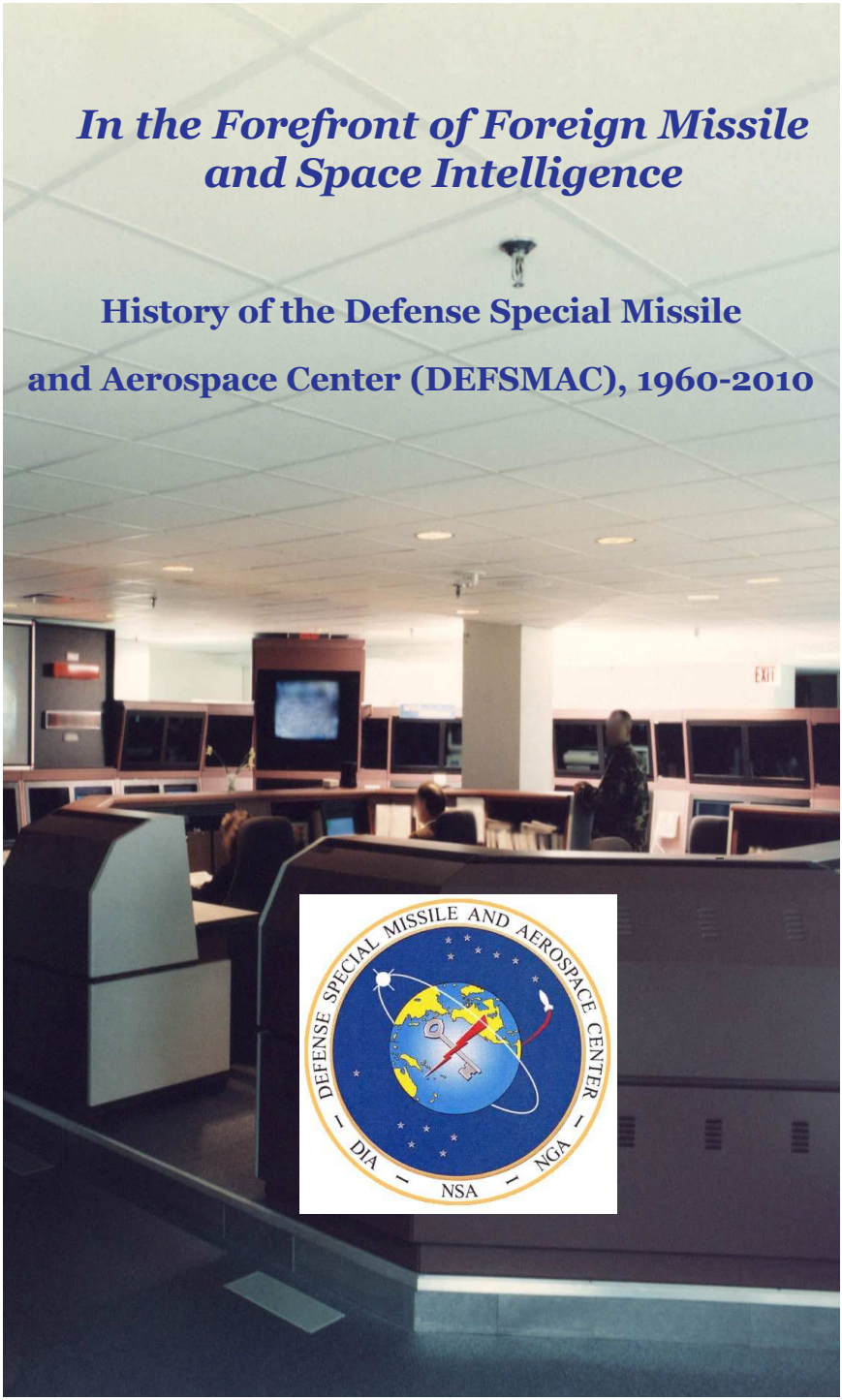
In the Forefront of Foreign Missile and Space Intelligence

History of the Defense Special Missile and Aerospace Center (DEFSMAC), 1960-2010



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Cover Photo: Partial overview of the DEFSMAC Operations area Watch Center in 1997

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Center for Cryptologic History

National Security Agency

2012

Initial formal DEFSMAC seal highlighting the DIA and NSA partnership for managing and operating the Center

DEFSMAC Mission

Although little known to the public at large, the U.S. Department of Defense (DoD) Defense Special Missile and Aerospace Center (DEFSMAC) serves in the forefront of U.S. missile and space intelligence. The Center coordinates the collection of intelligence information on foreign missiles and satellites from the ground, from the sea, and from aerospace based upon intelligence requirements. The Center personnel then analyze the initial collection results and provide intelligence reporting based on the information.

DEFSMAC is an all-source operations and intelligence center that serves as the focal point for real-time mission operations, as well as analysis and reporting of foreign missile and space events. It provides time-sensitive alerts, initial event assessments, and mission support to national agencies, national command authorities, combat commands, and field-deployed data sensor platforms and stations.

Formation and Organizational Milestones

1958 — NSA Soviet Missile Analysis Center (SMAC) formed in NSA Office of General Studies (GENS).

1963 — DoD (Dr. Fubini, DDR&E) Study Group recommended combining DIA and NSA responsibilities in a joint center to manage all-source collection and perform early reporting of intelligence information.

1964 — DoD Directive of 27 April 1964 formed Defense Special Missile and Astronautics Center (Defense/SMAC) to be operated by DIA and NSA and located at NSA.

2002 — DoD Directive updated – Center was renamed Defense Special Missile and Aerospace Center (DEFSMAC). Some additional missions and clarification of functions were added.

2010 — The National Geospatial-Intelligence Agency (NGA) became a full partner with DIA and NSA in the management and operation of DEFSMAC.

The 2010 DEFSMAC seal showing the DIA, NSA, and NGA partnership

Location and Staffing

DEFSMAC is located at NSA Headquarters at Fort George G. Meade, Maryland, and has been in operation 24 hours a day, 365 days a year, for almost 50 years.

DEFSMAC is located within these NSA facilities at Fort George G. Meade, Maryland.

DEFSMAC is staffed by civilian and military members of the National Security Agency (NSA), the Defense Intelligence Agency (DIA), and the National Geospatial-Intelligence Agency (NGA). There are DoD military officers and enlisted personnel from all branches of the military assigned for two- to three-year tours. Civilians from various organizations of the U.S. government are assigned for variable length assignments.

The Director of DEFSMAC has traditionally been from NSA, and the Deputy Director has traditionally been assigned from DIA. All other staff are fully integrated and assigned duties within the Center according to their background and experience.

1960s – Operations Area Watch Center

After DEFSMAC was established by the April 1964 DoD Directive, NSA moved quickly to find a suitable location at the NSA complex at Fort George G. Meade, MD. The NSA SMAC operation was relocated, space was added for the DIA personnel who were assigned to DEFSMAC, and a communications area and a target location work area was designed into the new Center.

The 24-hour-a-day Watch Operations Area at NSA in June of 1964

Located next to the Watch Operation work area was the communications suite and a computer-based missile/space geographic location set of equipment and personnel. The missile and space data analysts, reporting personnel, and a small management and administrative staff were also located adjacent to the Watch Operations area.

1960s — Mission Targets and Results

During the 1960s, Soviet Union missile and space events, particularly the test firings of new missiles, were of the highest priority for DEFSMAC. DEFSMAC also targeted Soviet space operations including manned space events.

Soviet SL-4 space launch vehicle

The 1960s were a period of extensive ballistic missile development by the Soviet Union, particularly medium-range (MRBM) and inter-continental range (ICBM) weapons. Many of the test ranges were within the borders of the Soviet Union, which made advance knowledge of the tests and collection of test data very difficult. Fortunately, the Soviet ICBM test range impact area was on the Kamchatka Peninsula and allowed for limited access by U.S. collection assets. The Soviet SL-4 space launch booster, pictured on the left, was initially developed during the 1960s as the R-7 ICBM.

The SL-4 remains in use today as a Russian space launch vehicle, and in the photo is shown launching a Russian manned mission to the International Space Station, where the U.S. and Russia now have a cooperative venture.

1970s — The DEFSMAC Organization Matures

The DEFSMAC leadership team for the first twenty-five years of the Center consisted of the Director, a Deputy Director, and a small staff. There were three main functional elements, as described below.

The Operations Directorate (OP) coordinated current data collection operations (twenty-four hours a day), collection resources management, and target development.

The 1970s-1980s teletype communications to collection locations and customers, still with paper-based operations

The above photo shows the first use of computer terminals and PCs to replace teletype machines. Note in the photo the hard copy mail distribution boxes on the back wall were still in use to distribute hard copies from the teletype printer circuits.

1970s — Reporting and Operations Support

The Intelligence Directorate (IN) reported on missile systems, space systems, and spacecraft operations. Rapid communication of analytic results to customers has always been a vital part of its reporting responsibilities, as has sending information to supporting data collection operations.

The Data Systems Development (SY) element provided computer system upgrades and supported current operations and intelligence reporting. SY also assisted other NSA elements as they developed new, or modified, computer systems to support DEFSMAC requirements.

Computer support work area in the late 1970s. Several computer systems that directly supported DEFSMAC were located adjacent to the DEFSMAC operations and analytic work areas.

1980s–Major Modernization and Expansion Needed

By the late 1970s, the need for computers to support the operations center and the analysts/reporters had grown dramatically. The many new missile and satellite intelligence targets followed by DEFSMAC required expansion of operations, reporting, and computer support areas. Other upgrades to the communications complex needed to be planned as well.

1983 Operations Watch Area before the upgrade with single computer-connected terminals and minimum display capability

1980s — Major Modernization Results

Operations Watch Area after modernization with improved computer screen displays

Communications work area in later 1980s with all teletype machines replaced with just computer "PCs"

1990s —A New Location and Modernization

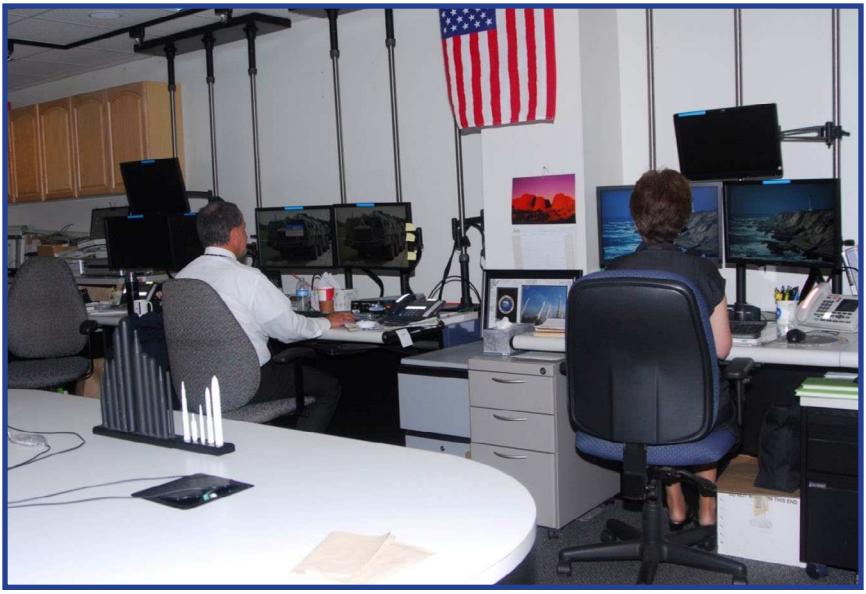
By the early 1990s DEFSMAC had once again outgrown the space and facilities available to operate the Center. A completely new facility was planned and implemented with the added constraint of maintaining the twenty-four-hour-a-day operation without any disruption in capability. The modernization of the Center was completed and put into operation, still within NSA facilities at Fort George G. Meade. The upgrade also provided increased and improved worldwide communications access to collectors and customers as well as major additions to the computer and database assets essential to managing the operation.

The new location included modern computer console workstations, equipment, and extensive interactive databases and computer resources.

1990s — The New Center Challenges

During the 1990s the most significant challenge for DEFSMAC was the worldwide increase in foreign missile and space activities. This increase was caused by additional foreign countries developing indigenous missile and space systems and the operation of potential space targets of intelligence interest to the United States. Known potential adversaries of the U.S. continued to develop missile systems as well. Reduction in U.S. intelligence data collection assets, particularly ground-based collection facilities, added to the challenges.

A new challenge was the addition to the DEFSMAC mission of providing early information on missile and space launches by foreign nations involved in a crisis or war. The Center addressed these challenges by developing techniques to integrate intelligence source information from collection assets and to provide more timely analysis and reporting to the DEFSMAC intelligence customers.



Two analysts at their workstations in the missile analysis and reporting work area, after the 2005 upgrade to the workspaces.

2000-2010 History Highlights

The Operations Area Watch Center was again updated in 2005, primarily with additional analytic and reporting tools and an improved data support architecture. Additional and more flexible computer display monitors were added as well as new features.

A revision to the DoD directive covering DEFSMAC activities gave the Center a name change. The Center became the Defense Special Missile and Aerospace Center (still DEFSMAC).

During 2010 the National Geospatial-Intelligence Agency (NGA) formally joined the Center partnership with a formal interagency agreement among DIA, NSA, and NGA.

DEFSMAC Fifty-Year Historical Perspective

Fifty years of developing and operating DEFSMAC have resulted in continuously improved intelligence information derived from foreign missile and space activities.

1960s – The NSA Soviet Missile Analysis Center (SMAC) was moved to be part of DEFSMAC. To this was added the DIA DoD intelligence reporting responsibilities and selected DIA personnel. Both NSA and DIA managed data collection resources and then provided input to DEFSMAC.

1970s – DEFSMAC operations were fully implemented, still with primary emphasis on Soviet missile and space-earth satellite vehicles (ESVs) and deep-space probes.

1980s – First overall modernization of the Center's Operations area was completed along with a facilities expansion. Partial or full computer automation of many DEFSMAC functions was implemented. Emphasis remained on obtaining information on missile and ESV developments by foreign adversaries.

1990s – DEFSMAC's mission was expanded to include providing direct support to active military operations. The challenge was met by substantial computer automation improvements in conjunction with the Center's expansion and relocation to a new area at NSA, which was custom designed to support the mission.

2000-2010 – DEFSMAC time-sensitive support to the intelligence community during world crises became a formal mission responsibility. The use of geospatial intelligence was expanded and new analytic techniques were developed. NGA became a full partner with DIA and NSA in DEFSMAC.

The DEFSMAC primary mission to "Forecast–Alert–Report" foreign missile and space activities related to U.S. intelligence requirements continues to drive the overall operation twenty-four hours a day, seven days a week.

Author's Biography

Richard L. Bernard is an NSA retired Senior Executive. He was Director of DEFSMAC from 1980 to 1983. He was awarded the NSA Meritorious Civilian Service Award for his performance in that position.

Mr. Bernard was first assigned to NSA as a computer maintenance supervisor in 1953 while serving as a second lieutenant in the U.S. Air Force. In 1955 he was sponsored for a year of study at George Washington University to complete his Master of Engineering Management degree in 1956.

His NSA assignments included several positions in the Research and Engineering organization; Project Manager in the Office of Special Program Management; Chief of the Office of Space, Microwave, and Mobile Systems; and Deputy Group Chief for the Line-of-Sight Systems Group.

In 1985 he retired from NSA as a Senior Cryptologic Executive Manager and became an Engineering Program Manager in industry until 1995. He then returned to NSA as a part-time consultant and volunteer for the Center for Cryptologic History. He also serves as the DEFSMAC historian.

In 2009 he completed an unclassified brochure on NSA ELINT history from 1950 to 1990 for use by the National Cryptologic Museum and presented the results at the Center for Cryptology History Symposium in 2009. He recently completed this brief history of DEFSMAC from 1960 to 2010 and presented the information at the 2011 Center for Cryptologic History Symposium.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