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STATEMENT

BY

J. MICHAEL GILMORE

DIRECTOR, OPERATIONAL TEST AND EVALUATION

OFFICE OF THE SECRETARY OF DEFENSE

BEFORE THE

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SUBCOMMITTEE ON STRATEGIC FORCES

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J. Michael Gilmore
Director, Operational Test and Evaluation (DOT&E)
Office of the Secretary of Defense

Chairman Nelson, Senator Sessions, distinguished Members of the Committee, thank you for the opportunity to discuss missile defense test planning, processes, and programs, including my assessment of the Ballistic Missile Defense System, or BMDS and the Integrated Master Test Plan (IMTP). I will focus my remarks in four areas:

First, my assessment of the Missile Defense Agency, or MDA, flight and ground test program during the past year, the details of which are in my annual report submitted to you on February 13th;

Second, the major events this last fiscal year that influenced the most recent update to the IMTP, version 12.1;

Third, my assessments of the Terminal High Altitude Area Defense (THAAD), the AN/TPY-2 Radar, and the Phased Adaptive Approach for the defense of Europe; and

Finally, I will provide my assessment of the current IMTP.

Fiscal Year 2011 Flight and Ground Test Program

The MDA conducted four intercept flight tests this past year: two for Aegis Ballistic Missile Defense (BMD), one for Ground-based Midcourse Defense (GMD), and one for THAAD. The U.S. Army conducted four Patriot intercept flight tests, one for the PAC-3 Missile Segment Enhancement interceptor, and

three supporting Post Deployment Build 7. The MDA conducted eleven ground tests and exercises, with the most significant ground test, the Ground Test Distributed-04 (GTD-04) series, occurring late in the calendar year supporting the implementation of the European Phased Adaptive Approach (EPAA) Phase 1 capability on December 31, 2011. These flight and ground tests were included in the DOT&E-approved IMTP.

During this period, Aegis BMD 3.6.1 and THAAD demonstrated progress toward intermediate and short-range threat class capability, respectively. Aegis BMD successfully completed Flight Test Standard Missile-15 (FTM-15) and THAAD successfully completed Flight Test THAAD-12 (FTT-12). However, in its first flight test of the Standard Missile-3 (SM-3) Block IB missile, the MDA failed to achieve a successful intercept during FTM-16 Event 2, although the MDA was successful in demonstrating many other 4.0.1 Aegis Weapon System capabilities. The cause of the FTM-16 failure is under investigation.

In April 2011, Aegis BMD completed FTM-15, the first intercept of an intermediate-range ballistic missile. In this test, an SM-3 Block IA interceptor was launched from an Aegis BMD 3.6.1 destroyer, set up with remote engagements authorized. The ship used up-range track data from an AN/TPY-2 radar in forward-based mode as well as data from its organic Aegis radar to prosecute the engagement and intercept the target.

In October 2011, THAAD completed an Initial Operational Test and Evaluation (IOT&E) (FTT-12) in which the system intercepted two incoming

threat missiles nearly simultaneously. In February 2012, DOT&E published a detailed report supporting a decision to proceed with material release of the system to the Army for operational use.

GMD suffered a second consecutive flight test failure flying the Capability Enhancement II Exo-atmospheric Kill Vehicle, and did not demonstrate any progress toward intermediate-range or Intercontinental Ballistic Missile (ICBM) threat class capability. A Failure Review Board has identified the root cause of the failure of the kill vehicle to intercept and the MDA has developed and is implementing corrective actions on the associated kill vehicle components to correct the problems that caused the failure. It will first test these fixes on a non-intercept flight test this spring followed several months later with a repeat of the previously attempted intercept flight test.

For the first time, the Command, Control, Battle Management, and Communications (C2BMC) element demonstrated during a ground test in December 2011 the capability to control two operationally-deployed AN/TPY-2 radars in forward-based mode, using existing operational communications architectures, personnel, and tactics, techniques, and procedures.

My assessment, based on the testing, is that the MDA flight and ground test program for FY/CY11 was adequate to support the development of the BMDS. The flight test program allowed the MDA to collect important data on Empirical Measurement Events and Critical Engagement Conditions (such as THAAD's near-simultaneous intercept of two short-range targets during FTT-12 and an

Aegis BMD intercept conducted at high closing velocity during the FTM-15 intercept of an intermediate-range target, respectively) that support model and simulation verification, validation, and accreditation. During the reporting period, the MDA continued to incorporate elements of operational realism when planning for and conducting both ground and flight testing.

The MDA and the BMDS Operational Test Agency have now collected sufficient data to permit a quantitative assessment of Aegis BMD and THAAD capability. This allowed me to include estimates of the probability of engagement success over the tested battlespace of these two weapon systems in my 2011 Annual BMDS Assessment Report.

Events Affecting Test Planning

Four events affected the development of version 12.1 of the IMTP, approved in March 2012:

1. The FTM-16 Event 2 flight test failure,
2. Funding changes to the 2013 test baseline and the future years defense program,
3. The availability of the targets originally planned for use in FTO-01 in 4QFY12, and
4. A Space Tracking and Surveillance System (STSS) tracking exercise, demonstrating target detection and stereo tracking, that enabled the inclusion of a launch-on-STSS in future flight testing.

Due to the FTM-16 Event 2 failure, the MDA added FTM-16 Event 2a as part of the SM-3 return-to-flight plan. This flight test will also support the future SM-3 Block IB production decision and provide data to certify the performance of the 4.0.1 Aegis Weapon System.

The MDA maintained the GMD test sequence in IMTP version 12.1. The MDA will conduct their first engagement of an ICBM, with the target flying a range of greater than 5,000 kilometers, in FY15. This will also be the first salvo test of two interceptors fired at a single target. The MDA will conduct a multiple simultaneous engagement of two interceptors on two targets in FY18.

The MDA slowed the THAAD test cadence to eighteen-month test centers due to budget constraints within the agency. As a result, FTT-11a (exo-atmospheric engagement of a complex short range target) is delayed by five quarters to 4QFY14, FTT-15 (endo-atmospheric engagement of a medium-range target with an Aegis BMD cue) by 11 quarters to 2QFY17, FTT-16 (endo-atmospheric engagement of a unitary short-range target with high re-entry heating effects), and FTT-17 (engagement of a maximum range medium-range target) deferred beyond the future years defense program. However, THAAD will nonetheless participate in several previously planned integrated and operational BMDS tests to be conducted through FY15.

The FTO-01 operational test of layered defenses comprising THAAD, Aegis, and Patriot was delayed, primarily due to the unavailability of the originally planned targets. Analysis conducted last year also raised currently unresolved

issues regarding the performance of THAAD under the planned conditions of the test. As a result, MDA now plans to conduct an integration test using the ballistic and cruise missile targets that will be available to provide data needed to resolve the identified performance issues, as well as to provide operational commanders with information they will use to develop tactics, techniques, and procedures for employing layered theater missile defenses. The MDA moved FTO-01 from 4QFY12 to 3QFY13 and, in its place, added the walk-up event FTI-01 in 4QFY12. FTI-01 will be conducted as a combined developmental/operational test utilizing Aegis BMD, THAAD, and Patriot simulating a layered defense of the Central Command Area of Responsibility.

The MDA added FTM-20 in FY14 to demonstrate launch-on-STSS capability. The STSS-generated track will be forwarded by the C2BMC to an Aegis BMD 3.6.1 ship that will engage the target with an SM-3 Block 1A interceptor.

Assessments of THAAD, the AN/TPY-2 Radar, and the EPAA

In February, I published a report on the initial operation test and evaluation (IOT&E) of THAAD and the AN/TPY-2 radar. I based my assessment primarily on FTT-12, the IOT&E conducted at the Pacific Missile Range Facility from August to October 2011. However, I used significant contributing data from prior flight tests, lethality testing, and other testing of mobility, safety, and electromagnetic/environmental effects conducted from 2006 through 2011. To assess AN/TPY-2 performance in its Forward-Based Mode (FBM), I also used

data from FTG-06a, FTM-15, and ground testing associated with the radars currently deployed in Israel, Japan, and Turkey.

THAAD is operationally effective against simple short-range ballistic missile threats intercepted in both the endo- and low exo-atmosphere. Although THAAD has not yet demonstrated its capability against medium-range threats, ground testing and analyses indicate it has an inherent capability to deal with those threats. The AN/TPY-2 (FBM) radar is operationally effective at providing track data on intermediate-range threats to the C2BMC, the BMDS command and control architecture, for use by Aegis BMD or GMD.

THAAD is operationally suitable, but examination of reliability data, ground test results, problems encountered during testing, and soldier feedback indicate that the THAAD system has a number of limitations that the MDA should investigate or correct to increase the suitability of the system. Available contractor data, combined with THAAD test results, indicate the AN/TPY-2 (FBM) radar is operationally suitable.

In February, I also published my annual BMDS Assessment Report that includes an assessment of EPAA Phase 1 capability. I based my assessment primarily on FTM-15, an operational test featuring an Aegis BMD launch-on-remote engagement of an intermediate-range ballistic missile using up-range track data provided by an AN/TPY-2 (FBM) radar. However, I also used data from previous Aegis BMD 3.6.1 testing and ground testing conducted from July to October 2011. I also used Technical Assessment-04 that explored EPAA Phase 1

capability by simultaneously executing multiple theater engagements with Aegis BMD, AN/TPY-2 (FBM), and C2BMC in a digital modeling and simulation environment. All of this testing supported an assessment of capability over a limited region of the overall EPAA battlespace.

As currently deployed, Aegis BMD 3.6.1 provides some BMDS capabilities against short-, medium-, and intermediate-range ballistic missiles targeted at Europe. Aegis BMD 3.6.1 includes midcourse-phase engagement capabilities with SM-3 Block IA interceptors and terminal-phase engagement capabilities with modified SM-2 Block IV interceptors.

While the MDA has made progress toward achieving and demonstrating integrated engagement planning and execution to support the EPAA, such capability for use against all potential threat classes during all relevant phases of flight has not yet been demonstrated. BMDS battle management includes engagement planning, sensor management, track forwarding, sensor-weapon system pairing, and BMDS engagement direction. C2BMC is the element that is planned to perform global battle management while BMD weapon elements retain element-level battle management and fire control functionality. In December 2011, the U.S. European Command upgraded C2BMC to Spiral 6.4 (S6.4), replacing S6.2, as part of the EPAA Phase 1 deployment.

The capability to launch on remote track data is crucial to the defense of Europe as it increases battlespace. In the fully implemented EPAA, Aegis BMD will rely upon at least two AN/TPY-2 (FBM) radars to provide radar cues and

launch-on-remote track data. Aegis BMD executed a launch-on-remote engagement of an intermediate range target using AN/TPY-2 (FBM) tracks forwarded by C2BMC during FTM-15. Several ground tests in the GT-04 campaign also exercised launch-on-remote capability culminating in GTD-04d Part 3, which used assets that are part of the initial EPAA Phase 1 deployment.

C2BMC software demonstrated track forwarding of single AN/TPY-2 (FBM) tracks to Tactical Digital Information Link J (Link 16) users in multiple ground tests and FTM-15 in FY11. C2BMC also exercised the forwarding of track data from two AN/TPY-2(FBM) radars in two integrated and one distributed ground tests as part of the EPAA Phase 1 capability demonstration. However, there has been no demonstration of this capability using multiple AN/TPY-2 (FBM) radars and Aegis BMD ships in a flight test.

As the MDA executes the IMTP during the next several years, additional test data supporting more comprehensive quantitative assessments of the EPAA, as well as other elements of the BMDS will become available. However, complete quantitative assessments of EPAA capability are still a number of years away because it will take time to collect the test data needed to verify, validate, and accredit the models and simulations required to perform these assessments.

Assessment of the Current IMTP

The Director of MDA, General O'Reilly, has continued to pursue a rigorous IMTP development process that has produced a rigorous and well-justified set of tests. My office continues to be involved throughout the six-month review and revision process leading to each update of the IMTP. This process has worked well during the preparation of the five previous semiannual plans, including the most recent IMTP (version 12.1), that I approved jointly with General O'Reilly in March. The process has enabled each version of the IMTP to be revised in a timely manner consistent with policy changes, flight test results (including unsuccessful intercepts) such as those I have mentioned previously, or, fact-of-life changes in budgetary resources. The current IMTP is a rigorous plan for obtaining the test information needed to assess BMDS performance quantitatively.

However, the IMTP continues to be success-oriented, which is the case for most of the Department's test programs. It does not explicitly include plans for backup or repeat tests that would be needed in the event of flight test mission failures. Therefore, the effects of unsuccessful tests, such as the FTG-06a and FTM-16 Event 2 failures, need to be mitigated through future updates of the IMTP. Nonetheless, the six-month revision process has allowed MDA to make the necessary adjustments and create flexibility when it has been needed.

Conclusion

The ability to conduct comprehensive quantitative assessments of all BMDS capability across the full battlespace for each of the elements is still a number of years away. Nonetheless, BMDS testing has now produced sufficient data to enable a quantitative assessment of capability for both THAAD and Aegis BMD covering a portion of their battlespace. Notwithstanding the reductions made to the overall MDA budget as a result of the Budget Control Act, the pace and content of GMD testing has been sustained relative to previous IMTPs. In particular, the pace of GMD flight testing continues to be consistent with the best that has been achieved historically. Fact-of-life limitations on flight testing make it impossible for such testing alone to provide sufficient data to perform a statistically rigorous assessment of the performance of any BMDS element across its full battlespace. This is why a key focus of the IMTP has been since its inception to collect the data needed to validate the models and simulations that will provide the means to assess BMDS operational capability across that full battlespace. The rigorous testing incorporated in the IMTP will inevitably lead to flight test failures. These failures, although often perceived as setbacks, provide information that is absolutely critical to assuring that our ballistic missile defenses will work under realistic and stressing conditions.