had already documented a fix for these problems but had not finished implementing it. For example, the Navy discovered a reliability deficiency with the Standard Missile (SM)-6 missile uplink/downlink antennas in developmental testing, but was not able to fix all the missiles before the Block I FOT&E (the anomaly was not observed on any missile with the production fixes during FOT&E). Occasionally, previously documented problems were not considered significant enough to halt progression into the operational test, but the operational test provided new insights that amplified the problem's significance. For example, the Missile Defense Agency concluded that obsolescence changes made between Terminal High-Altitude Area Defense (THAAD) Configuration 1 and Configuration 2 did not affect functionality, but during Flight Test Operational (FTO) - 02, when the full system was integrated, the changes were observed to negatively affect suitability. Other times, a problem was rediscovered that the Program Office thought had already been fixed, such as when LCS-4 experienced disruptions in the flow of navigation data during its operational test. In some cases, the program tried to address the problem but was unable to eliminate it. Examples of this occurred in the CVN 78 *Gerald R. Ford* Class Nuclear Aircraft Carrier, which had low reliability for the Electromagnetic Aircraft Launch System (EMALS) and Advanced Arresting Gear (AAG). The Navy has been addressing known reliability problems in these components, but based on progress to-date, it is unlikely that they will achieve the required reliability without major redesigns.

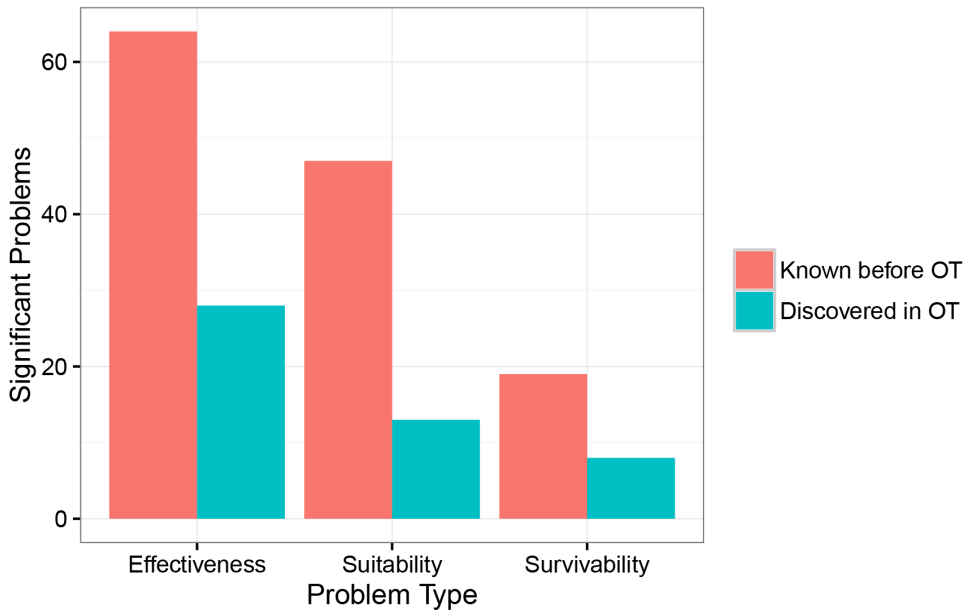

FIGURE 2. BREAKDOWN OF PROBLEMS BY TYPE AND WHETHER THEY WERE KNOWN PRIOR TO OPERATIONAL TESTING

Among the problems discovered in operational testing, the most common reason for finding these problems was the switch to operationally realistic environments and users. During developmental testing of the CV-22 Osprey, the Helmet-Mounted Display Color Display Day Module was only tested in limited environments. The switch to bright sunlight and bright urban conditions in operational testing revealed that the display module actually degraded pilots' situational awareness under such common environments. This problem could have been found in earlier developmental testing had it been tested in operationally representative environments with bright sunlight or in bright urban conditions. In another case, during developmental testing of the AN/SQQ-89A sonar system, the highly skilled users were able to use the system to effectively detect the test torpedoes. However, the operational test revealed that with fleet-representative users this variant of the system (Advanced Capability Build (ACB)-11) did not meet performance metrics, which degrades the effectiveness of torpedo evasion. Fortunately, the Program Office has supported further operational testing and has already documented upgrades to be implemented in a future variant of the system, ACB-15. Limited developmental testing is a common reason that these problems were not discovered prior to operational testing.

Of the problems discovered in operational testing, more than two-thirds (35/49) should have been discovered in developmental testing because they did not require an operationally representative environment to make that discovery. For example, a live test shot of the Advanced Anti-Radiation Guided Missile (AARGM) system revealed flawed logic within the system in the presence of countermeasures, which caused the shot to miss the target. This stopped the operational test and delayed development. Limiting developmental testing and pushing the discovery of these problems into operational testing creates delays in the schedule and increases the costs of development.

All of the survivability problems discovered in operational testing are in the cybersecurity domain (problems discovered during LFT&E are not considered discovered in operational testing). This finding highlights the importance of finding these problems through cybersecurity testing in the operational environment, both to identify and validate cybersecurity vulnerabilities and to assess mission effects and cybersecurity defense effectiveness. Fielding systems with cybersecurity deficiencies can dramatically affect missions and we cannot assume our cybersecurity defenses are up to the task of making up for those deficiencies. Although

the details of many of these deficiencies are classified, some explanations of specific problems can be found in the individual program articles in this report.

Figure 3 further breaks down the number of significant problems per operational test by each of the Services.

The LCS systems had large numbers of problems per operational test, with 9 and 13 for the *Freedom* and *Independence* variants, respectively. These problems occurred during FY14-15 operational testing of the two variants that DOT&E reported on in FY16. LCS has continued program development in spite of these problems; of the 22 significant problems, only 2 were discovered in the operational tests. The LCS Program Office has addressed 8 of the remaining 20 known problems. Many of these problems persist because they are inherent to the LCS design; others are fixable but DOT&E is not aware of efforts to correct them. The problems that persist vary from limited fuel range to a design that lacks the redundancy included in other combatants, which could lead to the ship being abandoned in heavy combat situations.

The histograms in Figure 3 show that, in general, the Services experience similar trends in the number of problems observed while conducting operational testing. It is also noteworthy that each of the Services experienced tests with no problems; even in these cases, the operational testing was essential to confirm that users will be able to employ these systems in realistic conditions without being plagued by significant problems.

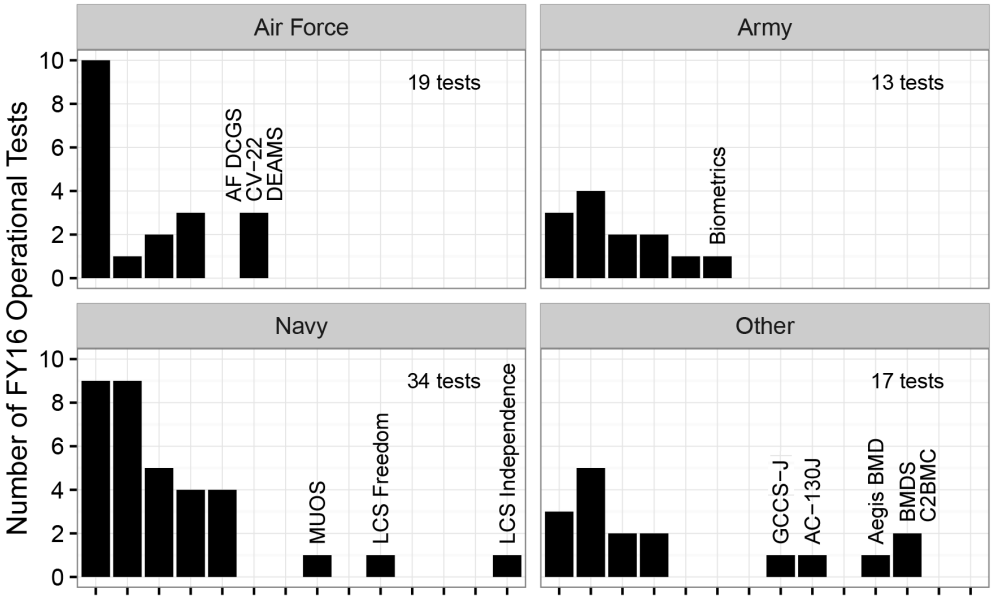

FIGURE 3. HISTOGRAM SHOWING THE NUMBER OF PROBLEMS OBSERVED IN EACH OPERATIONAL TEST, BY SERVICE. PROGRAMS WITH FIVE OR MORE PROBLEMS IN AN OPERATIONAL TEST ARE LABELED.

(Note: The Navy includes the Marine Corps; Other includes the U.S. Special Operations Command, Missile Defense Agency, Defense Logistics Agency, Defense Information Systems Agency, National Security Agency, and Under Secretary of Defense for Personnel and Readiness; the LCS systems labeled above include the surface warfare (SUW) mission package.)

* Problems reported in FY16 for Aegis BMD, BMDS, and C2BMC occurred over 4 years of testing, exaggerating the number of problems per test in this review.

Tables 1 and 2 list the 83 operational tests discussed in this year's Annual Report. Table 1 lists the 25 operational tests that had no significant problems, while Table 2 lists the 58 operational tests that had significant problems. Each row provides the name of the system and operational test, and indicates in which operational testing area problems were observed. For details on the problems observed, see the individual program articles in this report.

TABLE 1. OPERATIONAL TESTS IN FY16 WITH NO SIGNIFICANT PROBLEM DISCOVERY	
System Name	**OT Name**
AIM-120 Advanced Medium-Range Air-to-Air Missile (AMRAAM) (pg. 341)	AIM-120 Advanced Electronic Protection Improvement Program (AEPIP)
AMRAAM	AIM-120 Electronic Protection Improvement Program (EPIP)
AMRAAM	AIM-120D System Improvement Program (SIP-1) OT
AN/BQQ-10 Acoustic Rapid Commercial Off-the-Shelf Insertion (A-RCI) (pg. 201)	AN/BQQ-10 A-RCI Advanced Processing Build 2013 (APB-13) FOT&E
Battle Control System – Fixed (pg. 351)	Battle Control System – Fixed R3.2.3 OT
CHEM DEMIL-ACWA - Chemical Demilitarization Program - Assembled Chemical Weapons Alternatives (pg. 145)	Chemical Demilitarization OT
CHEM DEMIL-ACWA	Explosive Destruction Technology FOT&E
Close-In Weapon System – SeaRAM Variant (pg. 209)	SeaRAM Early Fielding Testing
Consolidated Afloat Networks and Enterprise Services (CANES) (pg. 215)	CANES FOT&E
Defense Agencies Initiative (DAI) (pg. 29)	DAI Operational Assessment Increment 2 Release 1
DAI	DAI Operational Assessment Increment 2 Release 2
Defense Readiness Reporting System – Strategic (DRRS-S) (pg. 37)	DRRS-S IOT&E
E-2D Advanced Hawkeye (AHE) (pg. 237)	E-2D Delta System/Software Configuration Build 2 (DSSC-2) OT-D2
F-22A Advanced Tactical Fighter (pg. 363)	F-22 Update 5 FDE
Geosynchronous Space Situational Awareness Program (GSSAP) (pg. 369)	GSSAP IOT&E
KC-46A Tanker Replacement Program (pg 389)	KC-46A OA-2
LHA 6 New Amphibious Assault Ship (pg 253)	LHA 6 IOT&E
Littoral Combat Ship (LCS) surface warfare (SUW) mission package on *Freedom* variant (pg 257)	OT-C1 *Freedom* variant LCS with Increment 2 SUW mission package
Logistics Modernization Program (LMP) (pg. 161)	LMP IOT&E
Massive Ordnance Penetrator (MOP) (pg. 389)	MOP Enhanced Threat Reduction Phase 3 (ETR-3) Quick Reaction Assessment
Miniature Air-Launched Decoy (MALD) and MALD – Jammer (MALD-J) (pg. 391)	MALD-J FDE
MV-22 Osprey (pg. 299)	MV-22 OT-IIIK Phase 2
Next Generation Jammer (NGJ) Increment One (pg. 301)	NGJ Increment 1 EOA
RQ-4B Global Hawk Block 40 (pg. 399)	RQ-4B Global Hawk Block 40 IOT&E
SSN 774 *Virginia* Class Submarine (pg. 321)	*Virginia* class Block III FOT&E

EOA – Early Operational Test
FDE – Force Development Evaluation
FOT&E – Follow-on Operational Test and Evaluation
IOT&E – Initial Operational Test and Evaluation
OA – Operational Assessment
OT – Operational Test

TABLE 2. OPERATIONAL TESTS IN FY16 WITH DISCOVERY OF SIGNIFICANT PROBLEMS				
System Name	Operational Test	Effectiveness	Suitability	Survivability
AC-130J Gunship (pg. 337)	AC-130J Block 10 OUE	X	X	
Aegis Ballistic Missile Defense (Aegis BMD) (pg. 413)	Flight Test Operational-02 (FTO-02)	X	X	X
Aegis Modernization Program (pg. 187)	Aegis Baseline Upgrade OT	X	X	X
AGM-88E Advanced Anti-Radiation Guided Missile (AARGM) (pg. 191)	AARGM Block 1 FOT&E	X	X	
Air Force Distributed Common Ground System (AF DCGS) (pg. 343)	AF DCGS Geospatial Intelligence Baseline (GB) 4.1 FDE Phases 2 and 3 and GEOINT Workflow Enhancement (GWE) OUE Phase 1	X	X	
AF DCGS	AF DCGS Systems Release (SR) 3.0 OUE	X	X	X
Air Operations Center – Weapon System (AOC-WS) 10.0 & 10.1 (pg. 345)	AOC-WS 10.1 out-of-cycle (OOC) 13.1	X		
AOC-WS 10.0 & 10.1	AOC-WS 10.1 OOC 13.2			X
AN/BLQ-10 Submarine Electronics Support Warfare Measures (pg. 199)	Technical Insertion 10 (TI-10) FOT&E	X	X	
AN/SQQ-89A(V)15 Integrated Undersea Warfare (USW) Combat System Suite (pg. 203)	AN/SQQ-89A(V)15 Advanced Capability Build 2011 (ACB-11) FOT&E	X	X	
APR-39 D(V)2 (pg. 197)	Army APR-39 D(V)2 FOT&E	X	X	
Army Integrated Air and Missile Defense (AIAMD) (pg. 143)	AIAMD LUT	X	X	
Ballistic Missile Defense System (BMDS) (pg. 405)	Flight Test Operational (FTO) - 02	X	X	
BMDS Sensors / Command and Control (pg. 409)	FTO - 02	X	X	
Biometrics (pg. 171)	Near Real Time Identity Operations (NRTIO) OA	X	X	
Command Web (pg. 147)	Command Web LUT	X		X
Common Aviation Command and Control System (CAC2S) (pg. 211)	CAC2S IOT&E			X
Cooperative Engagement Capability (CEC) (pg. 217)	CEC FOT&E	X		
CV-22 Osprey (pg. 353)	CV-22 OT on the Tactical Software Suite	X	X	X
CVN 78 *Gerald R. Ford* Class Nuclear Aircraft Carrier (pg. 219)	OT-B4 OA	X	X	
Defense Enterprise Accounting and Management System (DEAMS) (pg. 355)	DEAMS Verification of Fixes	X		X
Defense Medical Information Exchange (DMIX) (pg. 33)	MOT&E	X		
Department of the Navy Large Aircraft Infrared Countermeasures (DON LAIRCM) Advanced Threat Warning System (pg 233)	DON LAIRCM FOT&E on the CH-53		X	
Distributed Common Ground System – Army (DCGS-A) (pg. 149)	FOT&E			X
Distributed Common Ground System – Navy (DCGS-N) (pg. 235)	Increment 1, Block 2 FOT&E			X
Expeditionary Transfer Dock and Expeditionary Mobile Base (pg. 239)	Expeditionary Sea Base Class ship IOT&E			X
Global Broadcast Service (GBS) (pg. 371)	GBS FOT&E-1		X	X
Global Command and Control System – Joint (GCCS-J) (pg. 107)	GCCS-J v4.3 Update 1 Emergency Release 1 Cooperative Vulnerability and Penetration Assessment and Adversarial Assessment			X
GCCS-J	GCCS-J Global v6.0 and Agile Client Release 7, v5.1.0.1 OA	X	X	
GCCS-J	GCCS-J Joint Operation Planning and Execution System (JOPES) 4.2.0.4 OT	X		
Ground-based Midcourse Defense (GMD) (pg. 419)	GMD Control Test Vehicle-02+ (CTV-02+)		X	X
Infrared Search and Track (IRST) (pg. 247)	F/A-18 Block I Operational Assessment 2 (OA-2)	X	X	
Integrated Defensive Electronic Countermeasures (IDECM) (pg. 249)	IDECM Integrated DT/OT	X	X	

TABLE 2. OPERATIONAL TESTS IN FY16 WITH DISCOVERY OF SIGNIFICANT PROBLEMS (CONTINUED)				
System Name	**Operational Test**	**Effectiveness**	**Suitability**	**Survivability**
Javelin Close Combat Missile System – Medium (pg. 153)	Javelin Spiral 2 - Live Fire Test Program	X		
Joint Standoff Weapon (JSOW) (pg. 251)	JSOW C-1 FOT&E	X		
Joint Tactical Network (pg. 157)	Joint Enterprise Network Manager (JENM) Early Fielding with Mid-Tier Networking Vehicular Radio (MNVR)	X		
Joint Warning and Reporting Network (JWARN) (pg. 115)	JWARN Increment 2 IOT&E A-1		X	X
Littoral Combat Ship (LCS) seaframe, *Freedom* variant (pg. 257)	OT-C1 *Freedom* variant LCS with Increment 2 surface warfare (SUW) mission package	X	X	X
LCS seaframe, *Independence* variant	OT-C4 *Independence* variant with Increment 2 SUW mission package	X	X	X
LCS SUW mission package on *Independence* variant	OT-C4 *Independence* variant with Increment 2 SUW mission package	X	X	
Mid-tier Networking Vehicular Radio (MNVR) (pg. 167)	MNVR OA	X		
Mobile User Objective System (MUOS) (pg. 289)	MUOS MOT&E-2	X	X	
MQ-4C Triton (pg. 293)	MQ-4C Triton OA	X		
MQ-8 Fire Scout Unmanned Aircraft System (pg. 295)	MQ-8C Fire Scout Milestone C OA	X		
MQ-9 Reaper (pg. 393)	MQ-9 Reaper Block 5 FOT&E	X	X	
Next Generation Diagnostic System (NGSD) Increment 1 (pg. 121)	NGDS OA		X	
P-8A Poseidon (pg. 303)	P-8A Data Storage Architecture Upgrade (DSAU) / VCD FOT&E		X	X
P-8A Poseidon Multi-Mission Aircraft (MMA)	P-8A Poseidon MMA Increment 2 Engineering Change Proposal 2 (ECP-2)	X		
Public Key Infrastructure (PKI) Increment 2 (pg. 123)	PKI Increment 2 Token Management System (TMS) Release 4 LUT	X	X	
Rolling Airframe Missile (RAM) Block 2 (pg. 311)	RAM Block 2 IOT&E	X		
Soldier Protection System (SPS) (pg. 177)	SPS IOT	X		
Space-Based Infrared System Program, High Component (SBIRS High) (pg. 403)	SBIRS Block 10 OUE		X	
Spider Increment 1A M7E1 Network Command Munition (pg. 181)	Spider Increment 1A LUT	X	X	X
Standard Missile-6 (SM-6) (pg. 323)	SM-6 Block I FOT&E	X		
Surface Electronic Warfare Improvement Program (SEWIP) Block 2 (pg. 327)	SEWIP Block 2 IOT&E	X		
Terminal High-Altitude Area Defense (THAAD) (pg. 421)	Flight Test Operational (FTO) - 02	X		
Theater Medical Information Program – Joint (TMIP-J) (pg. 127)	TMIP-J I2R3 MOT&E	X		X
Warfighter Information Network – Tactical (WIN-T) (pg. 183)	WIN-T Increment 3 OA	X		X

DT/OT – Developmental Test/Operational Test
FDE – Force Development Evaluation
FOT&E – Follow-on Operational Test and Evaluation
IOT – Initial Operational Test
IOT&E – Initial Operational Test and Evaluation
LUT – Limited User Test
MOT&E – Multi-Service Operational Test and Evaluation
OA – Operational Assessment
OT – Operational Test
OUE – Operational Utility Evaluation
VCD – Verification of Correction of Deficiencies

There are 79 programs that have operational tests scheduled to begin in the next two fiscal years, and I am aware of significant problems that, if not corrected, could adversely affect my evaluation of the effectiveness, suitability, or survivability of 45 of these systems. Table 3 lists the upcoming operational tests for systems discussed in this year's Annual Report (see individual program articles in this report for details on the problems). Table 4 lists the upcoming operational tests for systems that do not have entries in this year's report. For these systems, brief descriptions of the problems are provided after the table.

TABLE 3. PROGRAMS IN THIS ANNUAL REPORT WITH PROBLEMS THAT MAY ADVERSELY AFFECT UPCOMING OPERATIONAL TESTING				
System Name	Upcoming Test	Effectiveness	Suitability	Survivability
AC-130J Gunship (pg. 337)	AC-130J IOT&E	X	X	
Aegis Ballistic Missile Defense (Aegis BMD) (pg.413)	Flight Test Operational-03 (FTO-03)	X	X	
AH-64E Apache (pg. 141)	AH-64E Apache (Version 6) FOT&E II		X	
Air Force Distributed Common Ground System (AF DCGS) (pg. 343)	AF DCGS Systems Release (SR) 3.0.1 IOT&E	X	X	X
Air Operations Center – Weapon System (AOC-WS) 10.0 & 10.1 (pg. 345)	AOC-WS 10.1 out-of-cycle (OOC) 13.3	X		
AOC-WS 10.2	AOC-WS 10.2 OA	X		
Airborne Warning and Control System (AWACS) (pg.359)	E-3 AWACS Block 40/45 FOT&E	X	X	X
AN/SQQ-89A(V)15 Integrated Undersea Warfare (USW) Combat System Suite (pg. 203)	AN/SQQ-89A(V)15 Advanced Capability Build 2011 (ACB-11) FOT&E	X	X	
APR-39 D(V)2 (pg. 197)	Army APR-39 D(V) 2 FOT&E	X	X	
Army Integrated Air and Missile Defense (AIAMD) (pg. 143)	AIAMD OA for Milestone C Decision	X	X	
Ballistic Missile Defense System (BMDS) (pg. 405)	Flight Test Operational-03 (FTO-03)	X	X	
CH-53K (pg. 205)	CH-53K OT-B1	X	X	
Coastal Battlefield Reconnaissance and Analysis (COBRA) Block I (pg. 257) (LCS)	COBRA Block I Phase I IOT&E	X		
Command and Control, Battle Management, and Communications (C2BMC) (pg. 409)	Flight Test Operational-03 (FTO-03)	X	X	
Cooperative Engagement Capability (CEC) (pg. 217)	CEC FOT&E	X		
Defense Enterprise Accounting and Management System (DEAMS) (pg. 355)	DEAMS FOT&E	X	X	X
Defense Medical Information Exchange (DMIX) (pg. 33)	DHMSM IOT&E	X		
Department of Defense Healthcare Management System Modernization (DHMSM) (pg. 43)	DHMSM IOT&E	X		X
F-22A Advanced Tactical Fighter (pg. 363)	F-22A Increment 3.2B IOT&E	X		
F-35 Lightning II Joint Strike Fighter (JSF) (pg. 47)	JSF Block 3F IOT&E	X	X	X
F/A-18 E/F Super Hornet Naval Strike Fighter and EA-18G Airborne Electronic Attack (pg. 243)	H12 OT	X	X	
Family of Advanced Beyond Line of Sight Terminal (FAB-T) (pg. 367)	FAB-T Command Post Terminal (CPT) IOT&E	X		
Geosynchronous Space Situational Awareness Program (GSSAP) (pg. 369)	FOT&E 1	X		X
Global Command and Control System – Joint (GCCS-J) (pg. 107)	GCCS-J Global OA	X	X	X
Global Positioning System (GPS) Enterprise (pg. 375)	Military GPS User Equipment (MGUE) Increment 1 OA	X		
Ground-based Midcourse Defense (GMD) (pg. 419)	Flight Test GMD-15 (FTG-15)	X	X	
Integrated Defensive Electronic Countermeasures (IDECM) (pg. 249)	IDECM Software Improvement Program (SWIP) FOT&E	X	X	
Joint Information Environment (JIE) (pg. 111)	JIE OA	X	X	
Joint Space Operations Center Mission System (JMS) (pg. 381)	JMS Increment 2, Service Pack 9 OUE	X		
Joint Warning and Reporting Network (JWARN) (pg. 115)	JWARN Increment 2 Requirements Definition Package (RDP) 2 Capability Drop 2.1		X	
KC-46A (pg. 385)	KC-46A IOT&E	X		
Key Management Infrastructure (KMI) (pg. 117)	Spiral 2, Spin 2 OA	X		
M109A7 Paladin Integrated Management (PIM) (pg. 165)	M109A7 PIM IOT&E	X	X	
MQ-4C Triton Unmanned Aircraft System (UAS) (pg. 293)	MQ-4C Early Fielding Evaluation for Integrated Functional Capability (IFC) 3.1	X		
Next Generation Diagnostic System (NGDS) (pg. 121)	NGDS MOT&E		X	
P-8A Poseidon Multi-Mission Aircraft (MMA) (pg. 303)	P-8A Increment 2 Engineering Change Proposal 2 (ECP-2)	X		
Patriot Advanced Capability-3 (PAC-3) (pg. 173)	Patriot Post-Deployment Build-8 and Missile Segment Enhancement IOT&E	X	X	X
Spider (pg. 181)	Spider I1A IOT&E	X	X	
Surface Mine Countermeasures Unmanned Undersea Vehicle (SMCM UUV) (pg. 257)	Knifefish OA	X	X	
Surface Ship Torpedo Defense (SSTD) Torpedo Warning System (TWS) Countermeasure Anti-Torpedo (CAT) (pg. 329)	QRA and Early Fielding Report Update	X		

TABLE 3. PROGRAMS IN THIS ANNUAL REPORT WITH PROBLEMS THAT MAY ADVERSELY AFFECT UPCOMING OPERATIONAL TESTING (CONTINUED)				
System Name	**Upcoming Test**	**Effectiveness**	**Suitability**	**Survivability**
Terminal High-Altitude Area Defense (THAAD) (pg. 421)	Flight Test THAAD-18 (FTT-18)	X	X	X
Virginia Class Block III Submarine (pg. 321)	*Virginia* Block III FOT&E		X	
Warfighter Information Network – Tactical (WIN-T) (pg. 183)	WIN-T INC2 FOT&E	X		X
FOT&E - Follow-on Test and Evaluation IOT&E – Initial Operational Test and Evaluation MOT&E – Multi-Service Operational Test and Evaluation OA – Operational Assessment	OT – Operational Test OT&E – Operational Test and Evaluation OUE – Operational Utility Evaluation QRA – Quick Reaction Assessment			

TABLE 4. PROGRAMS NOT IN THIS ANNUAL REPORT WITH PROBLEMS THAT MAY ADVERSELY AFFECT UPCOMING OPERATIONAL TESTING				
System Name	**Upcoming Test**	**Effectiveness**	**Suitability**	**Survivability**
Nett Warrior	Nett Warrior LUT	X		
Common Analytical Laboratory System (CALS)	CALS Field Confirmatory (FC) Analytical Capability Sets (ACS) User Demonstration	X	X	
LUT – Limited User Test				

Nett Warrior. Nett Warrior is a dismounted leader situational awareness system for use during combat operations.

- Nett Warrior's effectiveness when used dismounted at the company-level was adversely affected by Manpack radio's low message completion rate of position location information. The Program Office has implemented a fix but it has not been operationally tested.

Common Analytical Laboratory System (CALS). CALS provides sensors for the identification of chemical and biological agents in environmental samples.

- During testing at operationally realistic high and low temperatures, the HAPSITE® ER Gas Chromatograph/Mass Spectrometer was unable to pass its internal performance verification step.
- During the developmental/operational testing, routine handling of the HAPSITE® ER by test operators resulted in scratches to the instrument screen on the primary and spare systems causing the systems to fail. A scratch on the screen creates an error message that requires factory level maintenance and, in some cases, entire reprogramming of the instrument by the vendor.
- The CALS Analytical Capability Set Biological Subsystem includes the NIDS® Lateral Flow Immunoassay system, which performed poorly and experienced reliability problems during confidence checks in environmental developmental testing.

PROGRESS UPDATES ON PROBLEMS REPORTED IN THE FY15 ANNUAL REPORT

In my annual report last year, I identified 8 systems that discovered only new problems, 19 systems that discovered new problems and re-observed known problems, and 18 systems that only re-observed known problems during operational testing in FY15. The status of these 45 programs is listed below.

All fixes implemented and verified in OT (6/45)

- Acoustic Rapid Commercial Off-the-Shelf Insertion (A-RCI) for AN/BQQ-10(V) Sonar
- F-22A Advanced Tactical Fighter
- LHA 6 New Amphibious Assault Ship
- Miniature Air-Launched Decoy – Jammer (MALD-J)
- Mobile Landing Platform (MLP) Core Capability Set (CCS) (Expeditionary Transfer Dock) and Afloat Forward Staging Base (AFSB) (Expeditionary Mobile Base)
- MV-22 Osprey

Some (or all) fixes implemented but new problems discovered or known problems re-observed in OT (21/45)

- AC-130J Ghostrider
- Aegis Modernization Program
- Air Force Distributed Common Ground System (AF DCGS)
- AN/SQQ-89A(V)15 Integrated Undersea Warfare (USW) Combat System Suite
- Air Operations Center – Weapon System (AOC-WS) 10.0 & 10.1
- Ballistic Missile Defense System (BMDS)

- CV-22 Osprey
- CVN 78 *Gerald R. Ford* Class Nuclear Aircraft Carrier
- Defense Enterprise Accounting and Management System (DEAMS)
- Defense Medical Information Exchange (DMIX)
- Department of the Navy Large Aircraft Infrared Countermeasures (DON LAIRCM)
- Global Command and Control System – Joint (GCCS-J)
- Integrated Defensive Electronic Countermeasures (IDECM)
- Infrared Search and Track (IRST)
- Joint Warning and Reporting Network (JWARN)
- Littoral Combat Ship (LCS) *Freedom* Class
- LCS *Independence* Class
- Mid-Tier Networking Vehicular Radio (MNVR)
- P-8A Poseidon Multi-Mission Maritime Aircraft (MMA)
- Surface Electronic Warfare Improvement Program (SEWIP) Block 2
- Warfighter Information Network – Tactical (WIN-T)

Some fixes (potentially) implemented; currently in OT or planning additional OT (10/45)
- Countermeasure Anti-Torpedo (CAT)
- F/A-18E/F Super Hornet
- Family of Advanced Beyond Line-of-Sight Terminals (FAB-T)
- Guided Multiple Launch Rocket System – Alternate Warhead (GMLRS-AW)
- Key Management Infrastructure (KMI) Increment 2
- MQ-1C Unmanned Aircraft System (UAS) Gray Eagle
- Q-53 Counterfire Target Acquisition Radar System
- Ship Self-Defense System (SSDS)
- Torpedo Warning System (TWS)
- *Virginia* Class Block III Submarine

No fixes planned, or no fixes planned to be tested in the next two years (8/45)
- AIM-9X Air-to-Air Missile Upgrade
- Airborne Mine Neutralization System (AMNS)
- Integrated Personnel and Pay System – Army (IPPS-A)
- Global Combat Support System – Marine Corps (GCSS-MC)
- H-1 Upgrades to AH-1Z Attack Helicopter and UH-1Y Utility Helicopter
- Joint High Speed Vessel (JHSV)
- MH-60R Multi-Mission Helicopter
- Surveillance Towed Array Sensor System (SURTASS) and Compact Low Frequency Active (CLFA) Sonar

In FY15, I also identified 48 systems that had significant problems in early testing that should be corrected before operational testing. The following provides an update on the progress these systems made in implementing fixes to those problems.

Fixes verified in OT - No other problems observed (2/48)
- Acoustic Rapid Commercial Off -the-Shelf Insertion (A-RCI) for AN/BQQ-10(V) Sonar
- F-22A Advanced Tactical Fighter

Fixes verified in OT - New problems observed (2/48)
- Defense Medical Information Exchange (DMIX)
- P-8A Poseidon Multi-Mission Maritime Aircraft (MMA)

Fixes verified in OT - Known problems re-discovered (8/48)
- AN/BLQ-10 Submarine Electronic Support System
- Defense Enterprise Accounting and Management System (DEAMS)
- Department of the Navy Large Infrared Countermeasures (DON LAIRCM)
- Infrared Search and Track (IRST)
- Mid-Tier Networking Vehicular Radio (MNVR)
- MQ-4C Triton Unmanned Aircraft System (UAS)
- Mobile User Objective System (MUOS)
- Surface Electronic Warfare Improvement Program (SEWIP) Block 2

Fixes tested in OT - Both new problems discovered and known problems re-observed (11/48)
- AC-130J Ghostrider
- Aegis Modernization
- Air Force Distributed Common Ground System (AF DCGS)
- AGM-88E Advanced Anti-Radiation Guided Missile (AARGM)
- AN/SQQ-89A(V) Integrated Undersea Warfare (USW) Combat Systems Suite
- CV-22 Osprey
- Global Command and Control System – Joint (GCCS-J)
- Integrated Defensive Electronic Countermeasures (IDECM)
- Littoral Combat Ship (LCS) *Independence* Class
- MQ-9 Reaper Armed Unmanned Aircraft System (UAS)
- Warfighter Information Network – Tactical (WIN-T)

Fixes not planned to be tested in the next two years (10/48)
- Airborne Laser Mine Detection System (ALMDS)
- Airborne Mine Neutralization System (AMNS)
- Air Operations Center – Weapon System (AOC-WS) 10.2
- DOD Automated Biometric Identification System (ABIS)
- Mark XIIA Mode 5 Identification Friend or Foe (IFF)
- Integrated Personnel and Pay System – Army (IPPS-A) Increment II
- Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS)
- Joint Battle Command – Platform
- MK 54 Lightweight Torpedo
- Remote Minehunting System (RMS)

Fixes currently being tested or planned to be tested in the next two years (15/48)
- AH-64E
- Ballistic Missile Defense System (BMDS)
- CH-53K Heavy Lift Replacement Program
- Coastal Battlefield Reconnaissance and Analysis (COBRA) Block I
- Countermeasure Anti-Torpedo (CAT)
- F/A-18E/F Super Hornet
- Family of Advanced Beyond Line-of-Sight Terminals (FAB-T)
- Key Management Infrastructure (KMI)
- Military GPS User Equipment (MGUE)
- Nett Warrior
- GPS Next Generation Operational Control System (OCX)
- Patriot Advanced Capability-3 (PAC-3)
- Torpedo Warning System (TWS)
- *Virginia* Class Block III Submarine
- XM25 Tactical Increment 2 XM 25 Counter Defilade Target Engagement System (CDTE)