Problem Discovery Affecting OT&E

Overview

Operational testing of new acquisition programs frequently identifies new and significant problems missed in earlier program development, but it can also find issues known prior to testing that were unaddressed. The latter category is especially problematic, as delays in addressing these problems only exacerbate the cost and time required to fix them. Since 2011, my annual report has documented both categories 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 categories offer insights into the actions needed to field weapons that work.

Discovering problems during operational testing is crucial for those problems to be corrected prior to the deployment and use of a system in combat. In many cases, an operational environment or user is necessary to uncover the problem, as in the Follow-on Operational Test and Evaluation (FOT&E) of Department of the Navy Large Infrared Countermeasures (DoN LAIRCM) on the CH-53E helicopter, where it was found that cycling the power to reset system faults could put the aircrew at risk during a combat mission for an extended time. Although the system technical manuals contained the times needed for each activity in the power-cycling sequence, it required operationally realistic testing to reveal how the combination of various times could affect a combat mission.

Realistic operational testing can also identify the full implications of problems seen during developmental testing for success in combat. This was true in the case of Ship Self Defense System (SSDS) MK 2, in which problems had been observed in contractor testing prior to the operational test event, but correcting these problems was not considered a high priority until operational test results showed the potential for these problems to result in missed cruise missile engagements.

The discussion below provides an overview of the problems discovered in FY15 during analyses of operational test events. Detailed accounts of the discovered problems can be found in corresponding individual program write-ups in this report. I also list 48 programs that presented significant problems during early testing. If left uncorrected, these deficiencies could affect my evaluation of operational effectiveness, suitability, or survivability. At the conclusion of this section, I report on the progress of the problems reported in my FY14 Annual Report.

The results of problem discovery in FY15 are shown in Figure 1. There were 134 programs on the DOT&E oversight list that planned or conducted operational testing between FY15 – FY17. Of those, 66 programs had a total of 75 operational tests this year (some programs had more than one phase of testing this year). About one-third (27/75) of the operational tests conducted this year had no significant problem discovery, while nearly two-thirds (48/75) revealed problems significant enough to adversely affect my evaluation of the system's operational effectiveness, suitability, or survivability. Almost 40 percent (29/75) of these operational tests discovered significant problems that were unknown prior to operational testing.

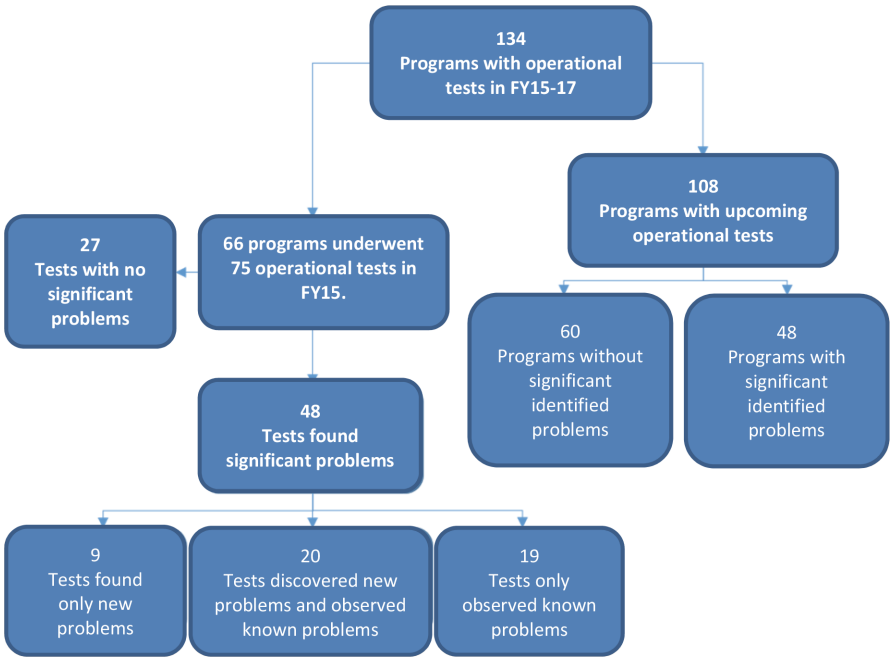

FIGURE 1. PROGRAMS/OPERATIONAL TESTS UNDER OVERSIGHT IN FY15 WITH IDENTIFIED PROBLEMS

(Note: Programs with testing in FY15 and upcoming testing in FY16-17 may be counted more than once if there were multiple test events. All counts exclude some classified and chemical demilitarization programs.)

Figure 2 shows the distribution of the types of significant problems found during operational testing (effectiveness, suitability, survivability) according to whether the problem was known prior to the operational test. The majority of the problems (including 75 percent of effectiveness problems) were known going into operational testing. Many programs proceeded to operational testing with known problems because they planned to address the problems later. An example of this was the P-8A Increment 2 Engineering Change Proposal (ECP) 1, which did not meet its wide-area Anti-Submarine Warfare search requirement in some environments because of known limitations in its Multi-static Active Coherent (MAC) sonobuoy system; the Navy plans to improve P-8A's performance with upgrades fielded as part of Increment 2 ECP 2 in FY17.

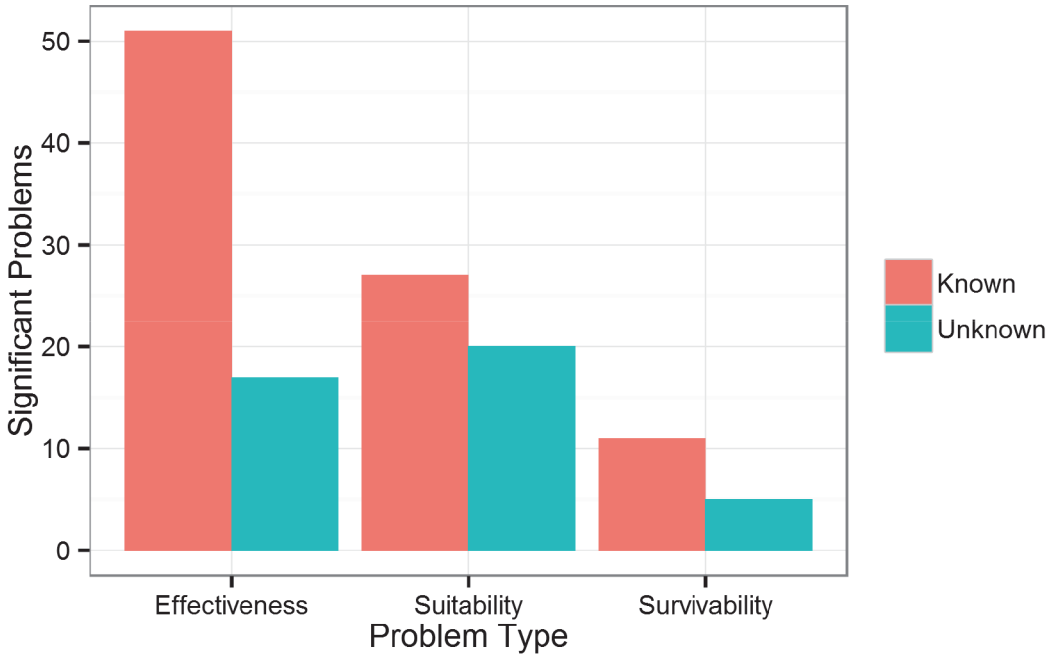

FIGURE 2. BREAKDOWN OF PROBLEMS BY TYPE AND WHETHER THEY WERE KNOWN PRIOR TO OPERATIONAL TESTING

Often, the realistic environment of operational testing provided new insights into problems even if they were known previously. Sometimes the scope of a problem was not understood until the system operated in a realistic operational test environment against realistic threats, as in the SSDS example above. Another example of this case occurred with the electro-optical/infrared (EO/IR) system installed on the *Independence* variant of the Littoral Combat Ship (LCS) for 57 mm gun engagements. Although developmental testing revealed the significant update rate and tracking performance problems, the full impact of these deficiencies was only realized in the operational test environment. In operational testing, these problems, combined with poor bearing accuracy and an unwieldly operator interface, forced the crew to supplement the watch team with a dedicated operator for the sensor. Even with this unsustainable manning arrangement, the ship was only able to achieve modest gun performance, expending excessive amounts of ammunition against a single target.

In other cases, a problem was rediscovered after the program thought it was fixed, either because a technical fix did not perform as expected or because operational testing discovered that workarounds for a known problem were impractical or not effective in an operational environment. As an example, the operational availability of the Twin-Boom Extensible Crane (TBEC) used by the *Independence* variant LCS to launch and recover watercraft is degraded by equipment failures and the crew's limited capability to diagnose problems and repair the system when it fails. Without the TBEC, the LCS is unable to launch and recover boats needed to support Maritime Security Operations or Special Operations Force missions, or the Remote Multi-Mission Vehicle (RMMV) needed to conduct Mine Countermeasures (MCM) missions. Following initial observation of TBEC problems, the Program Office worked with the vendor to improve system operability and refined shipboard operating procedures, which resulted in some improvement in watercraft launch and recovery operations. However, there have been continuing problems with the ability of the ship's crew and Navy repair activities to diagnose problems and effect repairs without the assistance of the original equipment manufacturer.

Finally, in other cases, a problem was thought to be an isolated occurrence until it re-occurred again in operational testing, as in the case of the Integrated Defensive Electronic Countermeasures (IDECM) program. Serious suitability problems (cabin pressure problems and avionics cooling air "degrades" were seen at about 20,000 feet in altitude) for IDECM on the F/A-18C/D platform were discovered during integrated test, but were thought to be isolated problems. Later FOT&E re-observed the problems on three jets, suggesting that the issues were widespread.

New problems discovered in operational testing tended to cluster into several categories. New suitability problems were typically caused by low reliability once placed in an operational environment (7/20), training and documentation issues (7/20), or usability problems that prevented operators from successfully using a system (2/20). Other suitability problems included logistics and software deficiencies. New effectiveness problems primarily resulted from unexpectedly low performance in an operational environment or against a stressing threat. Survivability problems uncovered in FY15 operational tests were all cybersecurity vulnerabilities (5/5), which are harder to uncover in developmental testing. (Cybersecurity testing in operational testing consists of Cooperative Vulnerability Penetration Assessments (CVPAs) and Adversarial Assessments (AAs).)

Figure 3 further breaks down the number of significant problems discovered per operational test by each of the Services. Marine Corps tests are included with Navy; Special Operations Command and the Defense Agencies are grouped into a fourth category. In some cases, outliers have distorted the overall average. For example, in Navy operational tests this year, the LCS and the SSDS experienced many significant problems. These are documented in the individual write-ups for these programs. LCS, in particular, revealed nine significant problems in each of the two operational tests for the *Freedom* and *Independence* variants. Effectiveness problems, such as those described above, include surface warfare capabilities, air defense capabilities, and basic ship functions, such as fuel endurance and boat handling equipment. The 18 problems for LCS also include significant suitability problems with the reliability of such systems as the propulsion and cooling systems, as well as survivability and cybersecurity problems, the latter only being counted once for each ship variant despite the existence of numerous deficiencies in the architecture of the shipboard networks.

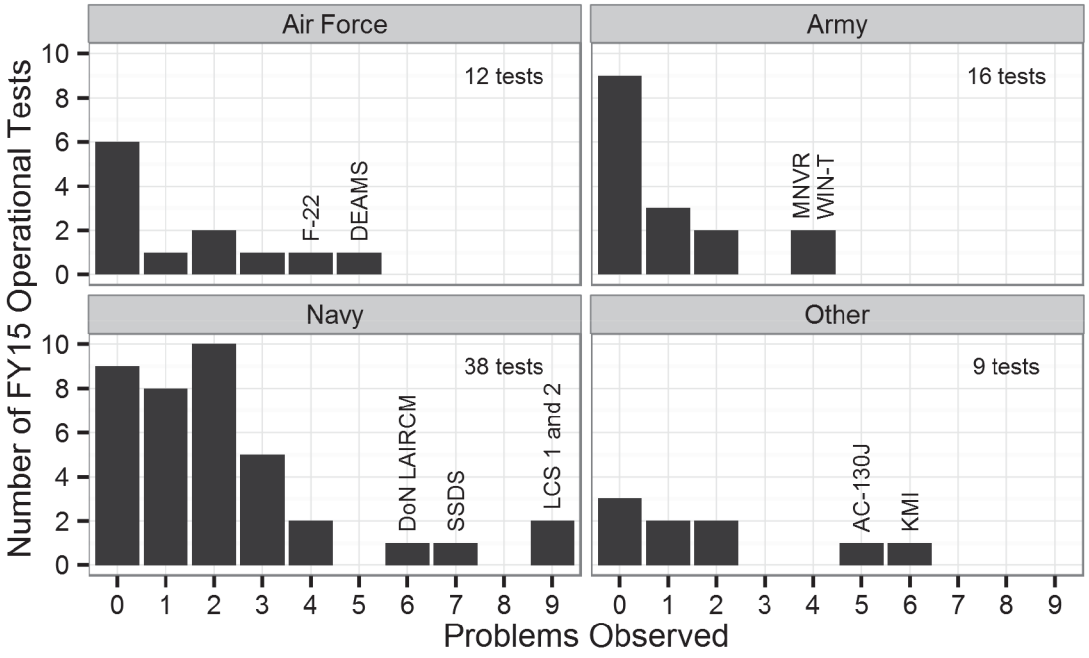

FIGURE 3. HISTOGRAM SHOWING THE NUMBER OF PROBLEMS OBSERVED IN EACH PROGRAM, BY SERVICE. PROGRAMS WITH THE MOST PROBLEMS FROM EACH SERVICE ARE LABELED.
(Note: Navy includes the Marine Corps; Other includes the U.S. Special Operations Command, Missile Defense Agency, Defense Logistics Agency, Defense Information Systems Agency, and National Security Agency.)

With the exception of these outliers, the histograms in Figure 3 show that, in general, the Services experience similar trends in the number of problems observed while conducting operational testing. Fortunately, few programs experienced large numbers of problems in operational testing. It is also noteworthy that each of the Services experienced tests with no problems (Air Force 6/12, Army 9/16, Navy (and Marine Corps) 9/38); even in these cases, the operational testing was essential to confirm that users will be able to employ these systems in realistic conditions and not be plagued by significant problems.

Tables 1 and 2 list the 75 operational tests discussed in this year's annual report. Each row provides the name of the system and operational test, and indicates which categories of problems were observed; for details on the problems observed, see individual system write-ups in this report.

TABLE 1. OPERATIONAL TESTS (OT) IN FY15 WITH NO SIGNIFICANT PROBLEM DISCOVERY	
System Name	**OT Name**
AIM-120 Advanced Medium-Range Air-to-Air Missile (AMRAAM) (pg. 315)	AMRAAM Basic Electronic Protection Improvement Program (EPIP) OT
AMRAAM	AMRAAM System Improvement Program (SIP-1) OT
Ballistic Missile Defense System (BMDS) (pg. 357)	BMDS Flight Test-Operational (FTO)-02
Common Aviation Command and Control System (CAC2S) (pg. 175)	CAC2S Increment I OA
Consolidated Afloat Networks and Enterprise Services (CANES) (pg. 179)	CANES Force-Level FOT&E
CANES	CANES Unit-Level IOT&E
Distributed Common Ground System – Army (DCGS-A) (pg. 107)	DCGS-A Increment 1 Release 2 FOT&E
E-2D Advanced Hawkeye (AHE) (pg. 199)	E-2D AHE FOT&E
EA-18G Growler (pg. 201)	H10 Software Configuration Set FOT&E
Global Combat Support System – Army (GCSS-Army) (pg. 109)	LSVT 2015
Guided Multiple Launch Rocket System – Alternate Warhead (GMLRS-AW) XM30E1 (pg. 113)	GMLRS-AW FOT&E
Integrated Personnel and Pay System – Army (IPPS-A) (pg. 117)	IPPS-A Increment 1 FOT&E
Joint Light Tactical Vehicle (JLTV) (pg. 125)	JLTV LUT (an operational assessment)
Light Armored Vehicle – Anti-Tank Modernization (LAV-ATM) (pg. 223)	LAV-ATM OA
KC-46A (pg. 337)	KC-46A OA-2
Massive Ordnance Penetrator (MOP) (pg. 341)	Enhanced Threat Reduction Phase 2 OA
Mine Resistant Ambush Protected Vehicles (MRAP) (pg. 137)	Long Wheel Base (LWB) Ambulance LUT (an operational assessment)
Naval Integrated Fire Control – Counter Air (NIFC-CA) From the Sea (FTS) (pg. 163, 181)	AWS 9A/CEC/ NIFC-CA FTS DT/OT
Nett Warrior (pg. 143)	Nett Warrior IOT&E
One System Remote Video Terminal (OSRVT) (pg. 145)	OSRVT IOT&E
Precision Guidance Kit (PGK) (pg. 149)	PGK IOT&E
QF-16 Full-Scale Aerial Target (FSAT) (pg. 349)	QF-16 IOT&E
Standard Missile-6 (SM-6) (pg. 299)	SM-6 Block I FOT&E

DT – Developmental Test
FOT&E – Follow-on Operational Test and Evaluation
IOT&E – Initial Operational Test and Evaluation
LSVT– Lead Site Verification Test
LUT – Limited User Test
OA – Operational Assessment
OT – Operational Test

TABLE 2. OPERATIONAL TESTS IN FY15 WITH DISCOVERY OF SIGNIFICANT PROBLEMS				
System Name	Operational Test	Effectiveness	Suitability	Survivability
AC-130J Ghostrider (pg. 309)	AC-130J Block 10 OA	X	X	X
Acoustic Rapid Commercial Off-the-Shelf Insertion (A-RCI) for AN/BQQ-10(V) Sonar (pg. 159)	A-RCI Advanced Processing Build 2011 (APB-11) Phase 2 FOT&E	X	X	
Aegis Modernization Program (pg. 163)	Aegis Weapon System (AWS) 9A (Cruiser (CG)/Cooperative Engagement Capability (CEC)/Navy Integrated Fire Control – Counter Air (NIFC-CA) DT/OT	X	X	X
Aegis Modernization Program	AWS 9A (CG) OT	X		
Aegis Modernization Program	AWS 9C (Destroyer (DDG) OT	X	X	
AIM-9X Air-to-Air Missile Upgrade (pg. 169)	AIM-9X Block II IOT&E		X	
Air Force Distributed Common Ground System (AF DCGS) (pg. 317)	Geospatial Intelligence (GEOINT) Baseline (GB) 4.1 FDE Phase 1	X	X	
Air Operations Center – Weapon System (AOC-WS) (pg. 321)	AOC-WS 10.1 Recurring Event (RE) 13 OT	X	X	X
Airborne Mine Neutralization System (AMNS; under LCS and MH-60S) (pg. 225, 249)	MH-60S with AMNS Phase B OA and concurrent LCS Mine Countermeasures (MCM) Mission Package (MP) DT	X		
AN/SQQ-89A(V)15 Integrated Undersea Warfare (USW) Combat System Suite (pg. 171)	Advanced Capability Build (ACB) 11 Pre-IOT&E		X	
Q-53 Counterfire Target Acquisition Radar System (pg. 151)	Q-53 IOT&E(2)	X		
Ballistic Missile Defense System (BMDS) (pg. 357)	Aegis BMD 4.0 IOT&E	X		
Countermeasure Anti-Torpedo (CAT) (under Surface Ship Torpedo Defense (SSTD)) (pg. 303)	SSTD QRA aboard CVN 71	X	X	
CV-22 Osprey (pg. 325)	Suite of Integrated Radio Frequency Countermeasures Block 8 FDE	X		
CVN 78 *Gerald R. Ford* Class Nuclear Aircraft Carrier (pg. 183)	CVN 78 OTB4 OA	X	X	
Defense Agencies Initiative (DAI) (pg. 25)	DAI Increment 2 Release 1 OA			
Defense Enterprise Accounting and Management System (DEAMS) (pg. 327)	DEAMS Release 3 IOT&E	X	X	X
Defense Medical Information Exchange (DMIX) (pg. 27)	DMIX Release 2 OA	X		X
Department of the Navy Large Aircraft Infrared Countermeasures (DoN LAIRCM) (pg. 197)	DoN LAIRCM Advanced Threat Warning (ATW) FOT&E on CH-53E	X	X	
F-22A Advanced Tactical Fighter (pg. 331)	F-22A Increment 3.2A FOT&E	X		X
F/A-18E/F Super Hornet (pg. 201)	Super Hornet FOT&E	X	X	
Family of Advanced Beyond Line-of-Sight Terminals (FAB-T) (pg. 335)	FAB-T OA-1	X		
Global Combat Support System – Marine Corps (GCSS-MC) (pg. 203)	GCSS-MC Release 1.1.1 FOT&E	X	X	
Global Command and Control System – Joint (GCCS-J) (pg. 83)	GCCS-J Global Release 4.3 Update 1 OT&E			X
Guided Multiple Launch Rocket System – Alternate Warhead (GMLRS-AW) M30E1 (pg. 113)	GMLRS-AW IOT&E	X		
H-1 Upgrades – U.S. Marine Corps Upgrade to AH-1Z Attack Helicopter and UH-1Y Utility Helicopter (pg. 205)	H-1 Upgrades OT-IIIC FOT&E	X	X	
Infrared Search and Track (IRST) (pg. 207)	IRST OA 1	X		
Integrated Defensive Electronic Countermeasures (IDECM) (pg. 209)	IDECM Block 4 FOT&E	X	X	
Integrated Personnel and Pay System – Army (IPPS-A) (pg. 117)	IPPS-A Adversarial Assessment			X
Joint High Speed Vessel (JHSV) (Expeditionary Fast Transport) (pg. 213)	JHSV FOT&E	X	X	
Joint Warning and Reporting Network (JWARN) (pg. 91)	Navy FOT&E for JWARN Increment 1	X	X	

TABLE 2. OPERATIONAL TESTS IN FY15 WITH DISCOVERY OF SIGNIFICANT PROBLEMS (CONTINUED)				
System Name	**Operational Test**	**Effectiveness**	**Suitability**	**Survivability**
Key Management Infrastructure (KMI) Increment 2 (pg. 93)	KMI Spiral 2 Spin 1 LUT (an operational assessment)		X	
KMI Increment 2	KMI Spiral 2 Spin 1 LUT Retest (an operational assessment)		X	
KMI Increment 2	KMI Spiral 2 Spin 1 OA		X	
LHA 6 New Amphibious Assault Ship (formerly LHA(R)) (pg. 219)	LHA 6 IOT&E	X	X	
Littoral Combat Ship (LCS) (*Freedom* Class) (pg. 225)	*Freedom* Class LCS with Increment 2 Surface Warfare (SUW) mission package OT	X	X	X
LCS (*Independence* Class) (pg. 225)	*Independence* Class LCS with Increment 2 SUW mission package	X	X	X
MH-60R Multi-Mission Helicopter (pg. 247)	LAU-61G/A Digital Rocket Launcher QRA	X		
Mid-Tier Networking Vehicular Radio (MNVR) (pg. 135)	MNVR and Joint Enterprise Network Manager (JENM) LUT (an operational assessment)	X		X
Miniature Air-Launched Decoy (MALD) and MALD – Jammer (MALD-J) (pg. 343)	MALD-J FDE	X	X	
Mobile Landing Platform (MLP) Core Capability Set (CCS) (Expeditionary Transfer Dock) and Afloat Forward Staging Base (AFSB) (Expeditionary Mobile Base) (pg. 255)	MLP CCS IOT&E	X		
MQ-1C Unmanned Aircraft System Gray Eagle (pg. 145)	Gray Eagle FOT&E	X		X
MV-22 Osprey (pg. 67)	MV-22B OT-IIIK FOT&E	X	X	
P-8A Poseidon Multi-Mission Maritime Aircraft (MMA) (pg. 269)	P-8A Increment 2 Engineering Change Proposal (ECP) 1 FOT&E	X		
Surface Electronic Warfare Improvement Program (SEWIP) Block 2 (pg. 301)	SEWIP Block 2 IOT&E (Phase 1)	X	X	
Ship Self-Defense System (SSDS) (pg. 287)	SSDS FOT&E	X		
Surveillance Towed Array Sensor System (SURTASS) and Compact Low Frequency Active (CLFA) Sonar (pg. 307)	SURTASS/CLFA IOT&E	X		X
Torpedo Warning System (TWS) (as part of Surface Ship Torpedo Defense (SSTD)) (pg. 303)	SSTD QRA aboard CVN 71		X	
SSN 784 *Virginia* Class Block III Submarine (pg. 295)	*Virginia* Block III Early Fielding Certification Event	X	X	
Warfighter Information Networking – Tactical (WIN-T) (pg. 155)	WIN-T Increment 2 FOT&E 2	X	X	X

DT – Developmental Test
FDE – Force Development Evaluation
FOT&E – Follow-on Operational Test and Evaluation
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
OT&E – Operational Test and Evaluation
QRA – Quick Reaction Assessment

There are 108 operational tests scheduled to begin in the next two fiscal years, and I am aware of significant problems, that if not corrected, may adversely affect my evaluation of the system's effectiveness, suitability, or survivability in 48 of these systems. Table 3 lists the upcoming operational tests for systems discussed in this year's annual report (see individual system write-ups 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, I provide a brief description of the problems below 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 Ghostrider (pg. 309)	AC-130J Block 10 IOT&E	X	X	X
Acoustic Rapid Commercial Off-the-Shelf Insertion (A-RCI) for AN/BQQ-10(V) Sonar (pg. 159)	A-RCI Advanced Processing Build 2013 (APB-13) FOT&E	X	X	
Aegis Modernization Program (pg. 163)	Aegis Weapon System (AWS) 9C OT (DDG)	X	X	
AGM-88E Advanced Anti-Radiation Guided Missile (AARGM) (pg. 167)	AARGM Block 1 Upgrade FOT&E	X		
Air Force Distributed Common Ground System (AF DCGS) (pg. 317)	Geospatial Intelligence (GEOINT) Baseline (GB) 4.1 FDE Phase 2	X	X	
Air Operations Center – Weapon System (AOC-WS) (pg. 321)	AOC-WS 10.2 OA	X		
Airborne Laser Mine Detection System (ALMDS; under LCS and MH-60S) (pg. 225, 249)	Combined MH-60S with ALMDS Block I and LCS Mine Countermeasures (MCM) mission package Increment 1 OT&E	X	X	
Airborne Mine Neutralization System (AMNS; under LCS and MH-60S) (pg. 225, 249)	Combined MH-60S with AMNS Block I and LCS MCM mission package Increment 1 OT&E	X	X	
AN/SQQ-89A(V)15 Integrated Undersea Warfare (USW) Combat System Suite (pg. 171)	Continued Advanced Capability Build (ACB) 11 IOT&E		X	
Ballistic Missile Defense System (BMDS) (pg. 357)	Aegis BMD 5.0 Capability Upgrade (CU) OT	X		
CH-53K – Heavy Lift Replacement Program (pg. 173)	CH-53K OT-B1 OA		X	
Countermeasure Anti-Torpedo (CAT) (under Surface Ship Torpedo Defense (SSTD)) (pg. 303)	Salvo Capability QRA	X	X	
CV-22 Osprey (pg. 325)	Operational Utility Evaluation (OUE) of the CV-22 Tactical Software Suite 20.2.02/20.2.03	X	X	X
Defense Enterprise Accounting and Management System (DEAMS) (pg. 327)	DEAMS Inc 1 FOT&E	X	X	X
Defense Medical Information Exchange (DMIX) (pg. 27)	DMIX Release 3 IOT&E	X		X
Department of the Navy Large Aircraft Infrared Countermeasures (DoN LAIRCM) (pg. 197)	DoN LAIRCM Advanced Threat Warning (ATW) QRA on MV-22	X	X	
F-22A Advanced Tactical Fighter (pg. 331)	F-22A Increment 3.2B IOT&E		X	
F/A-18E/F Super Hornet (pg. 201)	System Configuration Set H12 and APG-79 upgrade OT		X	
Family of Advanced Beyond Line-of-Sight Terminals (FAB-T) (pg. 335)	FAB-T IOT&E	X	X	
Global Command and Control System – Joint (GCCS-J) (pg. 83)	GCCS-J 6.0 OT&E			X
Infrared Search and Track (IRST) (pg. 207)	IRSTS Block I OA 2	X		
Integrated Defensive Electronic Countermeasures (IDECM) (pg. 209)	IDECM Software Improvement Program FOT&E	X	X	
Joint Battle Command – Platform (JBC-P) (pg. 123)	JBC-P-Log FOT&E	X	X	X
Key Management Infrastructure (KMI) Increment 2 (pg. 93)	KMI Spiral 2 Spin 2 LUT (an operational assessment)	X	X	
Littoral Combat Ship (LCS) (pg. 225)	*Independence* variant OT with the MCM mission package	X	X	X
Mid-Tier Networking Vehicular Radio (MNVR) (pg. 135)	MNVR IOT&E	X		X
Mobile User Objective System (MUOS) (pg. 259)	MUOS MOT&E 2	X	X	
MQ-4C Triton Unmanned Aircraft System (UAS) (pg. 261)	MQ-4C IOT&E	X		
MQ-9 Reaper Armed UAS (pg. 345)	MQ-9 Block 5 FOT&E		X	X
Nett Warrior (pg. 143)	Nett Warrior FOT&E	X		
P-8A Poseidon Multi-Mission Maritime Aircraft (MMA) (pg. 269)	P-8A Increment 2 Engineering Change Proposal (ECP) 2 FOT&E	X		
Patriot Advanced Capability-3 (PAC-3) (pg. 147)	Patriot Post-Deployment Build-8 (PDB-8) IOT&E	X	X	X
Remote Minehunting System (RMS; also addressed in LCS) (pg. 273)	LCS MCM mission package Increment 1 OT&E and unofficial concurrent RMS OA	X	X	
Surface Electronic Warfare Improvement Program (SEWIP) Block 2 (pg. 301)	SEWIP Block 2 IOT&E (Phase 2)	X	X	
Torpedo Warning System (as part of Surface Ship Torpedo Defense (SSTD)) (pg. 303)	Towed Active Acoustic Source QRA		X	
SSN 784 *Virginia* Class Block III Submarine (pg. 295)	*Virginia* Block III FOT&E	X	X	
Warfighter Information Networking – Tactical (WIN-T) (pg. 155)	WIN-T Increment 2 Network Management and Cybersecurity FOT&E	X		X

FDE – Force Development Evaluation
FOT&E – Follow-on Operational Test and Evaluation
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
OT&E – Operational Test and 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
AH-64E	AH-64E Lot 6 FOT&E II			X
AN/BLQ-10 Submarine Electronic Support System	Technical Insertion 14 (TI-14) FOT&E	X	X	
Coastal Battlefield Reconnaissance and Analysis (COBRA) System (also addressed in LCS)	COBRA Block I IOT&E	X		
DOD Automated Biometric Identification System (ABIS)	DOD ABIS 1.2 Adversarial Assessment			X
GPS Next Generation Operational Control System (OCX)	OCX Milestone C OA	X	X	
Mark XIIA Mode 5 Identification Friend or Foe (IFF)	Mode 5 Joint Operational Test Approach (JOTA) 3	X		
Integrated Personnel and Pay System – Army (IPPS-A) Increment II	IPPS-A Increment II Release 2.0 LUT (an operational assessment)		X	
Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS)	JLENS Combatant Command Integration Assessment (CCIA)	X	X	
Military GPS User Equipment (MGUE) Increment 1	MGUE OUE	X	X	
MK 54 Lightweight Torpedo	MK 54 MOD 1 IOT&E	X	X	
XM25 Counter Defilade Target Engagement System	XM25 LUT (an operational assessment)		X	

FOT&E – Follow-on Operational Test and Evaluation
IOT&E – Initial Operational Test and Evaluation
LUT – Limited User Test
OA – Operational Assessment
OUE – Operational Utility Evaluation

AH-64E. The AH-64E is a four-bladed, twin-engine attack helicopter. The AH-64E Lot 6 FOT&E II is scheduled to begin in late FY17.

Lot 4 AH-64E and its interfacing systems have potentially significant cybersecurity deficiencies. Further testing of the AH-64E embedded systems is necessary to determine the significance of the deficiencies.

AN/BLQ-10. The BLQ-10 is an electronic support system that provides submarines the capability to detect, classify, and localize communications and radar signals. The TI-14 FOT&E is scheduled to begin in FY16.

- Classified effectiveness problems
- TI-08 testing in FY13 found that the Navy's training program and promotion system does not maintain operator proficiency on the communications subsystem (of BLQ-10). Additionally, normal operations do not frequently involve the communications subsystem, so operators do not have a chance to maintain their proficiency.

Coastal Battlefield Reconnaissance and Analysis (COBRA) Block I. The COBRA Block I system is designed to detect and localize surface minelines, minefields, and obstacles in the beach zone in support of a beach landing by offensive forces. The COBRA Block I IOT&E is scheduled to begin in FY16.

- During dynamic conditions, such as roll or pitch maneuvers, the Integrated Gimbal (IG) was unable to maintain the correct step-stare sequence. During flight operations, the IG must continually look at a single spot while several images are taken. In addition, the IG must also adjust its look direction systematically to the next correct spot to optimize its imagery acquisition. This process of adjusting the look angle of the IG is called the step-stare sequence. Failures in the system to maintain the correct step-stare sequence can result in lack of imagery data for portions of the target area needed for Post Mission Analysis (PMA).

DOD Automated Biometric Identification System (ABIS). DOD ABIS consists of information technology components and biometric examiner experts that receive, process, and store biometrics from collection assets across the globe, match new biometrics against previously stored assets, and update stored records with new biometrics and contextual data to positively identify and verify actual or potential adversaries. The DOD ABIS 1.2 Adversarial Assessment is scheduled to begin in FY16.

- There are numerous (classified) deficiencies, as well as the network defenders' lack of knowledge of the network architecture, that could prevent the system from being adequately defended.

Global Positioning System (GPS) Next Generation Operational Control Segment (OCX). GPS OCX will provide command and control of the GPS satellite constellation and functions including monitoring and correction of position and time signals from each satellite, use of modernized GPS signals, and features that support navigation warfare requirements.

- The Air Force has stated that it needs to delay the start of OCX operations from 2018 to 2022 due to severe problems with software development. The Air Force has also stated that delaying OCX until 2022 poses a significant risk of a gap in GPS coverage starting in 2019 because the Air Force requires OCX to operate the GPS III satellites the Air Force is building to sustain the GPS constellation.
- To avoid a worldwide degradation in GPS-based military and civilian positioning, navigation, and timing, the Air Force should prioritize acquisition of a GPS III ground station capability which can be operationally tested and employed prior to the constellation sustainment need date in 2019.
- GPS monitoring stations are inadequate for testing and operations of modernized GPS signals, which will prevent collection of worldwide signal quality data and full evaluation of required navigation warfare capabilities during both developmental and operational testing.

Mark XIIA Mode 5 Identification Friend or Foe (IFF). The Mark XIIA Mode 5 IFF is a cooperative identification system that uses interrogators and transponders on host platforms to send, receive, and process friendly identification information. The Mode 5 Joint Operational Test Approach (JOTA) 3 is scheduled to begin in FY17.

- The system does not meet the criteria for Lethal Interrogation performance. If uncorrected, this could result in fratricide incidents during real world combat operations, especially in dense target environments.
- Identification information from some Mode 5-equipped command and control systems could not be directly passed into the command and control system, limiting the ability of that system to develop an unambiguous picture of the dynamic ongoing air battle.

Integrated Personnel and Pay System – Army (IPPS-A) Increment II. IPPS-A is a human resource system that will become the authoritative database for demographic information, deployment history, pay, and other personnel information for the Army. The IPPS-A Increment II LUT is scheduled to begin in FY17.

- Personnel data in the Army and DOD systems that interface with IPPS-A need to be verified as correct in order for IPPS-A to provide accurate reports

Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS). JLENS consists of separate surveillance and fire control radar systems that are individually mounted on 74-meter tethered aerostat balloons that operate at altitudes up to 10,000 feet above mean sea level. The JLENS Combatant Command Integration Assessment (CCIA) is scheduled to begin in FY16.

- System-level reliability, both software and hardware, is not meeting the program's goals for reliability growth.
- Electronic interference has limited the surveillance radar system to certain frequencies.
- The JLENS surveillance radar, as initially configured, had certain features incorporated into its software system intended to deal with the very high target densities that exist. However, the design approach chosen to deal with this problem resulted in certain target sets being excluded by the software algorithms associated with the surveillance radar. This could result in some high priority radar targets not being processed and tracked.
- Early testing has revealed problems related to the timely passing of unambiguous radar target track information from the JLENS system into the North American Aerospace Defense Command.
- During preparations for the CCIA exercise, one of the aerostats suffered a tether failure and was badly damaged. The accident is under investigation and corrective actions will determine the future direction of the CCIA.

Military GPS User Equipment (MGUE) Increment 1. MGUE consists of GPS receivers, capable of receiving and processing the new military GPS code (M-code), for all DOD platforms except precision guided munitions, handheld devices, and space vehicles. M-code is designed to provide a more secure and electronic warfare resistant signal. The MGUE Operational Utility Evaluation is scheduled to begin in FY17.

- Developmental testing observed emerging power consumption, peak power draw, thermal output, and messaging problems in very early platform integration efforts. These problems might make MGUE incompatible with many DOD platforms, driving host platform and interface redesigns before those platforms can incorporate MGUE and employ M-code. Although MGUE is expected to eventually integrate in nearly all platforms and munitions across the DOD portfolio, the current acquisition strategy does not involve significant integration testing on many platforms until after completion of OT&E on the four lead platforms in 2019. Without wider testing, there is a significant risk of late discovery of compatibility problems that could

delay fielding and result in significant additional costs for either re-designing the MGUE itself or the platforms on which the MGUE is planned to be used.
- Messaging incompatibilities between current MGUE designs, existing platforms, and munitions may prevent some platforms from employing GPS M-code as required.

MK 54. The MK 54 lightweight torpedo is the primary Anti-Submarine Warfare weapon used by U.S. surface ships, fixed-wing aircraft, and helicopters. The MK 54 MOD 1 IOT&E is scheduled to begin in FY17.
- During FOT&E, the MK 54 MOD 0 demonstrated below threshold performance in many scenarios.
- Launch platforms are not always able to launch the MK 54 torpedo in a manner that can support an effective attack.
- The MK 54 torpedo does not always interface properly with the fire control systems on its launch platforms.
- There are several other classified problems.

XM25 Counter Defilade Target Engagement System (CDTE). The XM25 CDTE fires 25 mm programmable high-explosive airburst rounds to defeat defilade and point area targets out to 500 meters. A Limited User Test is scheduled to begin in FY16.
- The Army conducted three Forward Operational Assessments of the XM25 CDTE with prototype weapons in 2011, 2012, and 2013, each of which resulted in a weapon malfunction and minor injuries to the operators. The program conducted a root cause investigation and made design changes to ensure the safety of the weapon. Developmental testing of the modified design is ongoing.

PROGRESS UPDATES ON DISCOVERIES REPORTED IN THE FY14 ANNUAL REPORT

In my annual report last year, I identified 8 systems that discovered new problems, 10 systems that discovered new problems and re-observed known problems, and 15 systems that re-observed known problems during operational testing in FY14. The status of these 33 programs is listed below.

All fixes implemented and verified in OT
- AIM-120D Advanced Medium-Range Air-to-Air Missile (AMRAAM)
- Joint Light Tactical Vehicle (JLTV)
- QF-16 Full-Scale Aerial Target (FSAT)

Some (or all) fixes implemented but new problems discovered or known problems re-observed in OT
- Aegis Ballistic Missile Defense (Aegis BMD)
- Air Force Distributed Common Ground System (AF DCGS)
- Air Operations Center – Weapon System (AOC-WS)
- AN/SQQ-89A(V)15 Integrated Undersea Warfare (USW) Combat System Suite
- Ballistic Missile Defense System (BMDS)
- CVN 78 *Gerald R. Ford* Class Nuclear Aircraft Carrier
- Defense Enterprise Accounting and Management System (DEAMS)
- Defense Medical Information Exchange (DMIX)
- F/A-18E/F Super Hornet and EA-18G Growler
- Infrared Search and Track (IRST)
- Joint High Speed Vessel (JHSV)
- Joint Warning and Reporting Network (JWARN)
- Littoral Combat Ship (LCS)
- Miniature Air-Launched Decoy (MALD) and MALD – Jammer (MALD-J)
- Multi-Static Active Coherent (MAC) System
- MV-22 Osprey
- P-8A Poseidon Multi-Mission Maritime Aircraft (MMA)
- Q-53 Counterfire Target Acquisition Radar System
- Surface Ship Torpedo Defense (SSTD) System: Torpedo Warning System (TWS) and Countermeasure Anti-Torpedo (CAT)
- Surveillance Towed Array Sensor System (SURTASS) and Compact Low Frequency Active (CLFA) Sonar

Some fixes (potentially) implemented; currently in OT or planning additional OT
- Battle Control System – Fixed (BCS-F)
- DOD Automated Biometric Identification System (ABIS)

- Joint Battle Command – Platform (JBC-P)
- Manpack Radio
- Mark XIIA Mode 5 Identification Friend or Foe (IFF)
- MK 54 Lightweight Torpedo

No fixes planned, or no fixes planned to be tested in the next two years
- AN/PRC-117G
- Distributed Common Ground System – Marine Corps (DCGS-MC)
- F-15E Radar Modernization Program (RMP)
- RQ-21A Blackjack (formerly Small Tactical Unmanned Aerial System (STUAS))

In FY14, I also identified 23 systems that had significant issues 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
- Distributed Common Ground System – Army (DCGS-A)
- Key Management Infrastructure (KMI)
- Precision Guidance Kit (PGK)

Fixes verified in OT – New problems discovered
- AN/SQQ-89A(V)15 Integrated Undersea Warfare (USW) Combat System Suite

Fixes verified in OT – Known problems re-observed
- Ballistic Missile Defense System (BMDS)
- Infrared Search and Track (IRST)
- LHA 6 New Amphibious Assault Ship (formerly LHA(R))
- Littoral Combat Ship (LCS)
- Mobile Landing Platform (MLP) Core Capability Set (CCS) (Expeditionary Transfer Dock) and Afloat Forward Staging Base (AFSB) (Expeditionary Mobile Base)

Fixes tested in OT – Both new problems discovered and known problems re-observed
- AC-130J Ghostrider
- Air Force Distributed Common Ground System (AF DCGS)
- Defense Enterprise Accounting and Management System (DEAMS)
- Defense Medical Information Exchange (DMIX)
- Warfighter Information Network – Tactical (WIN-T)

Fixes not planned to be tested in the next two years
- F-35 Joint Strike Fighter (JSF)

Fixes currently being tested or planned to be tested in the next two years
- M829E4 Armor Piercing, Fin Stabilized, Discarding Sabot – Tracer (APFSDS-T)
- Public Key Infrastructure (PKI)
- RQ-4B Global Hawk High-Altitude Long-Endurance Unmanned Aerial System (UAS)
- AGM-88E Advanced Anti-Radiation Guided Missile (AARGM)
- MQ-4C Triton Unmanned Aircraft System
- MQ-9 Reaper Armed Unmanned Aircraft System (UAS)
- Patriot Advanced Capability-3 (PAC-3)
- Remote Minehunting System (RMS)