

GMD

GROUND-BASED MIDCOURSE DEFENSE

Thermal image of the successful intercept of a target warhead, Sept. 28, 2007

GMD is the cornerstone of the Missile Defense Agency's multi-layered missile defense architecture.

THE MISSION

The Boeing-led industry team and the U.S. Missile Defense Agency (MDA) are delivering America's only defense against the threat of long-range ballistic missiles.

The Ground-based Midcourse Defense (GMD) element of the overall U.S. Ballistic Missile Defense System consists of ground-based interceptors in Alaska and California, along with land-, sea- and space-based sensors and a sophisticated command-and-control system. It is designed to intercept and destroy hostile long-range ballistic missiles during their midcourse phase of flight.

Meeting the goals set forth by the President in 2002, the Boeing-led GMD team accelerated testing to deliver operational capability in just two-and-a-half years. Comparable in scale and complexity to the Apollo human spaceflight program, this effort provides the homeland with its only line of defense against a growing, long-range ballistic missile threat.

DEMONSTRATED CAPABILITY

GMD detects and tracks missile launches early in the boost phase, discriminates the target from countermeasures during the midcourse flight, and, with pin-point precision, intercepts and destroys the target through force of collision. Since initially deployed in 2004, the Boeing team has ensured that GMD is maintained at an unprecedented level of readiness, while also continuing to develop the Ballistic Missile Defense System and supporting missile defense operations. GMD was operational during the 2006 North Korean missile launches.

To date, GMD has had a total of seven successful intercept tests, including missile shootdowns with operationally configured interceptors in 2006 and 2007.

"The Boeing team has worked hard to turn the idea of global missile defense into an operational capability," said Scott Fancher, vice president and general manager of Boeing's Missile Defense Systems division. "We've done that with focus, determination, commitment and an extraordinary ability to integrate the components and resources on a global scale necessary to achieve this vision."

"GMD is tested, deployed and meeting the needs of the Warfighter," said Greg Hyslop, Boeing vice president and GMD program director. "The Boeing-led industry team has done an exceptional job, and that is why MDA has announced its intent to continue system development and integration under the leadership of the Boeing team."

THE PROGRAM

GMD incorporates decades of research, development, test and evaluation on proven hit-to-kill and other advanced technologies. In 2004, the GMD program fielded the first ground-based interceptors at Fort Greely, Alaska, and Vandenberg Air Force Base, Calif.



Flight Test - 03a took place on Sept. 28, 2007. The operationally configured interceptor was launched from Vandenberg Air Force Base, Calif., and successfully intercepted a long-range target launched from Kodiak, Alaska. The launch was part of the flight test program for the Ground-based Midcourse Defense program.

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GMD SITES



GMD FAST FACTS

- GMD components cross 12 time zones and are linked by 20,000 miles of fiber optic cable and satellites.
- Over 30 million lines of source code support system operations.
- GMD provides 24/7/365 operational capability.

Interceptors continue to be emplaced at both Fort Greely and Vandenberg. System capability increased to 24 interceptors in 2007, and the program is working toward a goal of 30 deployed interceptors by the end of 2008.

The GMD system also includes two fire control nodes at Fort Greely and Colorado Springs, the Cobra Dane ground-based radar at Shemya, Alaska, and an upgraded early-warning radar at Beale Air Force Base, Calif. The new Sea-Based X-Band Radar is being integrated into GMD.

GMD is a network-enabled system, linked by the world's largest fiber-optic ring, with 20,000 miles of cable integrating and enhancing program communications.

THE BOEING-LED TEAM

Since the inception of the GMD program, the Boeing-led team has maintained responsibility for all development, test and integration activities.

By developing and integrating best-of-industry solutions, Boeing successfully incorporated evolving Missile Defense Agency requirements. Since 1998, the Boeing team has integrated both

TRACK RECORD: Experience when it counts

The Boeing GMD team has demonstrated an outstanding record of success.

The team's countless operational, sustainment, and development accomplishments were recognized by MDA in 2007 as exceptional. The most significant accomplishment was meeting the President's 2002 direction to prepare GMD for operations in 2004.

The system was placed on alert status in 2004 and was operational during the 2006 North Korea missile launches. Other significant events included successful intercepts with operationally configured ground-based interceptors in 2006 and 2007 flight tests and accelerating the deployment of additional operational interceptors to Fort Greely, Alaska, and Vandenberg Air Force Base, Calif.

internal and external components into GMD, including sensors, weapons and command and control.

Program management is located in Huntsville, Ala., and supports a geographically dispersed Boeing team. The team supports GMD operations while also developing and testing new systems and technologies. Thousands of government and industry jobs support the program in Alabama, Alaska, California and Colorado.

In March 2008, MDA announced plans to negotiate a new multi-year contract with Boeing to complete the current development effort. Work under the contract is scheduled to be completed by the fourth quarter of fiscal 2013.

"We greatly appreciate the confidence that our government customer, MDA, has shown in the Boeing team's ability to do this important work," Hyslop said. "MDA has said consistently that it wanted the lowest risk, lowest cost, highest performance for the GMD follow-on contract, and we believe this announcement is consistent with those objectives."

"The GMD team includes partners Orbital, Raytheon, Northrop Grumman, Bechtel and Teledyne Brown, and each partner brings important elements to the system. However, GMD's successful performance is not measured by its individual pieces but rather



The Sea-Based X-Band Radar, a key sensor for GMD, arrives in Pearl Harbor, Hawaii, aboard the heavy lift vessel Blue Marlin on January 9, 2006, passing behind the U.S.S. Arizona Memorial.

A STRONG INDUSTRY TEAM: Partners in 28 States

GMD is the nation's only defense against long-range ballistic missiles. Boeing's GMD industry team has more than 200 partners and suppliers in 28 states. Here are just a few of these highly capable teammates:

ALEUT TECHNOLOGIES (Alaska)

Aleut Technologies, a Native Alaskan-owned small business, provides vital support services for the Sea-Based X-Band Radar (SBX), a key sensor for GMD. Aleut Technologies furnishes SBX with an escort vessel, refueling and other services, and will provide primary support services at SBX's future base at Adak, Alaska.

BAE SHIPYARDS (Hawaii)

BAE Shipyards has performed scheduled maintenance and planned systems upgrades on SBX during the radar platform's periodic visits to Pearl Harbor, Hawaii. SBX is a floating, self-propelled, missile-warning radar station that can roam over the Pacific Ocean to detect incoming ballistic missiles.

BECHTEL NATIONAL INC. (Maryland)

Bechtel National Inc., based in Frederick, Md., and a subsidiary of Bechtel Group (San Francisco), has designed and built the tactical facilities and infrastructure, including the interceptor silos, at Fort Greely, Alaska, and other locations. Bechtel National has consistently completed construction on a demanding schedule and to exacting quality standards despite challenges stemming from the extreme weather conditions of central Alaska that limit construction to six months of the year.

BLACK & VEATCH (Kansas)

Black & Veatch, based in Overland Park, Kan., has supported missile defense programs inside and outside

the continental United States for nearly 20 years. Services provided to date in support of these missions include: design and engineering studies for missile test bed and deployed facilities, ground-based radar prototype facilities, ground and sea-based X-band radar facilities, and the space-based laser test facility.

DAVIDSON TECHNOLOGIES (Alabama)

Davidson Technologies, a veteran-owned small business based in Huntsville, Ala., provides engineering services across systems engineering, integration and test to the GMD program. And Davidson provides services to ensure the security and reliability of information vital to GMD operators. Before founding Davidson, Dr. Julian Davidson had a distinguished career in government, including overseeing all advanced technology development for U.S. ballistic missile defense.

ORBITAL SCIENCES (Arizona)

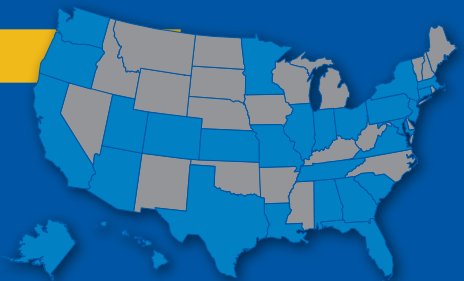
Orbital is a subcontractor to Boeing to design, develop and test GMD's interceptor booster. The Orbital Boost Vehicle is a silo-launched, three-stage rocket designed to carry advanced hit-to-kill interceptors that locate and destroy long-range hostile missiles in the midcourse phase of flight. Orbital's booster work is based in Chandler, Ariz.

OREGON IRON WORKS (Oregon)

Oregon Iron Works, based in Clackamas, Ore., builds the 72-ton steel sleeves that are the core of GMD's underground interceptor silos. Founded in 1944, the company works on a wide range of U.S. and international projects, from large bridges and dams to barges and military patrol boats.

SM&A (California)

SM&A, a management consulting firm headquartered



in Newport Beach, Calif., provides leadership and mentoring solutions for business capture, competitive procurements, and profitable performance on projects and programs won. SM&A supported Boeing to win the precursor to the GMD program in 1998 and since then has provided leadership and technical services, and solutions throughout the GMD organization with a focus on systems engineering, program management, proposal operations, business operations, and configuration and data management efforts.

TELEDYNE BROWN ENGINEERING (Alabama)

Teledyne Brown Engineering (TBE) in Huntsville, Ala., provides integrated systems testing capabilities and technical services. TBE is GMD's largest non-hardware teammate providing comprehensive support. TBE assisted with GMD hit-to-kill demonstrations that led to a deployment decision, and it is now participating in site activations.

TDX (Alaska)

Tanadgusix Corporation (TDX), a Native Alaskan-owned small business in St. Paul, Alaska, is building the electric power plant for the GMD interceptor site at Ft. Greely, Alaska. Besides power plant projects, TDX is involved in several other sectors, including satellite and wireless technology and environmental construction services.

by how it functions as an integrated system – which would not be achieved without MDA's vision and Boeing's extensive integration capabilities and leadership," Fancher said. "Continuing to leverage this proven industry team will guarantee a robust capability our nation can rely on to defend itself against long-range ballistic missiles."

SUSTAINMENT

MDA plans to transition GMD sustainment to a Performance Based Logistics (PBL) approach. System availability, cost, and crew training are the key metrics and areas of concern for MDA and the Warfighter. Working with the government's GMD joint program office, Boeing has already begun to establish the key PBL metrics and to implement a PBL approach.

Boeing is experienced in the management, systems engineering and integration of complex systems, and has achieved savings to the government in more than 10 PBL contracts through Boeing's Support Systems business. Retaining GMD's technical leadership, combined with Boeing's PBL experience, would ensure continuity in the capability that warfighters rely on to defend the nation. Boeing is poised to continue an unprecedented level of operational readiness, cost savings and crew training.

FOR MORE INFORMATION:

GMD News: www.boeing.com/gmd • **GMD Video:** <http://www.boeing.com/defense-space/space/gmd/video.html> • **Press inquiries:** Marc Selinger, 703-414-6138, marc.selinger@boeing.com • **Legislative Affairs:** Nick Abramczyk, 703-465-3500, nicholas.a.abramczyk@boeing.com

ALABAMA

Boeing Contributes \$700 Million Annually to Alabama Economy through GMD Program

The Boeing Company's work on the Ground-based Midcourse Defense (GMD) program contributed more than \$700 million to Alabama's economy in 2007 and supported nearly 5,600 direct and indirect jobs, according to a University of Alabama study.

The study found that Boeing's work on the GMD program contributed \$198 million in Alabama household earnings and that the average Boeing GMD worker in 2007 earned nearly twice the average wage of Alabama workers in 2006.

\$700 M

ALASKA

Boeing Contributes \$246 Million Annually to Alaska's Economy through GMD Program

Boeing's work on the Ground-based Midcourse Defense (GMD) program contributed more than \$246 million to Alaska's economy in 2007 and supported more than 700 direct and indirect jobs, according to a University of Alaska Fairbanks study.

The study found that the average Boeing GMD worker in 2007 earned nearly three times the

average wage of Alaska workers. Many of the jobs created by Boeing's GMD work are in remote areas, involve Native Alaskan businesses and provide "significant benefits" to the communities in which they are located, the study says.

\$246 M



INDISPENSABLE DEFENSE FOR THE NATION

Interceptor site, Fort Greely, Alaska

“ We have made great strides in the Ground-based Midcourse Defense system (GMD) capability and have fielded . . . ground-based interceptors and additional sensor capability standing ready to defend the United States’ and its allies’ infrastructure and population centers, if needed. ”

—AIR FORCE GEN. VICTOR E. RENUART JR., commander, U.S. Northern Command, March 6, 2008, testimony before Senate Armed Services Committee

“ The Ground-based Midcourse Defense system is a critical component of our country’s defense against ballistic missiles. This system was the first missile defense system operationally deployed to defend the homeland against ballistic missile attacks conducted by terrorists or rogue states. I am proud that Alaska is an integral part of this overall system, which provides our nation a strong deterrent against those who might endanger our national security. ”

—SEN. TED STEVENS (R-ALASKA), ranking member, Senate Defense Appropriations Subcommittee

“ Boeing’s GMD work force in North Alabama has had a significant, positive impact on the state’s economy. More importantly, it has provided the capability to defend our country from a ballistic missile threat. ”

—CONGRESSMAN BUD CRAMER (D-ALABAMA), House Defense Appropriations Subcommittee