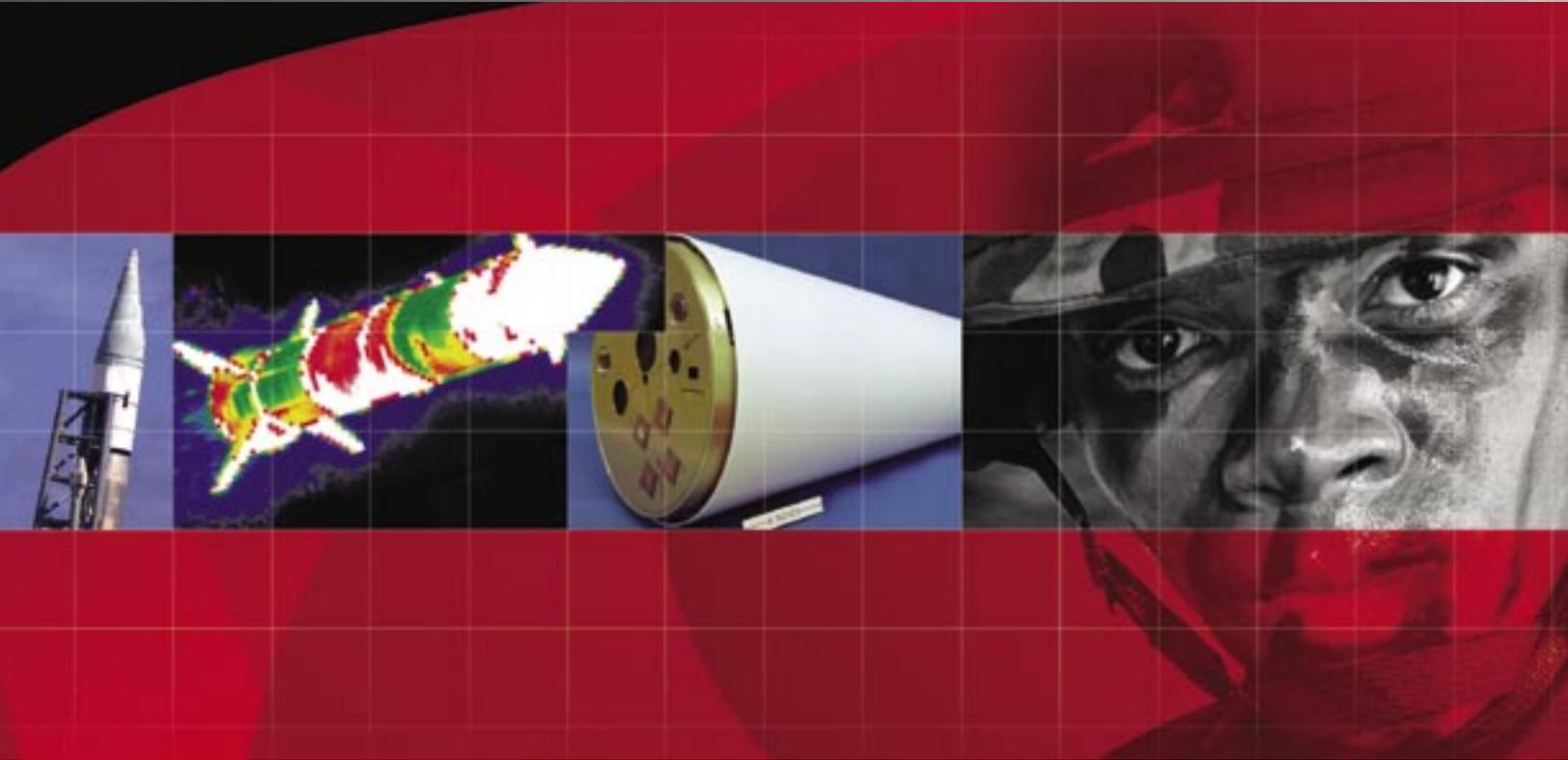




CMCM

Critical Measurements & Counter Measures Program



Summary

- Collect critical data for analysis and evaluation through the execution of high-fidelity, realistic experiments
- Mitigation of BMD technical risks through extensive radar and optical data collection
- Characterizes and evaluates effectiveness of potential countermeasures
- On-board sensor collects high quality infrared and visible imaging and signature data

CMCM conducts launches replicating projected BMD threats to collect realistic data for the purpose of evaluating potential countermeasures.

Through the collection of test data based on realistic missile flights, CMCM studies and analyzes solutions to current and potential Ballistic Missile Defense (BMD) threats. High fidelity hardware and realistic scenarios provide extensive radar and optical data of various wavebands and on-board instrumentation measurements. The data is used by DoD agencies and contractor BMD weapon system developers to determine system functional performance for evaluation of current and future discrimination techniques. CMCM data is stored by the executing agent, the Space and Missile Defense Technical Center, at the Missile Defense Data Center in Huntsville, Ala.

Overview

The Critical Measurements and Counter Measures Program (CMCM) serves as the corporate test program for the Missile Defense Agency (MDA). CMCM executes high-fidelity experiments in realistic environments to provide data to mitigate Ballistic Missile Defense (BMD) technical risks.

The Space and Missile Defense Technical Center has been designated by MDA as the executing agency for the CMCM program and maintains the test data for use by Department of Defense (DoD) agencies and their contractors. The Massachusetts Institute of Technology/Lincoln Laboratory is the payload developer and participates in mission planning and sensor coordination efforts. MDA's Targets Joint Project Office provides the launch vehicle and launch services through Orbital Sciences Corporation for CMCM. Technical support is provided to CMCM by various contractors.

To collect the required critical data, CMCM conducts a test campaign consisting of two to four launches with scenarios typical of current and projected BMD threats. Due to the high fidelity hardware and realistic scenarios in which the hardware is deployed, the CMCM Office assembles an extensive suite of data collection platforms and range assets to maximize the data collection on each campaign. Each mission provides extensive radar and optical data in a wide variety of wavebands and on-board instrumentation measurements.

Benefits for Tomorrow's Defense

CMCM designed experiments provide specific data on a chosen threat. Generally, the launch includes a high-fidelity re-entry vehicle and known or potential countermeasures. Experiments to date include balloons, decoys, liquid fuel experiments, and booster fragmentation and segmentation. These experiments support the investigation of the impact of different threats on BMD system functional performance, and provide the opportunity to evaluate current and future discrimination techniques.

Technical Concept

Past CMCM launches were conducted under the name Theater Missile Defense Critical Measurements Program (TCMP). Current CMCM campaigns are under way as Critical Measurements Program (CMP) and CMCM. The next campaign, planned for 2004, is CMP-4. These two sub-orbital flight tests will be

launched from Wake Island into the broad ocean area in the vicinity of the Kwajalein Atoll.

CMCM executed its most recent launch in February 2001. The mission included a risk reduction effort for the System Integration Test II and was used for IMPACT 98 evaluation. CMCM conducted six previous launches from 1993 to 1999.

CMCM is planning two campaigns from the Pacific Missile Range Facility in FY05. Each campaign will consist of two launches; each launch will investigate a specific countermeasures approach.

Data Collection

Data collection addresses BMDs functional performance and algorithm robustness as well as the characterization and evaluation of the effectiveness of potential countermeasures.

CMCM payloads since the 1996 launch have included a Fly Away Sensor Package, or FASP. The FASP is deployed from the launch vehicle and collects high quality infrared and visible imaging and signature data at a very close range to the payload complex. The FASP telemeters its data to remotely based recorders.

The FASP, unique to the CMCM, consists of off-the-shelf components, repackaged and ruggedized to survive the mission environment. Over time FASPs have improved with an increase in the transmitted data rates and the addition of a second infrared camera. They have provided a specialized set of infrared and visible data on unitary missiles and the separated re-entry vehicles. Future FASPs will continue to evolve to provide additional data types at close ranges.

Other measurement sensors are employed to collect data on CMCM tests. CMCM chooses the specific sensor participants based on the data requirements identified during CMCM planning. The AEGIS, Airborne Surveillance Testbed, Defense Support Program satellites, High-Altitude Observatory, Midcourse Space Experiment, Cobra Eye, Cobra Judy, THAAD Radar and PATRIOT radar are among the mobile sensors that have collected data on CMCM missions to date.



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