FACT SHEET

MDA FACT SHEET

GROUND BASED TESTING PROGRAM

INTRODUCTION

The Ground Based Midcourse Missile Defense (GBMD) Test and Evaluation (T&E) program is conducted with a philosophy best described as an analytically based test program that clearly relates system requirements to the test objectives. The GMD test program includes a variety of system testing including Integrated Flight Tests (IFTs), Integrated Ground Tests (IGTs) and the use of modeling and simulation. This approach increases confidence in the program and reduces program risk.

INTEGRATED FLIGHT TESTS

The type of test that receives the most publicity is the Integrated Flight Test (IFT). The IFT Program is used to ensure that various elements of GMD can not only complete their individual missions, but that they can also effectively communicate and work with the other elements of the system. During these tests, a prototype ground based interceptor (GBI), consisting of both the booster and exoatmospheric kill vehicle (EKV), is launched from Kwajalein Missile Range in the mid-Pacific Ocean, and a target (a look-alike dummy warhead) is launched from Vandenberg Air Force Base in California. The goal is for the EKV to separate from the booster, to process information it receives from ground-based radars, space-based sensors, as well as its on-board sensors, to "find" the target. The EKV then positions itself to collide with the target warhead. This collision is designed to destroy the target, without the use of explosives.

The Joint Program Office (JPO) plans to conduct several IFTs per year beginning in FY 2002 and, as the system progresses; the prototypes will be replaced by the actual elements. While this testing is costly, it provides significant data that allows the designers to refine the system and to design a production model. Flight test data is also used to anchor the extensive models and simulations that are used to test various elements.

INTEGRATED GROUND TESTS

Ground testing provides a unique opportunity in testing as it has the ability to reuse the same hardware several times while flight testing does not allow this. A ground test uses computers to simulate different aspects of the flight while utilizing some of the actual hardware that will be used in GMD. The computers offer simulations of an incoming threat and demonstrate how the information flows through each element. This data provides a stronger understanding of each element and how it reacts in different situations and enables each element to be tested with other elements in the lab.

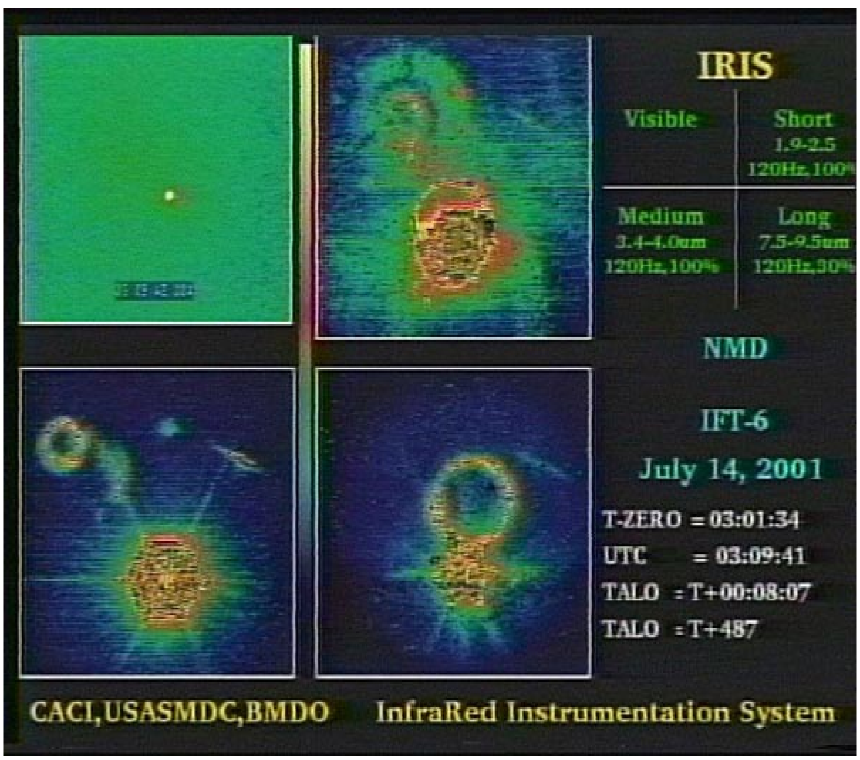
Modeling and Simulation

In view of the range of threats, environments and conditions under which GMD must operate, there is no practical, cost-effective method to verify system performance through testing alone. The GMD's approach to system verification, therefore, integrates modeling and simulations into its ground and flight test program. Modeling and simulation is useful for assessing system performance against scenarios and threats beyond those that can be tested due to physical testing limitations and cost constraints.

Test Bed

Following guidance provided by a team of independent reviewers, the Department of Defense has determined that the GMD elements require further testing under operationally realistic conditions. The Ballistic Missile Defense Organization (BMDO) proposes to create a Missile Defense Segment (MDS) test bed that will include components at multiple widely dispersed, operationally realistic locations throughout the Pacific Ocean and continental United States. This test bed will provide realistic trajectory, sensing, interception, and battle management command, control and communication (BMC3) scenarios that resemble conditions under which a MDS might be expected to operate.

While the test bed will initially be used to test GMD, it will be capable of integrating boost, midcourse, and terminal element defenses including the supporting sensors and BMC3 elements. The MDS test bed adds realism, allows for tests that attempt to intercept multiple targets simultaneously, and adds additional intercept areas to BMD testing.



Conclusion

The GMD T&E utilizes many different types of testing to maximize benefits to the overall program and to enhance the use of data and increase statistical confidence.

FAQs

How fast is the Kill Vehicle going when it hits the hostile reentry vehicle?

- More than 7,000 miles per hour. The target reentry vehicle (warhead) is also traveling about 15,000 miles per hour. The collision between the two occurs at a relative (closing) speed in excess of 16,000 miles per hour.

Is there an explosion?

- No. There is a collision in space. It is very powerful and generates debris, gas and dust. The gas and dust may actually look like they burn, but only for an extremely short time. The debris and dust will reenter the atmosphere and burn up like a meteor.

What will the hostile reentry vehicle look like?

- It will probably look like a long, smooth cone and will probably be covered with heat shielding material to allow it to reenter the earth's atmosphere.

What is inside the reentry vehicle?

- The reentry vehicle will carry a bomb of some kind. That bomb could be nuclear, biological or chemical. It could cause mass destruction of people and cities if it reached its target intact. We want to collide with it in space and prevent it from reaching earth.

What else will fly along with the hostile reentry vehicle?

- Probably some decoys to try to fool us into colliding with them instead of the reentry vehicle. Also, there is expected to be some debris from the rocket stages themselves.

How do we know we've collided with the target reentry vehicle when we test?

- We use a wide variety of sophisticated space-based, ground-based and airborne sensors and instruments, including advanced radar images and tracking information, high-speed photographs and video, and radio signals from the target, to determine the success of the intercept.

- Will future GMD tests be truly representative of an actual GMD engagement, or will they be "controlled" or "scripted?"

These developmental flight tests are carefully designed to answer specific questions about elements of the GMD system; however, they are not controlled or scripted. Rather, they are designed to create the conditions necessary to answer specific questions and build confidence in the system that we are working to design.

Why do you use a "beacon" on the target warhead during an intercept test?

We currently do not have an X-Band radar in the middle portion of the flight test range between California and Kwajalein Atoll. The only X-Band radar we currently use during tests is located on Kwajalein, and it is not powerful enough to gather target information during much of the midcourse phase of flight. As a result, we have installed a C-band transponder aboard the target warhead in order to serve as a surrogate for a midcourse X-Band radar. The transponder provides basic trajectory information in order to develop a "weapon task plan" that is communicated to the interceptor prior to its launch from Kwajalein so that the booster rocket knows to fly to a point in space. The EKV separates from the booster rocket more than 1,000 miles from the target. The EKV receives no signal or communication of any kind from the transponder after the EKV separates from the booster rocket. The EKV uses only its onboard sensors, computers and propulsion system to locate, track, discriminate the target from decoys, and place itself on a collision course with the target warhead. There is no "beacon" guiding the EKV to the target. As we expand the missile defense testbed, we plan to build an X-Band radar in the middle area of the test range, eliminating the need for using a transponder on the target for weapon task plan development.

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