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The Ballistic Missile Defense System: The Army Role in Limited Defensive Operations

**(Third in a series of three Background Briefs based on information
obtained from U.S. Army Space and Missile Defense Command)**

The U.S. Army Space and Missile Defense Command (SMDC) is a leading member of the U.S. Strategic Command (USSTRATCOM) Global Ballistic Missile Defense (GBMD) Team. SMDC's role as the Army's component to USSTRATCOM and as the Army proponent for space and ballistic missile defense enables the command to interact with the joint team at all levels of command and staff. The goal for GBMD is to ensure relevant, adaptable and seamless solutions to missile defense mission area requirements in support of regional combatant commanders.

The proliferation of weapons of mass destruction and the ballistic missiles that can deliver them are well documented by numerous studies, commissions and intelligence reports.¹ In 1972, only nine countries possessed ballistic missiles; today, 36 countries have that capability. Of these, at least 25 countries now possess or are acquiring nuclear, biological and chemical weapons. Since 1980, ballistic missiles have been used in seven regional conflicts, including by Iraqi forces during Operation Iraqi Freedom. These threats endanger peace and security around the world, including the U.S. homeland. Accordingly, the United States continues to develop capabilities to counter them.

The quest to shoot down ballistic missiles began 8 September 1944, the day the first German long-range V-2 missiles fell on Paris and London during World War II. Since then, the United States has developed a variety of systems to bring down enemy missiles. However, establishing a shield to protect all 50 states has been a formidable challenge. The National Missile Defense Act of 1999 established the policy of the United States to "deploy as soon as technologically possible an effective National Missile Defense system capable of defending the territory of the United States against limited ballistic missile attack."²

On 16 December 2002, the President signed a National Security Presidential Directive committing the nation to begin deployment in 2004 of a set of missile defense capabilities that will evolve to meet the changing threat from long-range ballistic missile attack.³ The Missile Defense Agency (MDA), an element of the Department of Defense, is in charge of developing the Ballistic Missile Defense System (BMDS). The BMDS will be an evolving, integrated, layered system comprising multiple elements and components that provide opportunities to intercept ballistic missiles in all phases of their flight against all ranges of threats.⁴ The centerpiece of the BMDS for Limited Defensive Operations (LDO) is the Ground-based Midcourse Defense (GMD) element; ground-based because the interceptors it uses are launched from silos in the ground; midcourse because the interceptors kill the inbound warhead in its midcourse phase above the atmosphere. All ballistic missiles follow a trajectory that includes

three phases: the boost, or missile ascent, phase; the midcourse phase, when the missile's warhead has separated from the booster and is coasting above the atmosphere; and the terminal phase, in which the warhead is reentering the atmosphere heading toward its target.

GMD is made up of sensors, interceptors and fire control components:

- Sensors include satellites that will detect an enemy missile shortly after launch; and high-powered radars at several land locations and aboard U.S. Navy ships that will track the threatening ballistic missiles, discriminate between warheads and decoys, and determine if the warhead was hit and whether it was destroyed or rendered harmless.
- Ground-based Interceptors (GBI) consist of the Exoatmospheric Kill Vehicle (EKV) integrated with a booster that launches it into space. The EKV performs final discrimination and steers itself to collide with the warhead, pulverizing it by sheer force of impact.
- Fire control interconnects communications among all GMD components and manages the battle. It comprises terminals that communicate with the EKV, fiber optic and satellite communication networks, and control nodes, allowing military and civilian authorities to operate the GMD.

In a typical scenario, sensors detect and provide early warning of the launch of enemy missiles. They then track these threats while simultaneously gathering data. Fire control uses this data to calculate a projected intercept point. Once authority is granted, the interceptors are launched, using onboard sensors and data received from fire control to acquire and discriminate the threat warhead amidst debris and decoys, guiding the EKV to a direct, high-speed collision. During and after each engagement, GMD sensors continue to collect data to provide kill assessment and evaluate the EKV's success.

Adequate and timely delivery of a missile defense capability is required for homeland security, to protect the infrastructure and population at large, and to protect the nation's ability to mobilize and respond to worldwide crises. GMD's record of successful performance was a factor that led to the President's decision to field GMD to provide protection for the United States and its territories.

In recent tests, an interceptor launched from the Marshall Islands in the South Pacific has struck targets launched from Vandenberg Air Force Base, California four of the last five times. The President's plan to begin missile defense operations is based on the integration of available sensors, intricate fire control components, and a relatively few GBIs at Fort Greely, Alaska. Current plans are to have a combined 20 underground silos and missiles at Fort Greely and Vandenberg AFB by the end of 2005.

On 3 July 2004, officials from MDA and visiting dignitaries attended the dedication of the first GMD missile field at Fort Greely. Major General John Holly, Program Director for Ground-based Midcourse Defense based in Huntsville, Alabama, and Ms. Diane Hutchison, the Fairbanks area representative for Senator Ted Stevens (Republican-Alaska), unveiled a monument with a plaque including the words "Forging America's Shield." General Holly noted in his remarks that although the missile defense program will remain a work in progress, completion of major construction at Fort Greely and the arrival of interceptors represent the beginning of a defense against intercontinental missiles that does not currently exist.⁵

On 22 July 2004 the first GBI was placed in one of the six completed silos. Each silo is 80 feet deep and 14 feet in circumference, and each silo insert weighs 88 tons. The missiles at Fort Greely stand more than 50 feet tall and are four feet in diameter, weighing up to 25 tons. They contain about 45,000 pounds of solid propellant and will not carry explosive warheads. They are intended to hit incoming enemy missiles ("hit-to-kill") at a range of about 100 miles above the Earth. An EKV

hitting its target missile is like a bullet hitting a bullet at a combined closing speed in excess of 10,000 miles per hour.

The interceptor pads at Fort Greely were cleared from a section of spruce forest that was destroyed by a wildfire in 1999. The initial construction contract was awarded for \$265 million, with subsequent contracts awarded for \$20 million. Alaskan companies performed about 80 percent of that work. The installation, located about 100 miles southeast of Fairbanks, was realigned under the 1995 Base Realignment and Closure (BRAC) process and most of its functions and tenants moved to Fort Wainwright, Alaska. However, Congress had authorized the Secretary of Defense to retain all or a portion of Fort Greely to meet support requirements for missile defense. With new construction and refurbishment of existing facilities over the last few years, Fort Greely has been given a new lease on life.

The developmental plan coming to fruition for Fort Greely consists of a full garrison operation with quarters and many services and support facilities for those assigned. The garrison will eventually comprise about 990 people, including Soldiers, garrison staff, family members and contractors. The plan calls for 24-month accompanied tours with quality-of-life (QOL) support. The QOL standard will be achieved through a garrison with quarters, a fitness center with pool, commissary, child-care facilities, community activities center, outdoor recreation services, Army & Air Force Exchange Service gas station and shoppette, entertainment facilities and other amenities.⁶ These important facilities will be needed, as the arctic environment at Fort Greely is very challenging. Winds there can exceed 100 miles per hour; temperatures can range from 100 degrees in the summer to minus 70 degrees in the winter.

The U.S. Army, working closely with the joint acquisition and warfighting communities, has played a key role in the GMD deployment. In 1999, the Army was designated as the lead service for the ground-based portion of what was then called National Missile Defense. This designation included responsibility for manning, training and equipping Soldiers to operate the system, and their support facilities. The Commanding General, U.S. Army Space and Missile Defense Command was designated as the mission commander for Fort Greely. The Army National Guard was given the mission of manning the GMD element and supporting the system testing.

On 16 October 2003, SMDC marked a significant milestone in the initial stages of deploying the Nation's ballistic missile defense program by activating the Army's first GMD Brigade in Colorado Springs, Colorado: the 100th Missile Defense Brigade (Ground-based Missile Defense). The multicomponent brigade consists of 90 Soldiers: 77 members of the Colorado Army National Guard and 13 members of the Army's active component. Lieutenant General Joseph M. Cosumano, Jr., then Commanding General, SMDC, told attendees at the brigade activation ceremony, "This activation is a fine example of coordination and cooperation between the joint community, the National Guard and the active component that follows a national recruiting campaign to select the finest Soldiers with an honored tradition of defending our homeland."

In January 2004, the Alaska National Guard activated the first GMD battalion, the 49th Missile Defense Battalion, at Fort Greely. Army National Guard Soldiers from across the country have become part of the GMD battalion. Eventually, a total of 199 full-time Army National Guard Soldiers will be assigned to work at Fort Greely.

The Army National Guard and SMDC have worked with multiple agencies to craft innovative solutions to bring these new organizations to life. The brigade's primary task of operating the GMD

system requires an ability to remain flexible to emerging requirements of the MDA and U.S. Northern Command while also providing direct linkage to USSTRATCOM in its role as the coordinator and integrator of Global Ballistic Missile Defense capabilities. The battalion's primary mission is to operate the GMD fire control network, to provide positive operational control over the interceptors at Fort Greely, and to ensure protective security to the systems deployed there. These units will face continuing challenges to actively support the combatant commanders' exercise programs and MDA's testing, training and deployment schedules while simultaneously training and certifying to the standards set for them.

The Fort Greely facility is just one part of the midcourse defense system being built. Interceptors will also be located at Vandenberg AFB, as well as other potential locations inside the United States and abroad. From Fort Greely and Vandenberg AFB, the GMD interceptors will be able to protect all states and territories of the United States. However, these facilities are just a portion of the midcourse defense system. Interceptor communications stations will be located at Kodiak Island and at Eareckson Air Station at the far end of the Aleutian Islands in the Bering Sea. The Cobra Dane Radar Facility at that air station is also being upgraded as part of the new missile system. The Sea-Based X-Band Radar, currently under construction, is scheduled to be homeported in Adak, Alaska.

Congress has appropriated \$10 billion for Fiscal Year 2005 for the BMDS, with almost half of that amount for the GMD system to allow for its deployment and continued improvement through the process called "spiral development." (In the spiral development process, selected Future Force capabilities are brought forward to enhance the Current Force.) Alaska's congressional delegation has been a strong proponent for funding for the GMD program. The robust development program and test bed activities will go on concurrently with the first missiles on alert to ensure that the ballistic missile defense system provided to the United States, its friends and allies, and deployed forces continues to mature.

Endnotes

¹ For an overview, see Jack Spencer, *The Ballistic Missile Threat Handbook*, The Heritage Foundation, 2000.

² National Missile Defense Act of 1999 (Public Law 106-38).

³ The following day, President Bush announced the United States would begin to "field missile defense capabilities to protect the United States, as well as our friends and allies." He stated, "These initial capabilities emerge from our research and development program and build on the test bed that we have been constructing." (<http://www.whitehouse.gov/news/releases/2002/12/20021217.html>).

⁴ Secretary of Defense Memorandum, 2 January 2002, subject: Missile Defense Program Direction.

⁵ Dan Rice, "Defense Site Dedicated," Fairbanks *Daily News-Miner*, July 4, 2004.

⁶ SMDC Command Concept Plan, 10 June 2003.