

**LEADERS OF THE
NATIONAL RECONNAISSANCE OFFICE
1961-2001**

Directors, Deputy Directors, Staff Directors, Program Directors,
Chiefs of Staff, Directorate and Office Managers

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FOREWORD

Today, throughout the world, the National Reconnaissance Office is recognized as the undisputed leader in space-based satellite reconnaissance. At the close of our 40th Anniversary year, it is gratifying to publicly acknowledge those individuals whose dedication, talents, and leadership shaped this organization into one of the nation's greatest national security and intelligence assets.

Since its inception, the National Reconnaissance Office has attracted the top minds of the U.S. Intelligence Community, the Department of Defense, private industry, and the academic-scientific community. Its mission brought together leaders of a quality rarely found elsewhere during the latter half of the twentieth century, as the following pages ably demonstrate. United by common goals and motivated by a single-minded sense of patriotism and professionalism, NRO's leaders represent an unusual array of national origins and races, and social, educational, and occupational backgrounds. Together they forged a new multi-agency intelligence team that produced remarkable results. The achievements of the National Reconnaissance Office in large measure are a tribute to the vision and dedication of these men and women; they made what many deemed impossible just fifty years ago into routine operations today.

Under such leaders, supported by several thousand dedicated, hardworking personnel, the NRO has successfully and proudly lived up to its motto: Freedom's Sentinel in Space: One Team, Revolutionizing Global Reconnaissance.

Peter B. Teets, Director
National Reconnaissance Office

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PREFACE

Between 1953 and late 1961 the administrations of Dwight D. Eisenhower and John F. Kennedy undertook a series of initiatives to protect the nation against surprise atomic attack by the Soviet Union. These initiatives resulted in the creation of the National Reconnaissance Program (NRP) and the National Reconnaissance Office to manage it on 6 September 1961.

A unique hybrid organization, the NRO brought together the foremost intellects from the Central Intelligence Agency, the Department of Defense, the military services, private industry, and the American academic-scientific community to solve the technical challenges of overhead reconnaissance. The individuals who came to the National Reconnaissance Office shared a mission of securing, through overflight of "denied areas," intelligence of potential adversaries that posed a threat to the United States, and the vision and belief that space represented a new frontier exploitable to this end through advanced technology.

Within a few years of its creation, the National Reconnaissance Office achieved its original mission and vision to a degree far beyond the expectations of its founders and early leadership. The NRO provided the nation's command authorities with unparalleled global information supremacy. Not since the Manhattan District [Project] created the atomic bomb during the Second World War has an organization accomplished such groundbreaking technological feats in the national security interests of the United States so thoroughly, so effectively, or so quickly.

The success of any organization or endeavor ultimately depends on its leadership, and the National Reconnaissance Office has fortunately attracted leaders of a quality rarely found elsewhere. Indeed, the National Reconnaissance Office and its mission have always attracted an extraordinary group of highly gifted individuals. Long before the terms *joint command and control*, *institutional flexibility*, *diversity*, *streamlined management*, or *public and private sector partnerships* entered the lexicon and became philosophical dictums in American government, business, and industry, the leaders of the NRO had institutionalized and practiced them all for decades. Together they forged a new multi-organizational team and adopted a decentralized form of management that produced, in technical sophistication and capability, remarkable overhead satellite reconnaissance systems unequalled elsewhere in the world. These achievements in large measure are a product of, and a tribute to, the vision and dedication of the organization's leaders.

Although the majority of the men and women who created, directed, and managed the National Reconnaissance Program in the twentieth century worked in anonymity, and without any sort of official acknowledgement, let alone public recognition, their unswerving dedication to an intelligence mission, to the national security of the United States, and their commitment to innovation and excellence, contributed significantly to maintaining the peace and protecting the nation from foreign threats both during and after the Cold War. In recognition of their contributions, the Office of the Historian has prepared these brief biographies of the directors, deputy directors, program directors, staff directors, chiefs of staff, directorate and office managers of the National Reconnaissance Office. This collection provides a comprehensive biographical survey of the NRO's leaders and their dates of service—a source of information and perhaps inspiration for members of the National Reconnaissance Office, the U.S. Intelligence Community, the Department of Defense, and the public at large.

This reference book was not a solitary effort. First, the author wishes to thank all of those included here, and the members of their staffs, who reviewed, edited, or supplemented various drafts of the biographies. Without their contributions, this monograph would be neither as accurate nor as comprehensive. The author also wishes to thank Matt Doering who used his computer skills to create and layout the present work. Equally important, Cathy A. McConnville, the former NRO History Staff secretary, completed an extraordinary amount of correspondence and administrative tasks associated with this monograph. The author also thanks those in the NRO's Visual Design Center, and others in the Intelligence Community and Department of Defense, who amid already busy work schedules, answered numerous inquiries, provided photographs and points of contact, who assisted with the preparation of the cover and text, and in many other ways large and small contributed to the final work seen here. Special appreciation is owed to former NRO Deputy Director Jimmie D. Hill and to Mrs. Sharilyn Watts, who provided unique firsthand information on this organization and its past leadership. Special thanks also are owed Cargill Hall, the NRO Historian, whose editorial review much improved the final work.

The biographies that follow are organized alphabetically by last name. They appear in the table of contents listed by office held, in chronological order. Those individuals who served in several leadership positions have their name and dates of service repeated for each office held, although only one biographical sketch is included. Military ranks, government positions, and other titles shown *are those held at the time of NRO service* and do not necessarily represent those held at the time of retirement from active duty or in subsequent military or government

service. The text of each biography describes these various military assignments and government offices held in chronological order before and after NRO service. Individuals who served temporarily as interim leaders are included in the chronological listing with their dates of service and with the designation “Acting” in parenthesis behind their name. Unless subsequently assigned permanently to that position, or to another NRO leadership position, their biography and photograph does not appear in this edition.

The men and women listed in this work are, or were, the leaders of primary offices appearing on NRO organization charts after the agency was established formally in the Defense Department in 1961. Leaders of subcomponents of the NRO director’s staff, of NRO staff offices, or of sub elements of the larger offices and directorates, are not included in this edition unless that component previously existed as primary office.

Information for these biographies was drawn from a variety of sources. For most NRO leaders, at least those serving since the collocation of all NRO elements in 1996, the bulk of the data and photographs came from official National Reconnaissance Office biographies. U.S. Air Force, U.S. Navy, and U.S. Army offices handling public affairs provided official biographies for most past and present uniformed NRO leaders. Additional biographical information and photographs came from materials available at the Library of Congress in Washington, D.C., and at the National Archives and Records Administration in College Park, Maryland, including various editions of the U.S. military service academy alumni registers, of *Who’s Who* and *Who Was Who*, *Who’s Who in Science and Technology*, *Current Biography*, etc., and, in some cases, the obituary listings of *The New York Times* and *The Washington Post*. In all cases, the biographical sketches contained in this publication were edited for stylistic consistency. When and where possible, biographical sketches were reviewed and edited by the individuals themselves, and the final products reflect their contributions. When additional information becomes available, or when positions change, updated editions of this monograph will appear. As always, the author accepts responsibility for any errors that may remain.

Chantilly, Virginia
1 May 2002

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INTRODUCTION

Formal establishment of the National Reconnaissance Office on 6 September 1961 ended one era of research and accomplishment in overhead reconnaissance of “denied territory,” while it marked the beginning of another era that applied this tradecraft at extreme altitudes—in outer space. Precipitated by the Cold War with the Soviet Union, the nation’s leaders adopted strategic overhead reconnaissance as a national policy in the 1950s to forewarn, if not forestall, surprise nuclear attack, and to provide knowledge about potential threats to the nation. Indeed, America’s strategic reconnaissance vehicles during the Cold War moved progressively to ever-higher altitudes to avoid interdiction and detection by the air defenses of the nation states over which they flew. Initial efforts employed available means such as high-altitude balloons, special purpose military airplanes, the U-2 and supersonic SR-71, and, ultimately, space-based reconnaissance satellites that constantly circled the Earth.

The prime mover behind these developments was President Dwight D. Eisenhower, followed by President John F. Kennedy. President Eisenhower approved the construction of American reconnaissance aircraft and satellites, and, in August 1960, the formation of a civilian-led office to direct the U.S. Air Force space-based reconnaissance satellite program, located in the Department of the Air Force. His successor, President John F. Kennedy, heartily endorsed all these forms of strategic overhead reconnaissance. His Secretary of Defense, Robert S. McNamara, on 6 September 1961 established a National Reconnaissance Program (NRP) that would consist of all U.S. space-based satellites and aerial reconnaissance projects, whether overt or covert, and, to manage and direct it, he converted Eisenhower’s Office of Missile and Satellite Systems (SAF/MSS) into the National Reconnaissance Office (NRO).

The new National Reconnaissance Office remained in the Department of Defense, staffed by military and civilian personnel drawn from the U.S. Intelligence Community and the Department of Defense, with intelligence collection requirements and priorities furnished by the United States Intelligence Board chaired by the Director of Central Intelligence. McNamara’s directive also made the National Reconnaissance Office a highly classified, compartmented organization whose existence was known only to those most directly involved in its operations in the federal government, the military services, and in private industry. Like President Eisenhower, President Kennedy, Secretary of Defense Robert McNamara, and the early directors of the

National Reconnaissance Office, all shared the opinion that reconnaissance aircraft and space-based satellites were national assets that should be controlled by a civilian, rather than a military organization. Moreover, the director of the NRO reported to the secretary of defense and to the director of the Central Intelligence Agency, and, through them, to the president, making intelligence derived from space-based reconnaissance satellites an exclusive and fundamental asset belonging to the chief executive and his national security team.

Because the National Reconnaissance Office was composed of representatives from all of the nation's civilian and military intelligence agencies, its position was unique within the U.S. Intelligence Community. Over time, directors of the NRO were selected from those with prior civilian service in the Department of Defense, the Central Intelligence Agency, and from other federal executive and legislative departments and offices, as well as from private industry. Obtaining leaders from such a broad pool ensured a combination of the skills, experience, and perspective necessary to effectively manage and operate the hybrid National Reconnaissance Office. In the early years of the organization, an under secretary of the Air Force, later the Air Force assistant secretary for space, and again an Air Force under secretary, served as the director of the National Reconnaissance Office. He was selected by the secretary of defense and the CIA director, and was confirmed by the U.S. Senate. It is the responsibility of the director of the National Reconnaissance Office to acquire and operate all U.S. space-based reconnaissance and intelligence systems through the National Reconnaissance Program.

In the early 1960s, in a revised charter agreement, the CIA and Defense Department established the NRO deputy director's position (DDNRO), designating it as a CIA billet. This designation, following the earlier decision that NRO directors would serve as under secretaries of the Air Force, further enhanced the Department of Defense-Central Intelligence Agency partnership at the NRO. As the principle executive officer, the NRO deputy director reports to, and coordinates with, the director, NRO, on the acquisition and operation of all space-based satellite reconnaissance activities as well as the day-to-day management of the organization. Those individuals appointed to this post, according to former NRO Director Keith R. Hall, "historically hold a unique place in the evolution of space reconnaissance, balancing as they do complex technical issues with broader intelligence community matters." In short, the NRO deputy directors, who also serve as the principal deputy assistant secretary of the Air Force for space, preserve the priority of the NRO mission while managing the tensions inherent within the intelligence community and the federal bureaucracy. "Through coordination, technical skills, and

sound business practices,” Hall once explained, the “deputy directors of the NRO have ensured appropriate requirements collection and considered exploitation methods in the development and operation of satellite systems. The NRO has been fortunate in attracting to these positions men of great stature in the scientific, defense, and intelligence communities. Each has made a unique and lasting contribution to the NRO’s legacy of innovation and technical excellence.”

On 11 August 1965, Director of Central Intelligence William F. Raborn, Jr., and Deputy Secretary of Defense Cyrus R. Vance signed the current NRO charter. It reaffirmed the National Reconnaissance Office as a separate agency of the Department of Defense responsible for the management and operation of the National Reconnaissance Program. The earlier decision to establish the NRO director’s position as a U.S. Air Force billet and the NRO deputy director’s position as a Central Intelligence Agency post was reaffirmed, with the secretary of defense now being designated as the NRO executive agent. Perhaps most important, the 1965 agreement established an Executive Committee (EXCOM) to approve or modify the National Reconnaissance Program and its budget, and to allocate developmental responsibilities and corresponding funds for specific reconnaissance programs to the CIA or to Defense Department components of the National Reconnaissance Office that were determined the “best equipped with facilities, experience, and technical competence to undertake the assignment.” In keeping with this charter, and during the remainder of the twentieth century, the National Reconnaissance Office, working with various contractors, designed, built, launched, and operated high-priority satellites for national intelligence purposes.

After 23 July 1962, the director and deputy director of the National Reconnaissance Office supervised an overhead reconnaissance program consisting of four constituent parts known as Programs A, B, C, and D. Although one coherent National Reconnaissance Program existed, each of the NRO’s “alphabetic” program elements were located at different points within the United States, with NRO headquarters located in Washington, D.C., at the Pentagon.

The National Reconnaissance Office Program A embraced the U.S. Air Force satellite reconnaissance efforts within the larger National Reconnaissance Program, and was designated for cover purposes as the Air Force Special Projects Office. For most of its existence, Program A operated from the west coast in Los Angeles and at Sunnyvale, California. Its leaders, profiled in the following pages, generally consisted of U.S. Air Force flag rank officers that normally had spent their entire careers involved in reconnaissance and space fields who were specifically selected for their experience. The U.S. Air Force element also provided base facilities, acquired,

integrated, launched, and in most, but not all, cases, operated on-orbit reconnaissance satellites for other NRO program elements, including those of the Central Intelligence Agency and the U.S. Navy. Program A leaders, therefore, were crucial directors of that portion of the NRO that physically put reconnaissance satellites into space.

Program B embraced the Central Intelligence Agency satellite reconnaissance effort in the National Reconnaissance Program, first managed by Deputy Director (Plans) Richard M. Bissell, Jr., and, later, by the various directors of the Office of Development and Engineering within the larger Directorate of Science and Technology located at CIA headquarters in Langley, Virginia. The CIA, with U.S. Air Force support, originally developed and controlled Project CORONA, the nation's first satellite photoreconnaissance system made operable in August 1960.

Program C consisted of the U.S. Navy satellite reconnaissance element in the National Reconnaissance Program. Its members were assigned to the Technical Operations Group made up of representatives from the Naval Research Laboratory, PME-106, SPAWAR, the U.S. Navy Electronics Command, and the Naval Security Group all located in Washington, D.C., and the nearby Maryland environs. The U.S. Navy portion of the National Reconnaissance Office had originally developed the galactic radiation and background (GRAB) signals intelligence satellite in the late 1950s, an effort culminating in the first successful launch of an American reconnaissance satellite in June 1960. As was true for Program A at the National Reconnaissance Office, the U.S. Naval officers who directed Program C were most often commanders of staff or flag rank who counted years of service in their chosen fields. Many were highly decorated combat veterans of the Second World War, Korean Conflict, or the War in Southeast Asia prior to service at the National Reconnaissance Office.

The National Reconnaissance Office Program D, briefly known as "aircraft projects" when created in July 1962, embraced the acquisition and support of aerial reconnaissance assets in the NRP, under the CIA reconnaissance program. Program D consisted of the nation's high altitude "air breathing" aerial reconnaissance assets developed in the 1950s and 1960s, including the U-2, the A-12, and the SR-71. The Program D directors also possessed extensive command and flight experience with reconnaissance and combat aircraft dating from the Second World War and Korean Conflict. Many had additional experience with the design, development, and operation of reconnaissance aircraft and photographic and intelligence-gathering equipment, and were thus singularly qualified to oversee aerial reconnaissance programs. Program D remained a

part of the National Reconnaissance Office until 1 October 1974, when all aerial reconnaissance assets transferred from joint NRO – CIA control to the U.S. Air Force in order to fill an increasing demand for tactical intelligence that directly served the needs of the military services, while space-based reconnaissance satellites at that time continued to serve primarily strategic intelligence needs of national command authorities.

Increasingly in the mid- to late-1980s, changes in the nature of foreign threats to the United States, as well as evolutionary changes taking place within the Intelligence Community and its relationships with the Congress and other federal civil and military departments, prompted the National Reconnaissance Office leadership to conduct several studies to determine more cost effective and efficient means to meet the nation's changing intelligence and national security needs. As the nation's premier overhead collector of signals and imaging intelligence data (not an analytical office producing a finished intelligence product from them), the National Reconnaissance Office served a number of customers whose needs varied widely. Of particular concern were the physically separated alphabetic programs and the decentralized organization of the National Reconnaissance Office. This produced rivalries and, at times, expensive duplications of effort that adversely affected communication and cooperation, and left important customer needs unmet. Recommendations resulting from these studies were implemented in a gradual fashion beginning in 1989 and accelerated rapidly in the 1990s.

One of the first internal reorganizations to result from these initiatives was the formation at NRO headquarters of the office of Plans and Analysis in February 1990. P&A, as it was known, was intended to serve as a non-partisan broker in competitive disputes between the NRO alphabetic programs, while also performing a range of central planning and analytic services for the entire organization, setting common goals and a common vision. Realizing that meeting customer needs required customer input, P&A also provided a window on the National Reconnaissance Office to facilitate customer participation and planning for the use of current satellite systems and capabilities as well as to solicit customer participation in the design and acquisition of future satellite constellations. On 9 December 1998, the office of Plans and Analysis was reorganized and renamed the Office of Architectures, Assessments, and Acquisition. This office underwent a further reorganization on 14 February 2000 and became the Corporate Operations Office. The director of the Corporate Operations Office ensured the implementation of the NRO's strategic direction and operations, and, with the NRO chief systems engineer, sustained an effective corporate decision-making environment. The director of

this office held further responsibilities as the NRO chief information officer, serving as the NRO director's principal advisor on information technology.

The Corporate Operations Office chief also served briefly as the overall director of Space Launch, an office that had originally been a part of Program A. After the NRO alphabetic programs were consolidated in 1993, the NRO Launch Program Office, as it was then called, was placed within the SIGINT Directorate (and later in COMM Directorate), only to be separated once again as the Office of Space Launch in July 1996. Two years later, on 1 July 1998, the Office of Space Launch truly became an "office" when its director became the NRO mission director, ending the traditional practice of having the senior Air Force officer at the NRO fill the role of launch mission director. On 6 October 2000 the Office of Space Launch was placed back in line authority of the Corporate Operations Office. It continued to serve as the focal point for integrating all NRO launch activities with the Air Force and other organizations at the Eastern and Western Ranges. On 4 September 2001, when the Corporate Operations Office was abolished, its constituent elements were apportioned throughout the remainder of the NRO. An independent Office of Space Launch was reestablished at that time. The director of the office reported straight to the DNRO as mission director. In addition, with the abolition of COO, the Strategic Planning Office, the Chief Information Office, and the NRO Analysis Center reported to the newly created office of the Deputy Director of Systems Engineering (DDSE), and the Corporate Communications Office reported directly to the NRO chief of staff.

In the five years following the 1991 demise of the Union of Soviet Socialist Republics and the general collapse of communism throughout Europe, the National Reconnaissance Office implemented the most extensive series of internal reorganizations in its history — again based on the recommendations made by the study panels of the late 1980s. First, on 18 September 1992, "the fact of" the existence of the National Reconnaissance Office, its mission, and its top leadership were publicly identified for the first time in an official Department of Defense press release. Second, in a major realignment, the National Reconnaissance Office abolished the alphabetic programs, on 31 December 1992, and replaced them with three, later four, functional directorates, all collocated in the National Capital Region by 1996. The original directorates consisted of the Signals Intelligence (SIGINT) Systems Acquisition and Operations Directorate, created to acquire and operate satellites collecting and processing foreign communications and weapons testing telemetry, the Imagery Intelligence (IMINT) Systems Acquisition and Operations Directorate, created to acquire and operate satellites collecting images of foreign

intelligence targets, and the Communications Systems Acquisition and Operations Directorate (COMM), created to direct policy, and to oversee the security and control of all NRO space and ground-based communications systems. The fourth directorate, Advanced Systems and Technology (AS&T), was established in March 1997, to direct research and development in new systems and technologies for use in satellite reconnaissance. The realignment of directorates ended the duplication of efforts that occurred in the old alphabetic programs, it pooled common resources and funding, and it brought together members of the older, separate, institutional programs where they now worked side-by-side without regard to prior military or institutional affiliation. Now, instead of developing multiple systems with similar functions to meet the needs of multiple customers, single functional systems would meet the needs of all customers.

In addition to this internal program reorganization, the Office of Management Services and Operations, or MS&O, was created in 1992 to supervise the gradual collocation of NRO offices and personnel. In addition, between 1990 and 1996, MS&O was charged with planning and supervising the construction of the Westfields headquarters facility where, for the first time in its history, all major portions of the NRO were centralized in a newly constructed building complex in Chantilly, Virginia. Following the completion of Westfields, the National Reconnaissance Office was able to function more efficiently internally and to work more effectively with its mission partners that now included the National Security Agency, the Defense Intelligence Agency, the CIA, the Central MASINT Office, the National Imagery and Mapping Agency, and the U.S. Space Command. To maintain the new headquarters compound, MS&O continued to oversee and provide for the physical operation and security of the NRO buildings and grounds. In addition, MS&O holds responsibility for environmental, safety, and safety policy guidance and technical advice, contracting, logistics and supply acquisition, employee assistance programs, records and property management, material movement, medical, and travel services, video production and visual design, corporate training, and community outreach programs.

Seeking to meet post-Cold War threats and the needs of a growing customer base, the National Reconnaissance Office created several new offices to provide policy guidance, liaison, and closer, more timely intelligence support both at the upper levels of the federal government and, especially, to the military services. Roughly a year after the conclusion of the Gulf War, the Operational Support Office (OSO) was established on 28 August 1992. Its intent was to direct the monitoring and assessment of the operational status of NRO satellites and to ensure that

military and national customers received the systems tools and information essential to accomplishing their missions. In addition, OSO advised the various components of the National Reconnaissance Office of military customer needs and requirements. Later, the Operational Support Office expanded its activities to maintain daily contact with operational national, military, civil, and law enforcement customers through worldwide liaison officers and theater support representatives. These OSO representatives increasingly helped regional commanders and war-fighters integrate NRO satellite capabilities into their operations and tactics. In May 2001, the Operational Support Office was placed in line authority to the Office of the Deputy Director of Military Support. It now serves almost exclusively military intelligence needs.

In the mid-1990s the National Reconnaissance Office established other offices, each lead by a deputy director responsible to the NRO director, to further enhance the organization's ability to meet customer needs in a more efficient and cost-effective manner. These new offices were the Office of the Deputy Director for National Support, the Office of the Deputy Director for Military Support, and the Office of Resource, Oversight, and Management.

The Office of Resource Oversight and Management (ROM) was established on 15 October 1995 to serve as the focal point for all NRO financial, budgetary, programmatic, and legislative matters, as well as to strengthen internal resource management functions. It also provided improved internal budgetary control and improved external interactions with Congress and its constituent intelligence and financial committees. The need for such a centralized office became apparent after the reorganization and collocation of the NRO programs into functional directorates exposed serious flaws in financial accounting and management used previously in the alphabetic programs. Since its formation, ROM has developed a comprehensive financial accounting, contracting, and disbursement system, developed a single comptroller's office, and a common database to support program management. ROM is responsible for, and continues with, frequent audits and reviews of major programs for subsequent reporting to Congress and other concerned federal agencies and departments. The Resource Oversight and Management office plays a major role in the relationship with the Congress, handling all legislative liaison, as well as preparation of the annual budget and executing funding initiatives for NRO systems.

The Office of the Deputy Director for National Support (DDNS) was added to the NRO organizational structure in October 1996. Serving first and foremost as the eyes and ears of the national security team, the main focus of the DDNS is to increase the national customer's understanding of NRO strategic-level operational and program decisions in the context of

national security intelligence. The DDNS supports national customers other than the military, for example, the Department of State, Department of Agriculture, and the Department of Transportation. It assists federal civilian departments and agencies, various environmental offices, and law enforcement agencies by providing data as well as defining policies, establishing liaison, and providing guidance on NRO capabilities and means of information support. Since its establishment, the Office of the Deputy Director for National Support has developed the framework and policies necessary to provide information and data to national customers relating to natural and environmental disasters, crop assessments, habitat and wetlands mapping and study, arms control verification, and narcotics and arms trafficking, among many other functions and services.

The Office of the Deputy Director for Military Support (DDMS) was established in August 1990 to work closely with the Office of the Secretary of Defense, the Joint Chiefs of Staff, and the intelligence components of the military services at home and abroad. The DDMS helps to formulate policies, and to develop contacts that facilitate the provision of NRO gathered intelligence to top commanders and decision-makers at the staff and headquarters level, to support their military planning and readiness, as well as provide intelligence to the war fighter in the field, either in combat or peace-keeping roles. The DDMS also serves as the Joint Staff/ J-35 and as the focal point for NRO operational readiness for the J-3. Established to improve the ability of the NRO to meet the needs of the war fighter, the DDMS grew in significance with the post-Cold War downsizing of the military services and the 1991 Gulf War. Both of these events emphasized the increased importance of tactical intelligence in an era when military forces were likely to become smaller, but who nonetheless would still have to react rapidly and decisively in times of crisis or war. Since the early 1990s, the Office of the Deputy Director of Military Support has responded to an ever-growing demand for information gathered by NRO satellite constellations in near real time. In addition, the office of the Deputy Director of Military Support conducts annual military education courses, exercises, experiments, and training events to familiarize the military services with NRO technical capabilities and means of supporting the nation's armed forces in peacetime and in war.

On 6 July 2001, the NRO Office of Corporate Systems Engineering was reorganized to become the office of the Deputy Director for Systems Engineering (DDSE). It now included the NRO Strategic Planning Office, the Chief Information Office, and the NRO Analysis Center. The purpose of DDSE was to provide assured, timely, global coverage, and tailored information

on demand to customers worldwide. According to former NRO Director Keith R. Hall, the office also had as one of its main challenges the need to “bridge the gap between thinking strategically and acting tactically,” as well as “to focus on the NRO strategic thrust and to make our vision more explicit.”

An ever-changing organization, the National Reconnaissance Office continues to evolve to meet the needs of its costumers and employees in the new century. Recognizing that NRO employees were the organization’s most precious and important resource, the announcement was made on 5 October 2001 that a separate Office of Human Resources was being created. The office, whose director would report directly to the DNRO, was to improve recruitment, and implement policies and programs intended to better develop, administer, and retain NRO civilian and military personnel. According to then NRO Director Keith R. Hall, the Office of Human Resources represented more than just a name change, but also a change of mission. Hall stated this “mission focus will shift from predominantly personnel administration to management and oversight of all HR [human resources] strategic and corporate level programs for the NRO.” The new OHR, Hall envisioned, “would have responsibility and commensurate authority for all corporate human resource programs” at the National Reconnaissance Office, as well as the responsibility for creating and maintaining “a world-class NRO workforce to revolutionize global reconnaissance.”

In the twentieth-first century satellite remote sensing and reconnaissance systems will become an increasingly significant element of national power. While other nations have developed nuclear weapons, no other nation has managed to create anything close to the American capability to see, hear, and detect activities around the globe. As the National Reconnaissance Office enters its fifth decade of service to the nation, it will continue to perform its mission of ensuring U.S. global information supremacy during peace and war. It will also continue to provide unique, innovative technology, large-scale systems engineering, and to develop, acquire, and operate space reconnaissance systems second to none.

Biographies of the Leaders of the National Reconnaissance Office

Mr. Edward C. Aldridge, Jr.

**Director of the National Reconnaissance Office,
3 August 1981- 16 December 1988**



Edward Cleveland “Pete” Aldridge, Jr., was born in Houston, Texas, on 18 August 1938. He earned a Bachelor of Science in Aeronautical Engineering at Texas A&M University in 1960, and a Master of Science in Aeronautical Engineering at the Georgia Institute of Technology two years later.

Aldridge was initially employed by the Douglas Aircraft Corporation in St. Louis, Missouri, as the manager of the Missile and Space Division of that company, a post he held from 1962 until 1967. In the latter year he began a four-year appointment as the director of the

Strategic Defense Division of the Department of Defense, leaving that post in 1972 to return for two years to private industry as the manager of Advanced Systems Concepts at the Ling-Temco-Vought (LTV) Aerospace Corporation in Dallas, Texas. Between 1973 and 1974 he served as a senior management associate with the Office of Management and Budget, Executive Office of the President. Aldridge returned to the defense establishment in 1974 as deputy assistant secretary of defense for strategic programs. In 1976 he was named director of planning and evaluation in the Office of the Secretary of Defense.

Once again returning to private industry in 1977, Aldridge served four years as the vice president of the National Policy and Strategic Systems Group, System Planning Corporation. In 1981 he was appointed under secretary of the Air Force and, concurrently, director of the National Reconnaissance Office. He served as DNRO between 3 August 1981 and 16 December 1988. During this time he commissioned and led the first major examination of the National Reconnaissance Office, the Geiger-Kelly Study, which recommended consolidation and collocation of various office elements and the combining and functional realignment of the NRO's separate institutional programs. Aldridge subsequently served as secretary of the Air Force between 1986 and 1988, while retaining his position as director of the National Reconnaissance Office. In addition to his primary assignments, he also has served as an advisor to the U.S. delegation at the Helsinki and Vienna sessions of the Strategic Arms Limitations Talks between the United States and the Union of Soviet Socialist Republics.

On leaving government service, Aldridge was named president of McDonnell Douglas Electronic Systems Corporation in McLean, Virginia, a position he held until 1992. At that time he was named president and chief executive officer of Aerospace Corporation in El Segundo, California, a position he held until his retirement as president in September 2000. Although intending to stay on as chief executive officer of Aerospace Corporation, on 11 May 2001 Aldridge returned to government service to fill the position of under secretary of defense for acquisition, a new post created by President George W. Bush and Secretary of Defense Donald H. Rumsfeld. He currently serves in this position.

Aldridge has received numerous awards for his public service and accomplishments, including the Department of Defense Meritorious and Distinguished Civilian Service Medals, the Distinguished Public Service Award (with similar distinctions awarded by the U.S. Army and U.S. Navy), the Air Force Exceptional Civilian Service Award, the National Intelligence Distinguished Service Award, and the George M. Low Space Transportation Award from the

American Institute of Aeronautics and Astronautics. He is past president and a fellow of the American Institute of Aeronautics and Astronautics.

Brigadier General Lew Allen, Jr., USAF

**Staff Director, National Reconnaissance Office,
20 June 1969 – 20 August 1970**

**Director of Program A, National Reconnaissance Office,
1 April 1971 – 21 January 1973**



Lew Allen, Jr., was born in Miami, Florida, on 30 September 1925 and entered the U.S. Military Academy in 1943 from Gainesville, Texas, earning a bachelor of science degree with the class of 1946. After completing flight training in November 1946, Allen was assigned to the Strategic Air Command's 7th Bombardment Group at Carswell Air Force Base, Texas, where he flew B-29 and B-36 bombers. He also served in several positions dealing with nuclear weaponry.

In September 1950 he entered the University of Illinois where, in 1952, he received a Master of Science in Nuclear Physics, followed by a Doctorate of Philosophy in Physics at the same institution earned in 1954. Allen was then assigned to the Atomic Energy Commission's Los Alamos Scientific Laboratory in New Mexico, as a physicist in the Test Division, where he participated in experiments at several of the nation's nuclear test sites. These experiments involved the physics of thermonuclear weapons design and the effects of high altitude nuclear detonations for ballistic missile defense.

From June 1957 to December 1961, Allen was assigned to Kirtland Air Force Base, New Mexico, as scientific advisor in the Physics Division of the Air Force Special Weapons Center. There, he specialized in the military effects of high altitude nuclear explosions and participated in several weapon test series. In December 1961 he began a four-year assignment with the Office of the Secretary of Defense, Space Technology Office, in the Directorate of Research and Engineering, Washington, D.C.

Between June 1965 and February 1973, Allen was assigned to the Office of the Secretary of the Air Force, initially in El Segundo, California, as deputy director for advanced plans, Office of Special Projects (SAF/SP, National Reconnaissance Office Program A). He moved to the Pentagon in June 1968, where he served as deputy director of the NRO headquarters staff, and, after 20 June 1969 until 20 August 1970, as the NRO staff director. Promoted to brigadier general in 1969, he returned to El Segundo in September 1970 as assistant to the director, Office of Special Projects, and in April 1971 became the director of that office, while concurrently serving as deputy commander for satellite programs, Air Force Space and Missile Systems Organization.

Brigadier General Allen served as director of NRO Program A between 1 April 1971 and 31 January 1973. The first Cold War nuclear arms control treaty was negotiated between the United States and the U.S.S.R. during this time, and Allen managed many of the overhead assets that insured Soviet treaty compliance. Following service at the National Reconnaissance Office, and after serving briefly as chief of staff of the Air Force Systems Command at Andrews Air Force Base, Maryland, now Major General Allen was appointed deputy director of the Central Intelligence Agency in March 1973. That August, promoted to lieutenant general, he became the director of the National Security Agency and chief of the Central Security Service at Fort George G. Meade, Maryland. In August 1977 he was promoted to general and named commander, Air Force Systems Command. In April 1978 General Allen was named vice chief of staff, before

being appointed chief of staff of the Air Force in July of that year. He retired from active duty on 1 July 1982.

Allen remained active in the scientific community after leaving the military, serving between 1982 and 1991 as director of the Jet Propulsion Laboratory, California Institute of Technology, responsible for NASA's Deep Space Exploration Program. His military decorations and awards include the Defense Distinguished Service Medal with two oak leaf clusters, the Air Force Distinguished Service Medal with one oak leaf cluster, the Legion of Merit with two oak leaf clusters, the Joint Service Commendation Medal, the National Intelligence Distinguished Service Medal, and the NASA Distinguished Service Medal.

Brigadier General James B. Armor, Jr., USAF

**Director of SIGINT Systems, Acquisitions, and Operations Directorate,
National Reconnaissance Office,
11 June 2001 - Present**



James Burton Armor, Jr., was born on 25 September 1950 in Oklahoma City, Oklahoma. On 27 May 1973 he was commissioned a second lieutenant in the U.S. Air Force through the Air Force Reserve Officer Training Corps at Lehigh University in Bethlehem, Pennsylvania, where he earned two Bachelor of Science degrees, with honors, in Psychology and Electrical Engineering. His first Air Force assignment, from September 1973 until August 1976, was as a deputy missile combat crew commander. He then served as senior wing instructor with the 381st

Strategic Missile Wing at McConnell Air Force Base in Kansas. In December 1977 Armor was a distinguished graduate of the Air Force Institute of Technology at Wright-Patterson Air Force Base in Ohio, earning a Master of Science in Electrical Engineering with a subspecialty in electro-optics. His next assignment was as the chief of the Laser Signal Intelligence Branch, Foreign Technology Division, at Wright-Patterson Air Force Base, where he served as a laser signal intelligence analyst until 1981. Following completion of the program management course at the Defense Systems Management College at Fort Belvoir, Virginia, then Major Armor was assigned to the Air Force Office of Special Projects at Los Angeles Air Force Station in California, with the title of assistant deputy for mission integration.

In November 1986 Armor returned to Washington, D.C., where he served as the deputy division chief for special technology operations, Office of the Deputy Chief of Staff for Plans and Operations at U.S. Air Force headquarters until July 1989. He went back to the Pentagon after a year as a senior research fellow at the National War College and served as the deputy chief of the Space Communications Division, Directorate of Space and Strategic Defense Initiative Programs, Office of the Assistant Secretary of the Air Force for Acquisition.

In mid-1992 then-Colonel Armor returned to California, to serve as the deputy program director of the Advanced Systems Program Office and then as the director of the Defense Dissemination Program Office (DDPO), Space and Missile Systems Center, at Los Angeles Air Force Base. In July 1996, after assisting with the transition of the DDPO to the newly created National Imagery and Mapping Agency, Armor became the system program director of the NAVSTAR Global Positioning System (GPS) Joint Program Office at Space and Missile Systems Center in Los Angeles. As the director of this multi-billion dollar GPS program, he was responsible for acquiring advanced replacement satellites for the 24 satellite constellation, as well as upgrading ground control stations, multi-service GPS receivers, and support equipment. He also managed the exploding worldwide civilian use of GPS for the Department of Defense. In October 1999, Colonel Armor assumed the position of vice commander at Warner Robins Air Logistics Center at Robins Air Force Base, one of the Air Force's five air logistics centers and Georgia's largest industrial complex. Here he was responsible for depot maintenance and worldwide logistics support of most Air Force transport aircraft, F-15 fighters, helicopters, air-to-air missiles, surface motor vehicles, and high-technology airborne electronics.

On 1 January 2000, Colonel Armor was promoted to the rank of brigadier general. After eighteen months at Robins Air Force Base, he was selected to serve as the director of the Signals

Intelligence (SIGINT) Systems Acquisition and Operations Directorate at the National Reconnaissance Office, in Chantilly, Virginia. He officially assumed these duties on 11 June 2001.

Brigadier General Armor wears the Missileman Badge, the Master Space Badge, and the Senior Acquisition Badge. In addition to his university degrees, Armor has completed studies at Squadron Officer's School, the Air Command and Staff College, and has completed the National Security Management Course. Among his military awards and decorations are the Defense Meritorious Service Medal, the Meritorious Service Medal with three oak leaf clusters, the Air Force Outstanding Unit Award, and the Air Force Organizational Excellence Award with three oak leaf clusters.

Colonel Bernard L. Bailey, USAF

**Director of Program D, National Reconnaissance Office,
21 July 1972 – 1 October 1974**



Bernard Lee “Buzz” Bailey was born on 17 June 1922 in Orland, California. He attended Redlands University in California in 1941, but left university studies after the Imperial Japanese attack on Pearl Harbor, Hawaii, in December of that year, and joined the U.S. Army Air Corps in January 1942. Receiving his pilot’s wings in March 1943, Bailey underwent an additional six months training in C-46, C-47 Dakota, and other similar military transport aircraft in Illinois, California, and Montana. In September 1943 he was assigned to the China-Burma-India Theater where he flew combat missions over the Himalayas, or the “hump,” from India to China. He also

transported passengers and cargo elsewhere throughout the theater, amassing over 1,000 hours of flight time. In January 1945 he reported to the Air Corps Ferry Command at Long Beach, California, where he delivered P-38 Lightning fighter aircraft to various locations in the United States, while also qualifying to fly B-17 Flying Fortresses and B-25 Mitchell bombers. He then moved to Stockton Army Air Field, California, where he flew with the Military Air Transport Service until December 1946 when he left the military to take a position with United Airlines, Incorporated.

After the Air Force became a separate service in 1947, Bailey was recalled to active duty in January 1948, and assigned to Barksdale Air Force Base, Louisiana, with the Air Training Command, where he served as the chief of the Synthetic Training Department and as an instrument flight examiner. In 1949 he transferred to the 3500th Pilot Training Wing at Lubbock Air Force Base, Texas, where he served as an instructor pilot in the B-25 and T-28. Going overseas in February 1953, Bailey was assigned to the Northeast Air Command, Thule Air Base, Greenland, assuming duties as operations officer and commander of the 55th Air Rescue Squadron. Returning to the United States in early 1954, he went to Norton Air Force Base, California, as an analyst in the Directorate of Air Force Flying Safety and later served as a staff officer in the Office of the Assistant for Programs and Analysis, Deputy Inspector General, U.S. Air Force headquarters. He was transferred in June 1958 to the 552nd Airborne Early Warning and Control Wing, McClellan Air Force Base, California, where he served as flight commander and aircraft commander in RC-121D aircraft. Then, in April 1959, he was selected to become chief of the Allocations Branch at Western Air Defense Force headquarters at Hamilton Air Force Base, California.

With so much specialized flight training, Bailey was ordered to the 1040th Air Force Special Activities Squadron at Wiesbaden, Federal Republic of Germany, in March 1961 where he flew U-2 aircraft throughout Europe, the Middle East, and Africa. In 1964 Colonel Bailey returned to the United States and served for two years as chief of the Current Intelligence and Indications Center, U.S. Strike Command, MacDill Air Force Base, Florida, before being assigned to U.S. Air Force headquarters in Washington, D.C., as a staff officer in the Special Activities Division, Deputy Chief of Staff for Research and Development, Reconnaissance and Electronic Warfare office.

From May 1970 until May 1971, during the Vietnam War, Bailey was assigned to Pacific Air Force headquarters at Hickam Air Force Base, Hawaii. His duties included serving as chief

of the Contingency Target Division, and he assisted the director of targets with data and strike recommendations for the staff and tactical units for current operations, contingency plans, and general war. In May 1971 Bailey was reassigned as deputy and then chief of Special Projects, Office of the Secretary of the Air Force. He then was named director of aerial reconnaissance, National Reconnaissance Office Program D, serving in that position between 21 July 1972 and 1 October 1974. During his tenure, Bailey successfully managed the U-2 and SR-71 programs and directed the acquisition of critical reconnaissance sub-systems. In October 1974, the leadership of the National Reconnaissance Office and the Central Intelligence Agency assigned Program D to the United States Air Force. Bailey, the last director of NRO Program D, retired in late 1974 following thirty-two years of military service.

A command pilot with over 8,000 flying hours, Colonel Bailey's decorations include the Legion of Merit with one oak leaf cluster, the Air Medal, the Joint Service Commendation Medal, the Distinguished Unit Citation, the Air Force Longevity Award, and eight other campaign and service medals.

Brigadier General David E. Baker, USAF

**Deputy Director for Military Support, National Reconnaissance Office,
8 January 1996 – 11 September 1997**



David Earle “Bull” Baker was born on 30 September 1946 in West Stewartstown, New Hampshire. He attended Hofstra University in New York where he obtained a Bachelor of Business Administration degree in 1968. Following his college graduation, and his commissioning as a second lieutenant in the Air Force on 15 May 1969, Baker completed pilot training at Webb Air Force Base in Texas, between June 1969 and June 1970. He then flew as an EC-121 pilot with Detachment 1 of the 552nd Airborne Early Control Wing at McCoy Air Force

Base in Florida, before undergoing AT-33 combat crew training at Cannon Air Force Base in New Mexico.

Deploying overseas in support of the American war effort in Southeast Asia in January 1972, Captain Baker served as an O-2A forward air controller assigned to the 21st Tactical Air Support Squadron based at Tan Son Nhut Air Base in Saigon, Republic of South Vietnam. During this service, Baker's aircraft was shot down by a surface-to-air missile over Cambodia during his fiftieth combat mission on 27 June 1972. Baker was a prisoner-of-war until the conclusion of the American combat involvement in Southeast Asia in February 1973. He was the only Air Force prisoner to be repatriated from Cambodia.

On his return to the United States, Baker spent 1974 attending Squadron Officer School and earning a Master of Science in Business Administration degree at the University of Hawaii in Honolulu. Following this, Baker spent the next five years, from September 1974 until September 1979, as a T-38 instructor pilot with the 97th Flying Training Squadron before becoming a flight commander, then assistant section commander, and then chief of standardization and evaluation with the 82nd Flying Training Wing at Williams Air Force Base in Arizona. During this time he also attended the Air Command and Staff College, completing his studies there in 1978.

Again deploying overseas, Major Baker spent four years as an F-15 fighter pilot, a cadre instructor in the F-15C, and as the assistant operations officer and chief of the F-15 Standardization and Evaluation Program with the 32nd Tactical Fighter Squadron at Camp New Amsterdam in the Netherlands. Following this tour, between January 1983 and December 1986, Lieutenant Colonel Baker attended the Armed Forces Staff College in Norfolk, Virginia, before spending the next three years as the international program manager for Africa, and later as the chief of international programs for Egypt, at U.S. Air Force headquarters in Washington, D.C.

Returning to work with the F-15, Baker spent four years after December 1986 as an instructor pilot, and later as the assistant deputy commander for operations of the 405th Tactical Training Wing at Luke Air Force Base in Arizona. In January 1991, then Colonel Baker began eight months combat service as the deputy commander for operations of a composite fighter wing, consisting of the 4th Tactical Fighter Wing (Provisional) and the 4404th Tactical Fighter Wing (Provisional), in Al Kharj, Saudi Arabia, during Operation Desert Storm. Baker flew twenty combat missions over Iraq in the F-15E during this time; he was the only repatriated Vietnam-era prisoner-of-war to fly combat missions during the Gulf War.

After attending the National Defense College of Canada at Kingston, Ontario, Baker served two years, between August 1992 and September 1994, as the director of operations, plans, and programs at the Air National Guard Bureau at U.S. Air Force headquarters in Washington, D.C. Following this assignment, and his promotion to the rank of brigadier general in October 1994, Baker served as the vice director of the Operational Plans and Interoperability Directorate, J-7, with the Joint Staff in Washington. Here, he was accountable to the director in providing assistance to the chairman, Joint Chiefs of Staff, by increasing the warfighting capabilities of the combat commands through improvements in the interoperability of the services in all aspects of joint doctrine, tactics, techniques and procedures. Concurrently, Baker served as the deputy director for military education for the Joint Staff.

From 8 January 1996 until 11 September 1997, in his last active duty assignment, Brigadier General Baker served as the deputy director for military support at the National Reconnaissance Office. He retired on 1 October 1997.

During his career, Brigadier General Baker logged more than 4,000 flying hours in the EC-121, AT-33, O-2A, T-38, and F-15 A/C/E aircraft. Among his numerous awards and decorations are the National Intelligence Distinguished Service Medal, the Defense Distinguished Service Medal, the Defense Superior Service Medal, the Legion of Merit, the Distinguished Flying Cross with oak leaf cluster, the Bronze Star with "V" device and oak leaf cluster, the Purple Heart, the Meritorious Service Medal with three oak leaf clusters, the Army Commendation Medal, the Air Medal with four oak leaf clusters, the Prisoner of War Medal, the Vietnam Service Medal with two service stars, the Southwest Asia Service Medal with two service stars, the Republic of South Vietnam Cross of Gallantry with bronze star, and the Kuwait Liberation Medal.

Colonel Wallace A. Beauchamp III, USAF

**Director, Office of Space Launch, National Reconnaissance Office
1 July 1998 – 15 July 1999**



Born at Fort Belvoir, Virginia, on 5 October 1949, Wallace Adrian “Pat” Beauchamp III received a Bachelor of Arts degree in Psychology from Millsaps College and was commissioned a second lieutenant in the Air Force following completion of Officer Training School in October 1973. During the two years between 1973 and 1975, he underwent pilot and pilot instructor training at Columbus Air Force Base, Mississippi, and stayed on at that base as a T-38 flight-training instructor until October 1978. He was then assigned to Hickam Air Force Base, Hawaii, where he was a HH-53 recovery pilot. From October 1978 until July 1983 Beauchamp served as

air operations officer and orchestrated a multi-service effort to recover a malfunctioning satellite. His innovative approach prevented the loss of a space capsule and was commended by the former Secretary of the Air Force Vern Orr. During this time he also earned a Master of Science in Education, Counseling, and Guidance from Mississippi State University in 1980 and completed Squadron Office School.

From September 1983 until August 1985, Beauchamp was assigned to the Los Angeles Air Force Base, California, as the manager of Space Transportation System (STS) Utilization Planning. He was responsible for managing STS utilization planning activities for the deputy of the Mission Integration Management Support Office. In 1985 and 1986 he attended the Air Command and Staff College at Maxwell Air Force Base in Alabama, before beginning his first tour of duty with the Office of Special Projects as a launch vehicle integration manager. Here he was responsible for the development of alternative systems to launch small Department of Defense payloads. From June 1987 through June 1989, Beauchamp remained at the Special Projects Office as the deputy director for expendable launch vehicle integration. He devised and implemented a new launch manifesting system for the Titan IV Program that reduced planning time and saved federal tax dollars. He also prepared a Titan IV recovery plan for the Solid Rocket Motor Upgrade Program that eliminated 12 months from a two year projected delivery slip.

Colonel Beauchamp moved from Los Angeles to Washington, D.C., in July 1989 where he was assigned to the Pentagon as the deputy for launch vehicles. In this position he served as the principal liaison on launch issues between the assistant secretary of the Air Force for space, NASA, Congress, and other government agencies. He was the lead in resolving major issues ranging from launch base security upgrades to conducting a top-to-bottom congressional review of the Titan IV and solid rocket motor upgrade developments.

Following completion of coursework at the Defense Systems Management College in August 1992, Beauchamp returned to the Los Angeles Air Force Base and the Office of Special Projects as the deputy director, and then director, of launch integration and operations. Significant accomplishments included membership on the Space Launch Modernization Study Team, where he chaired the Requirements Panel. In July 1996, he became the deputy director, and then director, of the Launch Program Office where he identified ways to reduce the expenses of the Titan IV Program; defined day of launch roles and responsibilities between different agencies, and became the focal point for the evolved expendable launch vehicle program. On 1

July 1998, Colonel Beauchamp became the director of the Office of Space Launch at the National Reconnaissance Office, serving in that position until 15 July 1998.

Among Colonel Beauchamp's awards and decorations are the Defense Superior Service Medal, the Defense Meritorious Service Medal with two oak leaf clusters, the Air Force Meritorious Service Medal, three Air Force Commendation Medals, one Air Force Achievement Medal, and the National Defense Service Medal with one oak leaf cluster.

Brigadier General Russell A. Berg, USAF

**Staff Director, National Reconnaissance Office,
1 February 1967 – 19 June 1969**



Russell Allen Berg was born in Chicago, Illinois, on 6 January 1917. He graduated from Roosevelt High School in Chicago in 1935, and from Grinnell College in Grinnell, Iowa, with a Bachelor of Arts in Journalism in June 1940. In September 1940 he entered U.S. Army Air Corps flight training at Maxwell Field in Montgomery, Alabama, and upon completion was commissioned as a second lieutenant in April 1941.

During World War II his principal duties were those of a tactical photoreconnaissance pilot, flight commander, operations officer, squadron, and group commander, flying in the

European Theater of Operations with the 12th Tactical Reconnaissance Squadron and 10th Photoreconnaissance Group from July 1942 until October 1945. For a period of five months, between May and July 1943, he flew with the Royal Air Force 610th Fighter Squadron and completed combat missions in Spitfire and P-51 Mustang aircraft.

Berg returned to the United States in October 1945 for a series of assignments, first as a Tactical Reconnaissance Group commander, then as a senior air instructor with the Wisconsin Air National Guard, and then for duty with Tactical Air Command headquarters at Langley Air Force Base in Virginia. In 1952, during the Korean War, Berg went to the East Asia where he commanded the 67th Tactical Reconnaissance Wing attached to the Far Eastern Air Force, flying combat reconnaissance missions in jet aircraft over Korea. He returned to the United States in August 1953 for duty at U.S. Air Force headquarters, where he served as chief of the Reconnaissance Division in the Directorate of Operations, later serving as the Air Force project officer on Project AQUATONE, the joint CIA and Air Force program then developing the U-2 high-altitude reconnaissance aircraft. He then attended the National War College in 1956 and 1957, before being assigned as the chief of the Reconnaissance Division of the Allied Air Forces in Central Europe, a part of the North Atlantic Treaty Organization.

In August 1960 Berg returned to the United States and was assigned as the chief of staff of the Ballistic Missile Division located at the Los Angeles Air Force Station in El Segundo, California, before serving as the vice commander of the Satellite System Division. Two years later, in 1962, he was assigned as the deputy director of the Air Force Special Projects Office in Los Angeles, California.

In September 1965 Berg began work on various classified projects under Gen. Bernard A. Schriever before being reassigned on 1 February 1967 as the director of the Office of Space Systems, Office of the Secretary of the Air Force at the Pentagon in Washington, D.C., serving as the staff director of the National Reconnaissance Office. Following his assignment with the NRO, on 19 June 1969, he was assigned as chief of the Requirements and Development Division, J-5, Joint Chiefs of Staff, also at the Pentagon. Following service in this position, Brigadier General Berg retired from active military duty after thirty years on 1 August 1970.

Among Brigadier General Berg's many military decorations and awards are the Distinguished Service Medal, the Legion of Merit with oak leaf cluster, the Distinguished Flying Cross, the Air Medal with eight oak leaf clusters, the Bronze Star Medal, the Army Commendation Medal, the Air Force Outstanding Unit Award Ribbon, as well as the

Distinguished Flying Cross with bar from Great Britain, the French croix de guerre with palm, the Belgium croix de guerre with palm, and the Republic of South Korea Presidential Unit Citation.

Rear Admiral Thomas C. Betterton, USN

**Director of Program C, National Reconnaissance Office,
20 March 1985 – 31 January 1992**



Thomas Cherrill Betterton was born in Berkeley, California, on 6 March 1936. He graduated from the University of Notre Dame in 1957 with a Bachelor of Science in Electrical Engineering and, following flight training in 1958, served four and one half years in Patrol Squadron 21. Betterton subsequently attended the Naval Postgraduate School, Monterey, California, for two years, and was accepted for a third year of study at the Massachusetts Institute of Technology where he graduated with a Master of Science and Engineering degree in Aeronautics and Astronautics. His subsequent tours included time at the Naval Air Rework

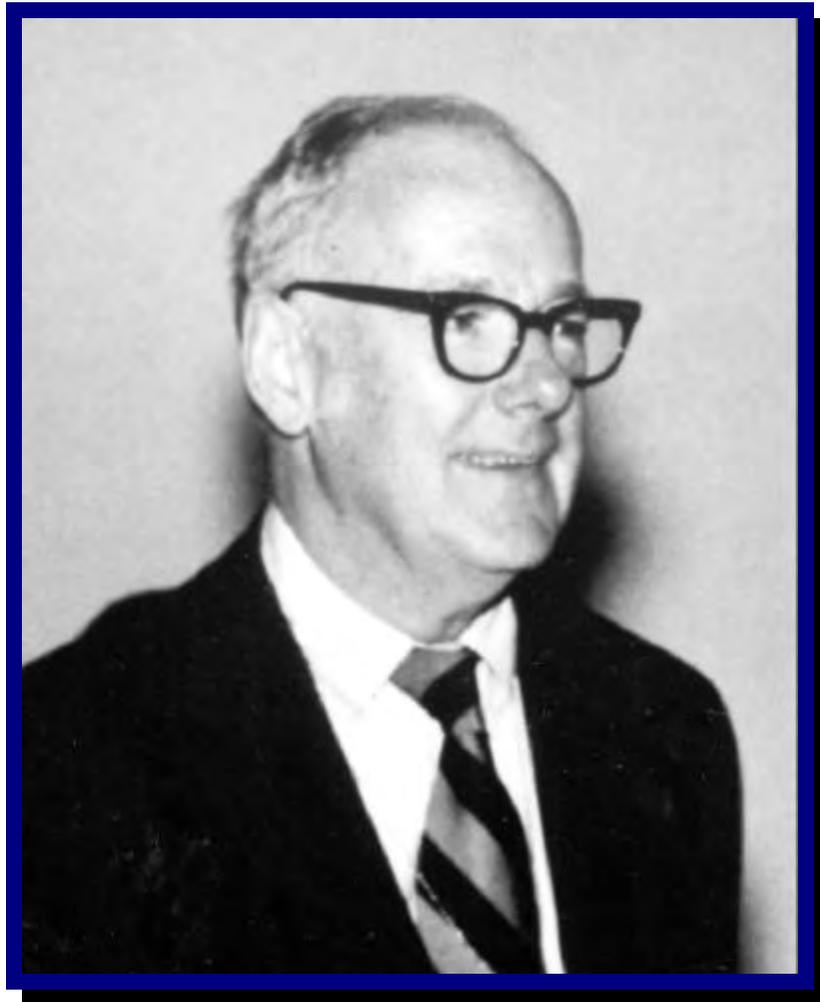
Facility, Norfolk, Virginia, where he served as the Engineering and Quality Assurance Department head, the Naval Safety Center, and three years as project director in Air Test and Evaluation Squadron 1.

Betterton reported to the U.S. Navy Space Program in 1975 and served as chief of the space segment for two years. His next assignment was at the Bureau of Naval Personnel where he served as the aeronautical engineering duty officer. In 1978 Betterton returned to the Navy Space Program where he served until 1985 as the manager of the Navy Special Systems Program. Promoted to rear admiral, he was assigned in November 1985 to the position of assistant commander for space technology, Space and Naval Warfare Systems Command. It was during this time that he also served as the director of the Navy's National Reconnaissance Office Program C, between 20 March 1985 and January 1992. During his tenure Betterton shaped the definition, development, deployment, and operation of future space-based sensing systems. His efforts led to the definition, acquisition, and operation of several space-based sensor systems responsive to U.S. Navy and Department of Defense needs. He retired from active duty in January 1992 after thirty-five years of service.

Rear Admiral Betterton continued to participate in aeronautical activities well into retirement. He supported the National Aeronautics and Space Administration as a member of several review teams and boards and, in August 1994, was named a visiting professor of space technology at the Naval Postgraduate School. Among his many military awards and decorations, Rear Admiral Betterton has earned the Legion of Merit, the Distinguished Service Medal, the National Intelligence Distinguished Service Medal, the Meritorious Service Medal with one gold star, the Navy Unit Commendation, and the Meritorious Unit Commendation.

Dr. Richard M. Bissell, Jr.

**Co-Director of the National Reconnaissance Office,
6 September 1961- 28 February 1962**



Richard Mervin Bissell, Jr., was born in Hartford, Connecticut, on 18 September 1909. He attended Yale University, where he received a Bachelor of Arts degree and Doctorate of Philosophy in Economics in 1932 and 1939, respectively. During World War II he worked as an economist for the Department of Commerce, the Shipping Adjustment Board, and the War Shipping Board before becoming the economic advisor to James F. Byrnes, the Director of War Mobilization and Reconversion between 1945 and 1946. Returning to the academy as a professor of economics at the Massachusetts Institute of Technology between 1946 and 1952, Bissell

helped administer American aid programs to Europe. In particular, and along with Paul H. Nitze, Bissell helped develop the European Recovery Act, or Marshall Plan, in 1947, and assisted with that program's administration during the following years as senior executive of the Economic Cooperation Administration and its successor organization, the Mutual Security Agency.

After two years with the Ford Foundation, Bissell was hired by the Central Intelligence Agency on 1 February 1954 as a special assistant to the director, Allen W. Dulles. That summer Bissell played a key role in the overthrow of the leftist government of Gen. Jacobo Arbenz Guzman of Guatemala, serving as Dulles' eyes and ears during this covert operation. His major assignments beginning in late 1954 through the early 1960s, however, and the Central Intelligence Agency programs for which he is best remembered, were AQUATONE, the development and deployment of the first U-2 reconnaissance aircraft, and the CORONA imagery satellite that eventually was subsumed in the National Reconnaissance Program administered by the National Reconnaissance Office. The U-2, under Bissell's direction, moved rapidly from conception to flight in conjunction with Lockheed Corporation's Clarence "Kelly" Johnson. Working in a secret Lockheed facility known as the "Skunk Works," the first prototype U-2 aircraft flew in August 1955, a mere nine months after the project was initiated.

Bissell became the Central Intelligence Agency's deputy director (plans) in January 1959. Shortly after disclosure of the Agency's involvement in the failed April 1961 Bay of Pigs invasion of Cuba, Bissell was named a co-director of the National Reconnaissance Office. Remaining in this position until his resignation from the Central Intelligence Agency on 28 February 1962, Bissell and his counterpart, NRO co-director Joseph V. Charyk streamlined acquisition practices for aerial and satellite reconnaissance programs, and developed a strategy for peacetime reconnaissance of denied areas. Bissell also guided the first U.S. imagery satellite, CORONA, into full operation and introduced the compartmented security systems needed to protect these reconnaissance assets.

Upon leaving government service, Bissell served as the president of the Institute for Defense Analysis between 1962 and 1964. He then became the director of marketing and economic planning for United Aircraft Corporation in Connecticut, in addition to serving as a consultant and board member of several other corporations. Bissell was the recipient of the National Security Medal, and he was a member of the American Academy of Arts and Sciences, the American Economic Association, the Council on Foreign Relations, and the Washington Institute on Foreign Affairs. He died on 7 February 1994 in Farmington, Connecticut.

Brigadier General David D. Bradburn, USAF

**Staff Director, National Reconnaissance Office,
1 June 1971 – 7 January 1973**

**Director of Program A, National Reconnaissance Office,
22 January 1973 – 31 July 1975**



David Denison Bradburn was born in Hollywood, California, on 27 May 1925. He earned a bachelor of science degree at the U.S. Military Academy, graduating with the class of 1946. After completing flight training, he was assigned to the 47th Bombardment Group (Light), Tactical Air Command, where he remained until April 1948. In May of that year he was sent to Japan where he served as a fighter intercept controller with the 610th Aircraft Control and

Warning Squadron. Bradburn then joined the 3d Bombardment Group (Light) at Yokota and later Iwakuni Air Bases, Japan, where, during the Korean War, he flew fifty combat missions in B-26 Marauder medium bombers as a flight commander on daylight bombing, close air support, and night-intruder missions.

After completing his combat service in April 1951, he completed a Master of Science in Engineering at Purdue University. Then, in December 1952, Bradburn was reassigned as a research and development staff officer at the headquarters of the Air Research and Development Command, in Baltimore, Maryland, where he worked on aerial photoreconnaissance equipment and ground radar, the latter effort being the precursor of the ballistic missile early warning radar system.

In May 1957 Bradburn was assigned to the WS-117L (later named SAMOS) Reconnaissance Satellite Program office at the Western Development Division, Air Research and Development Command, Los Angeles, California, as a program control officer. Three years later, in December 1960, he was assigned to the SAMOS Project Office (the later Special Projects Office), Office of the Secretary of the Air Force, in Los Angeles, as plans and policy officer, and later served as the director of several research projects, the last of which was completed in June 1965.

In August 1966, after attending the Air War College and earning a Master of Science in International Affairs from The George Washington University in Washington, D.C., Bradburn was appointed deputy director of the Special Projects Office (SAF/SP) in El Segundo, California, where he remained until April 1971 managing National Reconnaissance Office space programs. Promoted to brigadier general, he was assigned as staff director of the National Reconnaissance Office where he served from 1 June 1971 until 7 January 1973.

Bradburn returned to the west coast as director of the Special Projects Office (National Reconnaissance Office Program A), between 22 January 1973 and 31 July 1975, at that time also serving as deputy commander for satellite programs of the Air Force Space and Missile Systems Organization. He was promoted to major general in 1974. During his service with the National Reconnaissance Office, Major General Bradburn closely supervised ongoing research, helped integrate the operations of the NRO and the National Security Agency, and introduced significant improvements in overhead signals collection. After July 1975, Bradburn spent one year as vice commander of the Electronic Systems Division, Air Force Systems Command, Hanscom Air Force Base, in Massachusetts.

Major General Bradburn retired on 1 August 1976, but continued to be involved in national defense activities, serving as the director of engineering at TRW and as a member of the U.S. delegation and Joint Chiefs of Staff representative to the U.S.- Soviet Anti-Satellite Negotiations in Helsinki, Bern, and Vienna, starting in 1978. His military citations and decorations include two awards of the Distinguished Service Medal, the Legion of Merit with two oak leaf clusters, the Distinguished Flying Cross, the Meritorious Service Medal, the Air Medal with three oak leaf clusters, and the Distinguished Unit Citation Medal.

Rear Admiral Dennis M. Brooks, USN

**Director of Program C, National Reconnaissance Office,
4 October 1982 – 19 March 1985**

**Deputy Director for Military Support
31 August 1990 – 1 January 1992**



Dennis Matthew Brooks was born in Fairfield, Alabama, on 23 November 1934. He entered the U.S. Naval Academy in June 1953 and completed a bachelor's degree, graduating with the class of 1957. After completing flight training in February 1959, he began twenty years service with U.S. Navy air units, including Fighter Squadrons 32, 101, 103, and 174. During this time he also completed a Bachelor of Science in Aeronautical Engineering at the Naval

Postgraduate School, in 1965, and seven years later, graduated from the Armed Forces Staff College. He also served as a production test pilot for the F-4 Phantom, and as an instructor with the Division of Engineering and Weapons at the U.S. Naval Academy. Returning to the command of flying squadrons in September 1973, Brooks served with squadrons 51 and 121 until March 1977. In addition, he had ship commands during the late 1970s and early 1980s, serving as the commanding officer of the *USS Kansas City* between January 1979 and June 1980, and as the commanding officer of the *USS Constellation* between April 1981 and September 1982.

Following these duties, now Rear Admiral Brooks was assigned as the director of National Reconnaissance Office Program C and, concurrently, as director of the Navy Space Project, Naval Electronic Systems Command, between 4 October 1982 and 19 March 1985. During his tenure as Program C director, Brooks' aeronautical expertise was invaluable in the direction and management of surveillance, intelligence, and environmental sensing systems.

Upon leaving the National Reconnaissance Office, Brooks first commanded Carrier Group Seven between July 1985 and July 1986, then Carrier Group Five, Carrier Strike Force, Seventh Fleet, from July 1986 until July 1988, while also serving part of that time as the commander of Joint Task Force Middle East. After these sea commands, he became the director of warfare systems architecture and engineering, Space and Naval Warfare Systems Command, before becoming the deputy director for operations, National Systems Support, Joint Staff, and the first deputy director of the newly established NRO office of the Deputy Director for Military Support (DDMS) on 31 August 1990. Brooks retired from active military service on 1 January 1992.

Rear Admiral Brooks has been awarded the Defense Superior Service Award, the Defense Distinguished Service Medal, the Legion of Merit with three gold stars, the Joint Meritorious Unit Award, a Meritorious Unit Commendation, the U.S. Navy "E" Ribbon, and the Navy Expeditionary Medal (Cuba) with one bronze star.

Captain John M. Brownell, USN

**Director, Operational Support Office, National Reconnaissance Office,
19 August 2000 – Present**



John Michael Brownell was born on 10 August 1954 in Walla Walla, Washington. Raised in Walla Walla, he entered the U.S. Naval Academy in 1972 and graduated with merit in 1976 with a Bachelor of Science in Systems Engineering. Designated a naval flight officer in June 1978, Brownell's first operational assignment was with Oceanographic Research Squadron 8, then located at the Patuxent River Naval Air Station, in Maryland, where he served until May 1981. Going overseas, Brownell next served with Fleet Air Reconnaissance Squadron 2 at the Rota Naval Air Station in Spain until May 1984. Following graduation in June 1986 from the

Naval Postgraduate School in Monterey, California, where he received a Master of Science degree, with distinction, in Systems Engineering, he was assigned as electronic warfare officer with Tactical Electronic Warfare Squadron 34 at Point Mugu Naval Air Station in California. He then served as the operations officer of Fleet Air Reconnaissance Squadron 2 in Spain for two more years between June 1988 and May 1990. Continuing with his professional education, then Commander Brownell completed a Master of Arts in National Military Affairs at the Naval War College in June 1991.

Following his attendance at the Naval War College, Brownell spent 1991 and 1992 serving as executive officer of Tactical Electronic Warfare Squadron 35 at the Whidbey Island Naval Air Station in Washington. Upon that command's decommissioning, in June 1993, he was assigned as the executive and commanding officer of Fleet Air Reconnaissance Squadron 1 at the Agana Naval Air Station in Guam, and then at Whidbey Island Naval Air Station when that unit was relocated in December 1994. Between July 1995 and July 1996, Brownell served as the executive officer of the Whidbey Island Naval Air Station.

In August 1996, Commander Brownell was assigned as the chief of the Capabilities Division, Deputy Director for Operations (Information Operations), Joint Staff, J-39, in Washington, D.C. Promoted to the rank of captain in December 1998, he transferred to the National Reconnaissance Office in August 1999 as the chair of the Navy-NRO Coordination Group. On 19 August 2000, he assumed duties as the director of the Operational Support Office at the National Reconnaissance Office.

Captain Brownell has over 4,500 flight hours in various types of electronic attack, signals intelligence reconnaissance, and oceanographic research aircraft. During his career he has served as a mission commander, electronic warfare strike lead, senior electronic warfare evaluator, and electronic countermeasures officer. He is a member of the Association of Old Crows, and a life member of the Association of Naval Aviation and U.S. Naval Academy Alumni Association. He also serves as secretary of the National Capital Area Scholastic Rowing Association, and is a U.S. Rowing judge and referee. Among his military awards and decorations are the Distinguished Service Medal, two awards of the Meritorious Service Medal, and various campaign, service, and unit awards.

Mr. Julian Caballero, Jr.

**Director of Program B, National Reconnaissance Office,
28 August 1989 – 31 December 1992**

**Director of IMINT Systems, Acquisitions, and Operations Directorate,
National Reconnaissance Office,
1 January 1993 – 3 October 1993**



Julian Caballero, Jr., was born on 15 September 1930 in Harlingen, Texas. Following his high school graduation in 1948, he was employed for two years as a radio repairman in Texas. He entered the U.S. Army in January 1951 and served in the Federal Republic of Germany as a non-commissioned officer, radio operator, and repairman until December 1952. The next year

Caballero was employed by Melpar, Incorporated, a Virginia-based electronic research and development firm, where he worked as a project engineer and technical assistant to the manager of the aerospace program. During his time with Melpar, between 1953 and 1965, he worked in a series of research and development engineering and supervisory positions in the company while engaged in the study and development of electronic reconnaissance and countermeasure systems. He was the manager of the electronic warfare laboratories at Melpar, when he resigned to join the Central Intelligence Agency in March 1965. His initial assignment with the CIA was as a signals intelligence officer with the Office of Special Projects (the later Office of Development and Engineering).

Caballero ended his agency affiliation in 1967 to serve as vice president of Applied Systems Tech, Incorporated, in Vienna, Virginia, but rejoined the CIA in April 1968 as chief of the Systems Requirements Division. A self-educated expert in electronic and signals intelligence systems, Caballero was appointed director of the Special Program Group in November 1978. He served as deputy director and then director of the Office of Development and Engineering, Directorate of Science and Technology (DS&T), beginning on 8 March 1982 and ending on 3 October 1993.

Caballero served as director of the National Reconnaissance Office Program B, between August 1989 and 31 December 1992, the last agency member to hold that post before it was abolished in favor of the functional directorates. The day following the abolition of the old Program B, on 1 January 1993, Caballero became the first director of the Imagery Intelligence (IMINT) Systems Acquisition and Operations Directorate at the National Reconnaissance Office and remained in that position until 3 October 1993. While at the NRO he directed the development and operation of new imagery and signals intelligence technical collection systems and assisted in establishing a responsive and flexible imagery system that served the needs of several U.S. intelligence agencies. He retired from the Central Intelligence Agency on 3 January 1994.

During his nearly thirty years of government service, Mr. Caballero received the Distinguished Intelligence Medal, the Intelligence Medal of Merit, two CIA Meritorious Unit Citations, the Department of Defense Distinguished Civilian Service Medal, the NASA Distinguished Service Medal, and the National Security Agency Distinguished Service Medal.

Dr. Joseph V. Charyk

**Director of the National Reconnaissance Office,
6 September 1961 - 1 March 1963**



Joseph Vincent Charyk was born in Canmore, Alberta, Canada, on 9 September 1920. He earned a Bachelor of Science in Engineering and Physics at the University of Alberta in 1942, and a master of science degree at the California Institute of Technology the following year. Continuing his studies at Caltech, he completed a Doctorate of Science in Aeronautics, magna cum laude, in 1946 with minors in physics and mathematics. He also holds an honorary Doctorate of Law from the University of Alberta and an honorary Doctorate of Engineering from the University of Bologna. He became a naturalized American citizen in 1948.

In 1945 and 1946, Charyk served as a section chief at the Caltech's Jet Propulsion Laboratory, and as an instructor in the Department of Aeronautics at Caltech. In the fall of 1946 he accepted the position of assistant professor in the Engineering School at Princeton University and later was named an associate professor. While at Princeton he helped establish the Guggenheim Jet Propulsion Center at that institution. He left Princeton in 1955 to join the Missile Systems Division of the Lockheed Aircraft Corporation as director of the Aerophysics and Chemistry Laboratory. In 1956 he joined Aeronutronic Systems, Incorporated, a subsidiary of the Ford Motor Company, as director of the Missile Technology Laboratory and later became the general manager of the Space Technology Division there, a post he held until 1959. In the late 1950s Charyk served as a consultant and member of the Air Force Scientific Advisory Board, and as a member and technical advisor to the Defense Department Aeronautics Panel.

In 1959 Charyk left Ford Motor Company to assume the post of chief scientist of the Air Force. Six months later he became assistant secretary of the Air Force for research and development and six months after that was appointed under secretary of the Air Force. In this position he was actively involved in the formative processes and organizational arrangements that ultimately led to the formal creation of the National Reconnaissance Office (NRO). Under Secretary of the Air Force Charyk served as the first co-director of the newly formed NRO between 6 September 1961 and February 1962. Thereafter, until 1 March 1963, he was the sole NRO director. During the earlier period, from 1960 until early 1962, Charyk worked closely with co-director Richard M. Bissell, Jr., of the Central Intelligence Agency, to bring together the appropriate existing programs of the CIA, the U.S. Air Force, U.S. Navy, and U.S. Army to form the nucleus of a comprehensive reconnaissance organization. Later, as sole NRO director, Charyk authorized the polar-orbiting, Defense Meteorological Satellite Program and an imagery satellite program that followed Project CORONA, as well as other satellite projects involving the collection of signals intelligence from space. During his tenure, the National Reconnaissance Office operated the U-2 reconnaissance aircraft and, after 1962, managed development of the CIA's successor program, the supersonic A-12, and a variant that became the Air Force SR-71.

Following service with the National Reconnaissance Office, Charyk returned to private industry as the founding president and director of the Communications Satellite Corporation (Comsat). He retired from Comsat as chairman and chief executive officer in 1985.

For his significant contributions to space communications and national defense, Joseph V. Charyk has received a number of notable awards. These include the National Medal of

Technology, the Department of Defense Distinguished Service Medal, the Guglielmo Marconi International Award, the Distinguished Aviation Aerospace Service Award, the National Medal of Technology, the Theodore von Karman Award in aeronautics, the Robert H. Goddard Astronautics Award, the Computer and Communication Foundation Award, the Emmy award of the Academy of Television Arts and Sciences, the Arthur C. Clarke Award in communications, and the Distinguished Alumni Awards of the University of Alberta and the California Institute of Technology.

Joseph Charyk is a fellow of the American Institute for Aeronautics and Astronautics, a fellow of the Institute of Electrical and Electronics Engineers, and a member of the National Academy of Engineering. He has also served on numerous bank and corporate boards, as well as on the boards of the Abbott and Charles Stark Draper Laboratories.

Captain Bruce N. Coburn, USN

**Director, Operational Support Office, National Reconnaissance Office,
1 August 1995 – 8 December 1996**



Bruce Norman Coburn was born in Savannah, Georgia, on 27 January 1948. He enlisted in the U.S. Navy in October 1968. Selected for the Naval Enlisted Scientific Education Program in 1971, he attended the University of Louisville in Kentucky, where he earned a Bachelor of Science in Engineering and was commissioned an ensign upon graduation in May 1974. He completed aviation training at the Naval Air Station in Pensacola, Florida, and received his naval aviator wings in February 1975.

Coburn's initial assignment with the U.S. Navy was with Fleet Air Reconnaissance Squadron 1 in Agana, Guam, where he served between May 1976 and February 1978 as senior electronic warfare evaluator and mission commander. Following this tour, he attended the Naval Postgraduate School in Monterey, California, where he earned a Master of Science in Systems Technology in April 1980. He next served with the Naval Electronics Systems Command in Washington, D.C., between May 1980 and June 1982, where he was attached to the Special Program Office of the Navy Space Project Directorate. Coburn then served as maintenance officer with Fleet Air Reconnaissance Squadron 2 in Rota, Spain, between June 1982 and July 1985, before returning to Washington, D.C., where he worked for the assistant commander for space technology at the Naval Space and Warfare Systems Command. Coburn reported once again to Fleet Air Reconnaissance Squadron 1 in January 1989, and served as the executive officer of that unit prior to assuming command of that squadron in June 1990. Afterward, he attended the Defense Systems Management College, between July and December 1991, en route to assignment at the Systems Application Project Office of the Navy Space Technology Program.

Captain Coburn was named deputy director of the Operational Support Office at the National Reconnaissance Office upon its establishment on 28 August 1992. Three years later, on 1 August 1995, he assumed the position of director of the NRO Operational Support Office, serving until 8 December 1996. Captain Coburn retired from the U.S. Navy in March 1997.

In addition to his university degrees, Captain Coburn graduated from the Armed Forces Staff College in December 1985. Among his awards and decorations are the Meritorious Service Medal, with one gold star, the Navy Commendation Medal, the Navy Achievement Medal, the Navy Expeditionary Medal, the Good Conduct Medal, the National Defense Service Medal, and the Humanitarian Service Medal. He also wears the Meritorious Unit Citation, Battle "E," and the Sea Service ribbons.

Mr. Thomas W. Conroy

**Deputy Director for National Support, National Reconnaissance Office,
16 November 1998 – 9 March 2001**



Thomas Ward Conroy was born in Orange, New Jersey, on 26 September 1944. Raised in Buffalo, New York, he received Bachelor of Science and Master of Science degrees in Electrical Engineering at the University of Maryland, College Park, in 1966 and 1971 respectively. During and following his education, Mr. Conroy was employed in private industry at TRACOR, Defense Electronics, Incorporated, B-K Dynamics, and at Telcom, Incorporated.

Mr. Conroy joined the Central Intelligence Agency in August 1968 and served in the Directorate of Science and Technology until December 1993. Initially assigned to its Office of

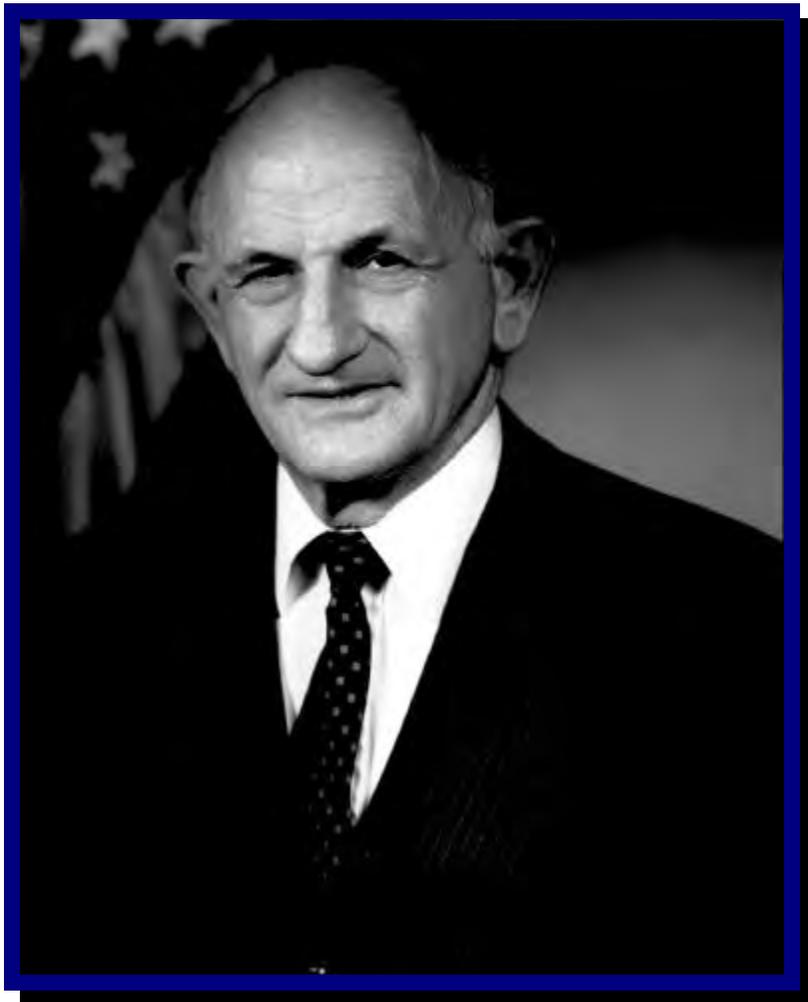
Research and Development, he managed technical developments involving ultra-small lithography semiconductors, the use of radioisotopes in research, custom-integrated circuits, and special purpose electronic systems. In 1976 he joined the Office of Development and Engineering to direct the development of wide-bandwidth recorders. He later helped develop, test, deploy, and operate special purpose collection systems, and was subsequently appointed deputy director, SIGINT Program Group, where he assisted in the development, launch, and operation of a significantly enhanced satellite collection system. In 1986 Conroy was appointed director, Data Communication Group, to manage the continued acquisition, launch, and operation of a critical national satellite constellation.

Beginning in May 1991, Conroy served as deputy director, Office of Special Projects and helped guide the development, deployment, and operation of signals intelligence (SIGINT) collection systems. During 1993, he played a leading role in the creation of the Office of Technical Collection, formed from the merger of the Office of Special Projects and the Office of SIGINT Operations within the Central Intelligence Agency. In December 1993 he was selected as the deputy chief of the Technology Management Office, Directorate of Operations. In June 1994, Conroy became the deputy director of the Office of Scientific and Weapons Research in the Directorate of Intelligence, where he supervised the production of all-source intelligence assessments of foreign weapons systems and their technical infrastructures. He was appointed deputy director of the newly established Office of Transnational Issues in 1997, a CIA organization that combined the missions, personnel, and budgets of his former office and those of the Transnational Security and Technology Issues Office. On 12 October 1998, Conroy was named the deputy director for national support at the National Reconnaissance Office, a position in which he served until his retirement on 9 March 2001.

Conroy is the recipient of the Intelligence Commendation Medal, the Intelligence Medal of Merit, and a Senior Intelligence Service Distinguished Officer Award. He has served on, or has led, numerous task forces relating to data communications systems within the Intelligence Community, including investigations of related counterintelligence issues. In 1990, Conroy was elected to the board of directors for the Northwest Federal Credit Union, one of the largest credit unions in the country. He has continued volunteer service in that position and served as chairman of the board from 1995 until 2000. On 26 July 2001, Mr. Conroy was named vice president for national intelligence program development at Logicon TASC, a Northrop Grumman company.

Dr. Charles W. Cook

**Deputy Director of the National Reconnaissance Office,
16 July 1974 – 30 November 1979**



Charles William Cook was born on 27 September 1927 in Yankton, South Dakota. Serving in the U.S. Army Air Force as a cryptographic technician, starting in October 1944, he left the service in August 1947 to seek a higher education. He subsequently graduated summa cum laude in 1951 with a Bachelor of Arts in Mathematics and Physics from the University of South Dakota. In 1952 he completed a degree in reactor physics at the Oak Ridge School of Technology at Oak Ridge, Tennessee, before earning a Master of Science in Physics and a

Doctorate of Science in Physics from the California Institute of Technology in 1954 and 1957, respectively.

Dr. Cook first worked for CA Research and Development Corporation as a theoretical physicist, before joining North American Aviation in 1954. Then, between 1957 and 1960, Cook served as the head of nuclear physics at Convair Corporation in San Diego, California, before serving for one year as the chief of the Ballistic Missile Defense Branch, Advanced Research Project Agency in Washington, D.C. Concurrently, he was the chief of research, ballistic missile defenses, for the Institute for Defense Analyses. Returning to private business in late 1961, Dr. Cook served as corporate director of electronics research and development for North American Aviation in El Segundo, California.

In September 1967, Cook joined the Central Intelligence Agency where for four years he analyzed foreign missile defense and guided missile systems. In September 1971 he became the deputy director of defense research and engineering (defense systems) at the Department of Defense, before serving as deputy under secretary for space systems, and as the deputy director of the National Reconnaissance Office where he remained from 15 July 1974 until 30 November 1979. During his NRO tenure, Cook worked vigorously with the National Aeronautics and Space Administration to assure a cross-utilization of the many advances in state of the art space technology. He also supervised the announcement revealing the first near real time electro-optical imagery collection system. Ever an advocate of new capabilities, Cook impressed upon Presidents Gerald R. Ford and Jimmy Carter, as well as key leaders of Congress, the value of advances in imagery capabilities. Following his service with the National Reconnaissance Office, Cook became the deputy assistant secretary for space plans and policy, U.S. Air Force, between 1979 and 1988.

After retiring from government service in 1988, Cook continued to consult for the Institute of Defense Analyses, several aerospace and publishing companies, and the Defense Science Board. Dr. Cook has received multiple service awards and commendations, including the Defense Department Meritorious and Distinguished Service Awards, the Air Force Exceptional Civilian Service Award with three oak leaf clusters, the National Intelligence Medal of Achievement, the National Aeronautics and Space Administration Distinguished Service Medal, and the Distinguished Service Award from the National Reconnaissance Office. Cook is a fellow of the American Institute of Astronautics and Aeronautics, the American Physical Society, the National Space Club, Phi Beta Kappa, and Sigma Xi.

Mrs. Mary M. Corrado

**Deputy Director for Resource Oversight and Management,
National Reconnaissance Office,
12 January 1998 – 4 October 1999**



Mary Margaret Corrado was born in Philadelphia, Pennsylvania, on 8 December 1948. She received a Bachelor of Science in Accounting from George Mason University in Fairfax, Virginia, in May 1983. A baseball enthusiast, Mrs. Corrado's began her professional career as a staff member of the Philadelphia Phillies baseball team. Here she worked in the public relations office handling fan mail and publishing the daily statistics for the media. She then transferred to the comptroller's office of the Phillies, working on payroll and expense accounts, including those

of the ballplayers. Moving to Washington, D.C., in May 1969, she remained affiliated with baseball, having been hired by the Washington Senators. In Washington she also supported the Senator's minor league baseball team system and handled publicity for baseball legend Ted Williams. When the Senators baseball team moved to Texas in 1970, Mrs. Corrado joined the Central Intelligence Agency as a secretary in the Office of Communications. She held similar positions in the Office of Legislative Counsel and in the Office of the Comptroller, before becoming the community relations coordinator in the newly established Office of Equal Employment Opportunity in 1976.

Corrado's long career in the budget field resumed in 1978 when she served as a budget analyst in the Office of the Comptroller. Between 1983 and 1985 she was a budget officer on the Evaluation and Plans Staff in the Directorate of Operations, where she was primarily responsible for review, evaluation, and tracking of covert action programs including National Security Council proposals. In 1985 she took on responsibility for all aspects of budget planning, formulation, and execution across all programs in the Directorate of Science and Technology as a budget officer in planning and resources. In 1987 she served as the deputy chief of the Science and Technology Group prior to becoming its chief in 1989. Then, in October 1990, she became the chief of the Resource Management Group, Technology Management, in the Central Intelligence Agency Directorate of Operations.

In October 1991 she joined the Office of Special Projects (OSP) as executive officer and became the director of management and plans in August 1993 when the OSP merged with the Office of SIGINT Operations to become the Office of Technical Collection. In this position she was responsible for all administrative services as well as the formulation and execution of budget submissions and related inquiries by Congress and the Intelligence Community. Her next position was as the deputy comptroller for resource management at the Central Intelligence Agency.

Corrado was appointed the associate deputy director of the Office of Resource, Oversight and Management at the National Reconnaissance Office in December 1996. On 12 January 1998, she was named deputy director of the NRO Resource Oversight and Management office, staying in this position until 4 October 1999. At that time, Corrado was appointed chief financial officer of the Central Intelligence Agency where she is responsible for overseeing all financial management activities, operations, and payroll of the CIA.

For her significant contributions to resource management at the Central Intelligence Agency and at the National Reconnaissance Office, Corrado has received a number of awards including a Meritorious Officer Stipend, a Meritorious Unit Citation, and the NRO Gold Medal of Distinguished Service.

Brigadier General Thomas F. Crawford, USAF

**Deputy Director for Military Support, National Reconnaissance Office,
15 June 1999 – 5 December 2000**



Thomas Fletcher Crawford was born in Roswell, New Mexico, on 30 June 1949. Raised in Roswell, he earned an associate's degree at the New Mexico Military Institute in 1970, and a Bachelor of Arts in Management and Finance at New Mexico State University in Las Cruces in 1972. Crawford was commissioned as a second lieutenant on 23 May 1972 through the Air Force Reserve Officer Training Corps at New Mexico State University. Following graduation, he completed pilot training at Laughlin Air Force Base in Texas, earning his wings in May 1973.

His first assignment in the Air Force, lasting nearly two years, was as a F-111F pilot with the 390th Tactical Fighter Squadron at Mountain Home Air Force Base in Idaho. From March 1975 until June 1977 he continued service as a F-111A pilot with the 429th Tactical Fighter Squadron at Nellis Air Force Base in Nevada, while also completing Squadron Officer School. An accomplished pilot, Crawford spent the period from June 1977 until November 1981 as a F-111A instructor pilot, weapons and tactics officer, fighter weapons instructor, and flight commander with the 390th Tactical Fighter Squadron at Mountain Home Air Force Base. During this time, he completed the Fighter Weapons Instructor Course and studies at the Air Command and Staff College. In 1981 Crawford was assigned to the 4450th Tactical Group at Nellis Air Force Base, Nevada, where he flew the F-117A and A-7D.

In June 1984, then Major Crawford began a four-year assignment as a special projects officer with the Air Staff at U.S. Air Force headquarters in Washington, D.C., before resuming duties in June 1988 with F-111F squadrons, first as a instructor pilot and chief of weapons and tactics with the 48th Tactical Fighter Wing, and then as operations officer and commander of the 494th Tactical Fighter Squadron at the Royal Air Force base at Lakenheath, England. Between August 1990 and March 1991, then Lieutenant Colonel Crawford commanded Detachment 1 of the 48th Tactical Fighter Wing before serving as the assistant deputy commander for operations of that same unit when it deployed for combat service in Operations Desert Shield and Desert Storm. Remaining overseas following the conclusion of the Gulf War, Crawford served for two years between June 1991 and June 1993 as the chief of the Special Weapons Section, and as the military assistant to the Supreme Allied Commander Europe, at Supreme Headquarters Allied Powers Europe, in Mons, Belgium.

On his return to the United States in 1993, Colonel Crawford completed a one-year course of studies at the Air War College at Maxwell Air Force Base in Alabama, and earned a Master of Science in Computer Information Systems at Boston University before accepting a two-year assignment, between June 1994 and June 1996, as an A-10 pilot and director of combat operations, then deputy commander, and finally commander of the 607th Air Operations Group at Osan Air Base, Republic of South Korea. Subsequently, between July 1996 and May 1997, Crawford served as the inspector general at Pacific Air Force headquarters at Hickam Air Force Base in Hawaii. From May 1997 until May 1999 Crawford commanded the 354th Fighter Wing at Eielson Air Force Base in Alaska. The 354th Fighter Wing flew the A-10/OA-10, and F-16 aircraft equipped with the low altitude navigation and targeting infrared system.

On 1 July 1998, Crawford was promoted to the rank of brigadier general and in June of the following year appointed deputy director for operations, National Support Systems, J-35, with the Joint Staff in Washington, D.C., also serving as the deputy director for military support at the National Reconnaissance Office. Brigadier General Crawford served in this position at the NRO between 15 June 1999 and 5 December 2000. Deputy Director Crawford was the principal ensuring national intelligence support to the Department of Defense.

Brigadier General Crawford is currently the director of joint matters at U.S. Air Force headquarters located at the Pentagon in Washington, D.C. He has been selected for promotion to major general. A command pilot with over 3,000 flying hours, Brigadier General Crawford has flown the F-111A/ D/ and F, the A-7D, the F-117A "Nighthawk," and A-10/OA-10 aircraft. Among his military awards and decorations are the Defense Superior Service Medal with oak leaf cluster, the Legion of Merit with oak leaf cluster, the Distinguished Flying Cross with oak leaf cluster, the Meritorious Service Medal with three oak leaf clusters, the Air Medal with oak leaf cluster, the Aerial Achievement Medal, the Air Force Commendation Medal, the Combat Readiness Medal with two oak leaf clusters, the National Defense Service Medal with service star, the Southwest Asia Service Medal with two service stars, and the Kuwait Liberation Medal.

Brigadier General Donald L. Cromer, USAF

**Staff Director, National Reconnaissance Office,
5 May 1982 – 11 June 1984**



Donald Lee Cromer was born in Grand Junction, Colorado, on 23 January 1936, and graduated from Lewis and Clark High School in Spokane, Washington, in June 1954. Raised in Idaho and Washington State, he attended Washington State University in Pullman between September 1954 and June 1955, and graduated with a Bachelor of Science in General Engineering from the U.S. Naval Academy with the class of 1959. Upon graduation he was commissioned as an Air Force second lieutenant and assigned to the Strategic Air Command (SAC) and the 549th Strategic Missile Squadron (Atlas D) at Offutt Air Force Base in Omaha,

Nebraska, as a guidance control officer and deputy missile combat crew commander. From January 1963 until August 1965 he served as an engineer analyst in the 4000th Aerospace Applications Group, also at Offutt Air Force Base. During this time he completed Squadron Officer School.

Following duty with SAC, Cromer was assigned to the Kennedy Space Center at Cape Canaveral, Florida, where he worked with the National Aeronautics and Space Administration on the Project Gemini Manned Spacecraft Program as a spacecraft test conductor. In December 1967 he returned to SAC headquarters, to the office of the director of plans in the Future Systems Division. He earned a Master of Science in Electrical Engineering from the University of Denver in 1969, and from December 1969 until August 1972, served as the chief of the payload branch, Satellite Data Systems Program Office, at the Space and Missile Systems Organization at Los Angeles Air Force Station.

In June 1973 Cromer was assigned to the Directorate of Space, Office of the Deputy Chief of Staff for Research and Development, U.S. Air Force headquarters in Washington, D.C., as program element monitor for the Satellite Data Systems and Defense Dissemination System Programs. He then became a project director with the Office of the Secretary of the Air Force, stationed at Fort Belvoir, Virginia.

Returning to California, from May 1977 until June 1978, Cromer served as deputy for the Defense Meteorological Satellite System and as director of the Defense Meteorological Satellite Program Office with the Space Division at the Los Angeles Air Force Station. He later was assigned as director of advanced technology for the Secretary of the Air Force Special Projects Office in Los Angeles. With his experience in Air Force space applications, he became director of space systems, Office of the Secretary of the Air Force in Washington, D.C., in May 1982, serving two years as the staff director of the National Reconnaissance Office, before returning to the Los Angeles Air Force Station as the deputy commander for launch and control systems, Space Division. The next January, Cromer became the vice commander of the Space Division. In June 1986, he became the commander of the Space and Missile Test Organization at Vandenberg Air Force Base, California, where he was responsible for the test, launch, and on-orbit control activities of Air Force space and ballistic missile systems. He was also responsible for the Western Space and Missile Center at Vandenberg Air Force Base, the Eastern Space and Missile Center at Patrick Air Force Base in Florida, and the Consolidated Space Test Center at Onizuka Air Force Base in California.

In June 1988, Cromer became the commander of the Space Systems Division, U.S. Air Force Systems Command, at the Los Angeles Air Force Base, responsible for managing the research, design, development and acquisition of space launch, command and control, and satellite systems. He was promoted to the rank of lieutenant general on 1 July 1988, and retired from active military duty on 1 June 1991.

In addition to his military postings, Lieutenant General Cromer attended the executive program at Stanford University's Graduate School of Business and the National Security Management Course at Harvard University. Lieutenant General Cromer wears the Master Missile and Master Space Badges, and includes among his many military decorations and awards the Distinguished Service Medal, the Legion of Merit with oak leaf cluster, the Meritorious Service Medal with oak leaf cluster, and the Joint Service Commendation Medal. In 1990, he was recognized for his outstanding leadership with the award of the National Geographic Society's General Thomas D. White U.S. Air Force Space Trophy, and in October 2001 was recognized by the NRO as a National Reconnaissance Pioneer.

Brigadier General Richard D. Curtin, USAF

**Staff Director, National Reconnaissance Office,
31 August 1960 – 14 June 1962**



Richard Daniel Curtin was born in Taunton, Massachusetts, on 2 April 1915. He attended Brown University for two years, majoring in civil engineering, before winning an appointment to the U.S. Military Academy in 1935. He earned a bachelor of science degree at the academy and graduated with the class of 1939. Entering the U.S. Army Air Corps, Curtin served with the Ninth Tactical Air Force headquarters during World War II, where he was instrumental in developing tactics used in attacking German targets heavily defended by

antiaircraft artillery, and in selecting the routes used by Allied airborne forces in Normandy in June 1944 and in the Rhine River assaults in March 1945.

Following his return to the United States, Curtin was one of the original faculty members of the Air University at Maxwell Air Force Base in Alabama, in April 1946. Following two years at Maxwell, and after serving as a lecturer at the Air Command and Staff School and at the Air War College, he attended the University of Michigan, earning a Master of Science in Aeronautical Engineering in 1950. During the following four years, Curtin served in the War Plans Division of U.S. Air Force headquarters, where in conjunction with Col. (later General) Bernard A. Schriever's Research and Development Plans Division, he formulated the original concepts for the Matador, Falcon, Rascal, Snark, and Navajo guided missile systems. During this time he frequently briefed U.S. Air Force Chief of Staff Gen. Nathan F. Twining and Chief of Staff Gen. Thomas D. White on the future value of missiles to the Air Force.

From 1954 until 1956, Curtin served as the director of plans, and then as the chief of staff of the Seventeenth Air Force in North Africa and Turkey. Here he helped to build the base and logistical structure for the Strategic Air Command's operations that targeted the Soviet Union, and for intelligence radars monitoring Soviet missile and space activity. Returning to the United States in 1956, Curtin was assigned as the executive to the deputy commander of systems at Air Research and Development Command headquarters. In February 1958 he became a member of the Select Officer Group at the Air Force Ballistic Missile Division in Los Angeles, where he assumed the post of assistant deputy commander. During this period Curtin and Schriever discussed continuing Air Force control of the nation's space program and argued against the establishment of a new civilian-controlled aeronautics and space administration, which the Congress nonetheless did that same year by passing legislation creating NASA. Soon thereafter, Curtin became commander of the Air Force space effort, serving as the deputy commander of the Ballistic Missile Division in September 1958. Curtin's group developed methods for operating space vehicles, ran worldwide space networks, and held responsibility for launching NASA's early space vehicles. From June until August 1960, Curtin served as the deputy director of systems development, and as deputy chief of staff for development at Air Force headquarters.

From August 1960 until June 1962, Curtin served as the director of Missile and Satellite Systems, Office of the Secretary of the Air Force. During this time, under the direction of Under Secretary of the Air Force Dr. Joseph V. Charyk, Curtin played a leading role in the founding of the National Reconnaissance Office, serving as its first staff director. From July 1962 until May

1965, Curtin served successively as the director of advanced engineering, the director of development, and the director of development plans in the Office of the Deputy Chief of Staff for Research and Development at U.S. Air Force headquarters, where he was responsible for many new missile, space, and aircraft programs. In the final years of his military career, Curtin served in the Office of the Secretary of Defense as the deputy advisor to the U.S. ambassador to the North Atlantic Treaty Organization, where he was instrumental in setting up the Allied Command Europe, Mobile Force, for Gen. Lyman L. Lemnitzer, the Supreme Allied Commander Europe.

Major General Curtin retired from the U.S. Air Force on 31 October 1967. The following year, he served as the director of management engineering for Bell Aerosystems, a division of Textron, Incorporated, in Buffalo, New York. He then moved to the Southwestern Research Corporation in Phoenix, Arizona, where he served as vice president for development and manufacturing for this electronics communications firm. In 1971, he became vice president of the Planning Research Corporation in Chicago, Illinois, and the general manager of the Jacobs Company, a subsidiary of that company. From 1973 until 1977, Curtin served as the director for technical management of the American Defense Preparedness Association in Washington, D.C., and from 1977 onward, as a private management consultant and owner of several water companies in Phoenix, Arizona.

Among his many awards and decorations, Major General Curtin received the Legion of Merit, two Bronze Stars, and the Distinguished Service Citation.

Rear Admiral Joseph J. Dantone, Jr., USN

**Deputy Director for Military Support, National Reconnaissance Office,
7 April 1994 – 7 January 1996**



Joseph John Dantone, Jr., was born in Baltimore, Maryland, on 6 August 1942. He entered the U.S. Naval Academy in July 1960 and graduated with the class of 1964 with a Bachelor of Science in Naval Engineering. Commissioned as an ensign upon graduation, he immediately began flight training at the Naval Air Station in Pensacola, Florida, and was designated a naval aviator on 24 September 1965.

Following the completion of fleet replacement squadron training in May 1966, then Lieutenant (j.g.) Dantone reported to Fighter Squadron 84, where he flew the F-4 Phantom

during Mediterranean Sea deployments aboard the aircraft carrier *USS Independence*. In March 1967 he was assigned to Fighter Squadron 161, where he made two Western Pacific combat deployments aboard the aircraft carrier *USS Coral Sea* and flew over one hundred and fifty combat missions in Southeast Asia in support of U.S. Armed Forces then deployed in the Republic of South Vietnam.

In August 1969 Dantone reported to the U.S. Naval Postgraduate School in Monterey, California, where he earned Master of Science degrees in Aeronautical Engineering and Management. He joined the F-14 fleet introduction cadre at the U.S. Naval Air Station in Miramar, California, in June 1973. In this position, he became a "plank owner" when Fighter Squadron 1 emerged as the U.S. Navy's first F-14 squadron. During this tour he deployed with the squadron once again to the Western Pacific and Indian Ocean aboard the *USS Enterprise* where he flew fighter cover during the evacuation of Saigon prior to the final collapse of the Republic of South Vietnam in April 1975.

In May 1976 Dantone reported to the Naval Air Systems Command as the F-14 Tomcat program assistant deputy for training. Returning to the fleet in July 1977, he became the executive officer, and then commanding officer, of Fighter Squadron 14, assigned to the aircraft carrier *USS John F. Kennedy*. After this tour, then Commander Dantone served as the fighter-training officer for the U.S. Naval Air Forces, Atlantic Fleet. This tour was followed by 18 months of nuclear power training, ending in December 1982, and a further tour as the executive officer of the *USS Enterprise* between January 1983 and February 1985. Captain Dantone next assumed command of the *USS Wichita*, before assignment as the commanding officer of the pre-commissioning unit for the aircraft carrier *USS Abraham Lincoln* in November 1987. The following September, he assumed command of the aircraft carrier *USS Dwight D. Eisenhower*, and commanded that vessel in the Red Sea immediately following the Iraqi invasion of Kuwait during Operation Desert Shield. Leaving the *USS Eisenhower* in December 1990, Dantone was assigned as the director of the Program Appraisal Division before assuming command of Carrier Group Three from April 1992 to March 1994.

In April 1994, now Rear Admiral Dantone became the deputy director of military support at the National Reconnaissance Office, serving concurrently as the deputy director of operations, national system support, Joint Staff, and as the deputy director of the Defense Support Project Office, Office of the Assistant Secretary of the Air Force for Space, in Washington, D.C. In October 1995, Rear Admiral Dantone had the distinction of becoming the first director of the

newly created National Imagery and Mapping Agency, a position he held until his retirement from active duty on 1 June 1998.

Among Rear Admiral Dantone's decorations and awards are the Legion of Merit with two gold stars, the Meritorious Service Medal with two gold stars, the Air Medal with combat "V," Numeral "8," and one gold star, and the Navy Commendation Medal with combat "V."

Captain Robert T. Darcy, USN

**Director of Program C, National Reconnaissance Office,
24 July 1975 – 30 June 1977**



Robert Thomas Darcy was born in Woodside, New York, on 20 November 1925. He entered the U.S. Navy in 1943 and, after completing flight training, was commissioned in May 1947. His first duty assignment was in Air Transport Squadron 3 where he served until 1951, providing air support during the Berlin Airlift and, later, during the Korean War. Between 1951 and 1953 he also was attached to the Air Force Aviation Supply Office where he served as a provisioning team chairman responsible for determining requirements and initiating the procurement of aviation parts for many types of aircraft then in service. From 1953 to 1955

Captain Darcy served in Patrol Squadron 18 as patrol plane commander and antisubmarine warfare officer. He also participated in antisubmarine operations throughout the Atlantic, while completing a Bachelor of Science in Aeronautical Engineering from the Naval Postgraduate School in 1957 and a Master of Science in Engineering from the University of Michigan in 1958.

Returning overseas for duty from 1958 until 1960, Darcy was assigned as aircraft engineering and maintenance officer on the staff of the commander, Fleet Air Western Pacific/Fleet Air Japan. Here he provided maintenance and technical engineering support for all carrier and shore-based naval aircraft units in the Western Pacific. For the next two years, between 1960 and 1962, Darcy served as operations and executive officer of Air Antisubmarine Squadron 23, attached to the Pacific Fleet, with operational deployments to the Seventh Fleet in the Western Pacific aboard the aircraft carrier *USS Yorktown*. On returning to the United States, from 1962 until 1964, he was assigned to the Bureau of Naval Weapons, Research and Development Directorate, as a project engineer responsible for the integration of, and improvements to, the sensor, armament, instrument, and electronics suite of S-2 aircraft.

Returning to an operational role in 1965, Captain Darcy was named executive officer of Air Antisubmarine Squadron 38, assuming command of that squadron in 1966. Operating from the aircraft carrier *USS Bennington* on the Yankee Station in the Tonkin Gulf, Darcy was awarded two Air Medals for operations during the Vietnam War. From 1967 to 1968 Darcy served as the commander of Carrier Antisubmarine Air Group 51. In this capacity he was responsible for training all officers and enlisted aviation personnel destined for helicopter and fixed-wing Pacific Fleet antisubmarine warfare carrier-based squadrons. From 1968 until 1972 he served as a U.S. Navy member of the Weapons Systems Evaluation Group at the Pentagon, where he studied and analyzed future navigation systems, including satellite navigation, as well as a wide variety of other air weapons platforms and systems. In 1972 he served as assistant chief of staff for anti-submarine warfare programs with the commander, Hunter-Killer Force, U.S. Atlantic Fleet, where he supervised improvements to hardware and the tactical operational effectiveness of sea-based fixed-wing and helicopter antisubmarine forces.

In 1973 Captain Darcy was ordered to the Naval Electronics Systems Command as deputy director of the Plans, Programs and Resources Management Directorate. In May 1974 he was named deputy manager, Navy Space Project, becoming its manager in July 1975. As manager of the Navy Space Project, Darcy also served as director of the U.S. Navy's National Reconnaissance Office Program C from 24 July 1975 until 30 July 1977, where he supervised

the engineering and development of satellite communications, navigation, and surveillance systems. In addition to his duties at the NRO, Captain Darcy concurrently served on the Chief of Naval Operations Research and Development Staff as director, Space and Command, Control, and Communications Division, and as assistant to the director of Anti-Submarine Warfare for Ocean Surveillance Space Systems. Darcy retired after thirty-four years of military service on 1 July 1977.

Captain Darcy has received the Legion of Merit, two Air Medals, the Meritorious Service Medal, and Navy Meritorious Unit Commendations in addition to several campaign and service medals.

Dr. William A. Decker

**Deputy Director for System Engineering,
National Reconnaissance Office,
10 September 2001 – Present**



William Arthur “Art” Decker was born on 25 September 1943 in Rolla, Missouri. He received his Bachelor of Science in Electrical Engineering in 1965 from the University of Missouri in Columbia, and between that year and 1971 he continued with his education, completing a Master of Science in Electrical Engineering and a Doctorate of Science in Electromagnetic Theory at the same institution.

Dr. Decker started his professional career as a civilian employee of the U.S. Navy in June 1966, where he carried out research and development projects in Washington, D.C. In September

1968 he accepted employment with the Bendix Corporation in Kansas City, Missouri, where he worked on the Polaris missile program.

Four years later, in October 1971, Dr. Decker joined the Central Intelligence Agency and the Directorate of Science and Technology. He initially worked as a technical intelligence analyst examining foreign capabilities in communications, antennas, radars, and exotic weapons, publishing his findings as technical intelligence reports. Three years later in February 1974 he joined the CIA's Office of Development and Engineering and began a tour of duty at the National Reconnaissance Office, holding leadership positions in the precursors of three of the NRO's present-day directorates, including the Signals Intelligence Acquisition and Operations Directorate, the Advanced Systems and Technology Directorate, and the Imagery Intelligence Acquisition and Operations Directorate.

During a period of seven years with the Office of Development and Engineering's SIGINT Programs Group, Dr. Decker worked on the development of a major block-change system and served as the chief of program system engineering for four years. In 1982, he was assigned as the associate director of the Collection Systems Group where he worked on development of advanced technologies and new concepts for intelligence collection. In 1982 he began a two-year long assignment as the associate director of imagery intelligence programs.

In October 1984, Dr. Decker joined TASC as a program manager. Six years later, in July 1990, he became vice president and director of the System Engineering Group at TASC, supporting National Reconnaissance Office programs. In this position he was responsible for supervising several hundred employees who supported the programs of the four NRO directorates. He was also a key participant in all of the major signals intelligence studies during this time, first in the office of Plans and Analysis, and later in the Signals Intelligence Acquisition and Operations Directorate. He also actively participated in the benchmarking and business practices sub-panels of the Jeremiah Panel.

In October 1995, Dr. Decker was appointed senior vice president and director of the newly established System Engineering Division of TASC, which supported the programs of the National Reconnaissance Office, Central Intelligence Agency, and National Security Agency. In this position he was responsible for the supervision of nearly a thousand TASC employees supporting Intelligence Community systems engineering, systems integration, and technical support programs.

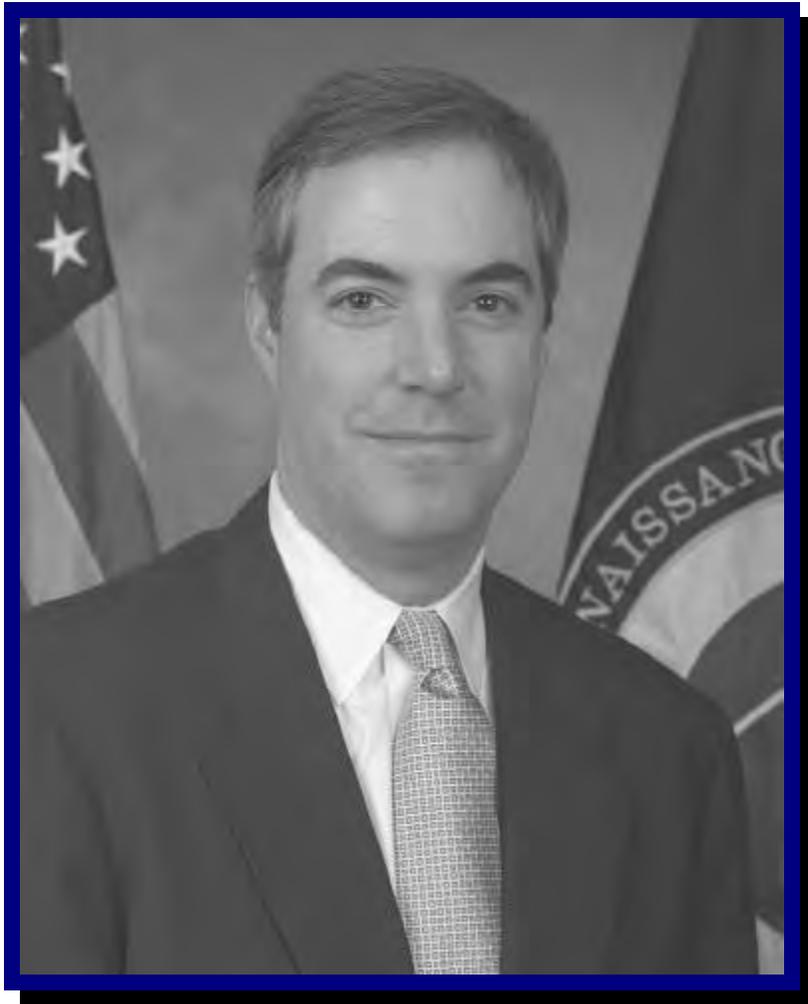
Leaving TASC in April 1997, Dr. Decker continued to be active in the Intelligence

Community and worked as a private consultant providing advanced systems planning for the National Reconnaissance Office. For five months in 1999 he served as the NRO representative and chairman of the Independent Review Panel in support of the White House commissioned broad area review of launch vehicle failures.

On 6 July 2001, the National Reconnaissance Office reorganized the former Office of Corporate Systems Engineering, giving it a different name and a deputy director comparable in importance and authority to the other existing NRO deputy directors leading military and national support efforts, and the office of Resource Management and Oversight. Two months later, on 10 September 2001, Dr. Decker was appointed the NRO's first deputy director for Systems Engineering (DDSE).

Mr. Vincent W. Dennis

**Deputy Director for Resource Oversight and Management,
National Reconnaissance Office,
4 October 1999 – Present**



Vincent William Dennis was born on 21 June 1964 in Washington, D.C. Raised in Durham, North Carolina, he received a Bachelor of Arts in History from Davidson College in 1986 and a Master of Arts in Public Policy from Duke University in Chapel Hill, North Carolina, in 1990. Mr. Dennis began his federal service as the legislative director to Congressman Alex J. McMillan (R-NC). Following completion of his graduate education, he was competitively selected as a presidential management intern in the Office of the Secretary of Defense.

Mr. Dennis joined the Central Intelligence Agency on 19 June 1995, and has served in a variety of line and staff assignments across the Intelligence Community, including tours with the National Security Agency, the Defense Intelligence Agency, and the Special Operations Command, as well as in the Office of the Secretary of Defense and the Director of Central Intelligence.

Dennis reported to the National Reconnaissance Office in 1996 as the director of the Office of Legislative Liaison. Following two years in that position, he was selected as the associate deputy director of the Resource Oversight and Management office. During this time, in 1998, he completed Harvard University's Senior Managers in Government Program. He was appointed to his current position as the deputy director of the Resource Oversight and Management office at the NRO on 4 October 1999.

As chief financial officer, Mr. Dennis, like his predecessors, is responsible for resource management within the NRO, including budget formulation and execution, financial operations, financial systems development, cost estimating, and congressional affairs. His principal focus has been on managerial cost accounting, financial management information systems, strategic resource planning, and corporate budgeting tools.

Major General Robert S. Dickman, USAF

**Director, Office of Architectures, Assessments and Acquisition,
National Reconnaissance Office,
5 June 1998 – 7 July 2000**



Robert Sanborn Dickman was born in Brooklyn, New York, on 5 October 1944. He grew up in New Jersey and entered the U.S. Air Force in June 1966 as a second lieutenant, after graduating with distinction from the Reserve Officer Training Corps at Union College in Schenectady, New York, and after earning a Bachelor of Science in Physics. Continuing his education, between June 1966 and June 1968, Dickman was a student at the U.S. Air Force

Institute of Technology at Wright-Patterson Air Force Base in Ohio, where he completed a Master of Science in Space Physics.

Dickman's first service assignment was as the theoretical and high energy physicist at the Air Force Office of Scientific Research in Arlington, Virginia, followed by an assignment at the Directorate of Space, Air Force headquarters in Washington, D.C. Between June 1973 and May 1975 Dickman served as systems program manager at the Air Force Satellite Communications System Program Office at the Los Angeles Air Force Base in California. Subsequently he attended the Squadron Officer School and the Air Command and Staff College, both at Maxwell Air Force Base, Alabama.

Returning to Washington, D.C., in June 1976, then Major Dickman spent the next three years as the operational manager of military satellite communications with the Office of the Deputy Chief of Staff for Plans and Operations, Headquarters, U.S. Air Force, before moving in October 1979 to the position of chief of the Space Defense Operations Center Implementation Branch, at North American Aerospace Defense Command headquarters in Colorado Springs, Colorado. By the time he left this assignment in June 1982, Dickman was the executive officer to the vice commander in chief, North American Aerospace Defense Command.

Resuming his higher education in 1983, Colonel Dickman obtained a Master of Arts in Management from Salve Regina College in Newport, Rhode Island, and was a distinguished graduate of the Naval War College, also in Newport, that same year. In July 1983, he returned to Colorado as the director of Space Systems, Deputy Chief of Staff for Operations, at the headquarters of the newly formed U.S. Air Force Space Command in Colorado Springs. The following year he served as the chief of the Commander's Group at headquarters of the North American Aerospace Defense Command and at Air Force Space Command. Remaining in Colorado until June 1987, Dickman served as vice commander, 2nd Space Wing, Falcon Air Force Base, and as assistant to the director of operations, U.S. Space Command, and finally as director of missile warning, Air Force Space Command.

Returning to Washington, D.C., Dickman served for two years as the chief of the Space Systems Division, Directorate of Space and Strategic Defense Initiative Programs, and a further three years, until June 1992, as the deputy director of Space Programs, Office of the Assistant Secretary of the Air Force for Acquisition. From July 1992 until June 1993 he was the director of plans at the Air Force Space Command. Then, between July 1993 and January 1995, now Major General Dickman served as the commander of the 45th Space Wing at Patrick Air Force Base,

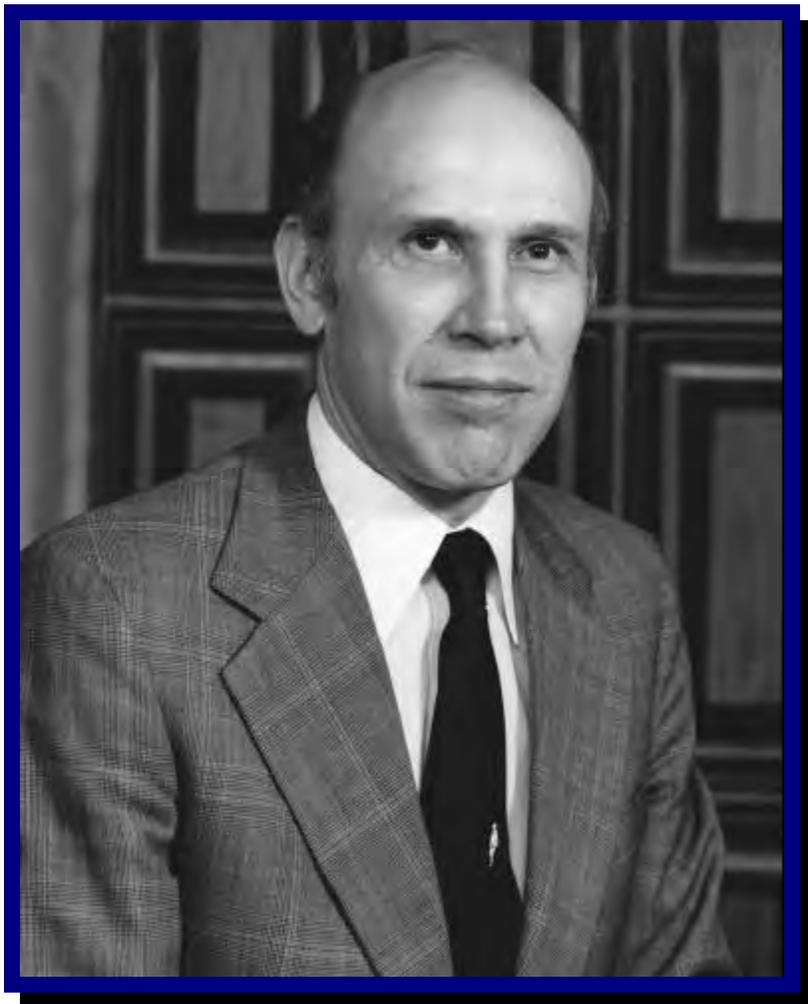
Florida, as director of the Eastern Range, and as the commander of the Cape Canaveral Air Station. Returning once more to Washington, D.C., Dickman served as the director of Space Programs, Office of the Assistant Secretary of the Air Force for Acquisition until September 1995 and the following month, in October 1995, he became the first Department of Defense Space Architect.

Major General Dickman joined the National Reconnaissance Office on 5 June 1998 as the director of the office of Plans and Analysis. When that office was reorganized and renamed in December 1998, Dickman remained in his position as director of the new Office of Architectures, Assessments, and Acquisition (OAAA), and finally as director of the newly created NRO Corporate Operations Office (COO), serving until 7 July 2000.

Major General Dickman's many awards and decorations include the Defense Distinguished Service Medal, the Defense Superior Service Medal, the Distinguished Service Medal, the Legion of Merit, the Defense Meritorious Service Medal, the Meritorious Service Medal with oak leaf cluster, the Air Force Commendation Medal with oak leaf cluster, the Master Space Badge, and the National Reconnaissance Office Gold Medal. In 1998 Major General Dickman's significant contributions to military space programs were recognized by the National Space Club, which awarded him their Astronautics Award.

Mr. Leslie C. Dirks

**Director of Program B, National Reconnaissance Office,
6 June 1976 – 2 July 1982**



Leslie Chant Dirks was born on 7 March 1936 in New Ulm, Minnesota. He received a Bachelor of Science in Physics at the Massachusetts Institute of Technology in 1958 and, as a Rhodes scholar, earned a Bachelor of Science in Physics at Oxford University, England, two years later. From 1956 until 1958, while still a student at MIT, Dirks worked as a researcher and analyst for Raytheon Manufacturing Corporation, Ewen Knight Corporation, and Edgerton, Germes, and Grier, Incorporated. He also worked as a part time mathematics instructor for the University of Maryland Overseas Program, while attending Oxford University. Upon his return

to the United States in 1960, Dirks taught physics for one year at Philips Academy in Andover, Massachusetts.

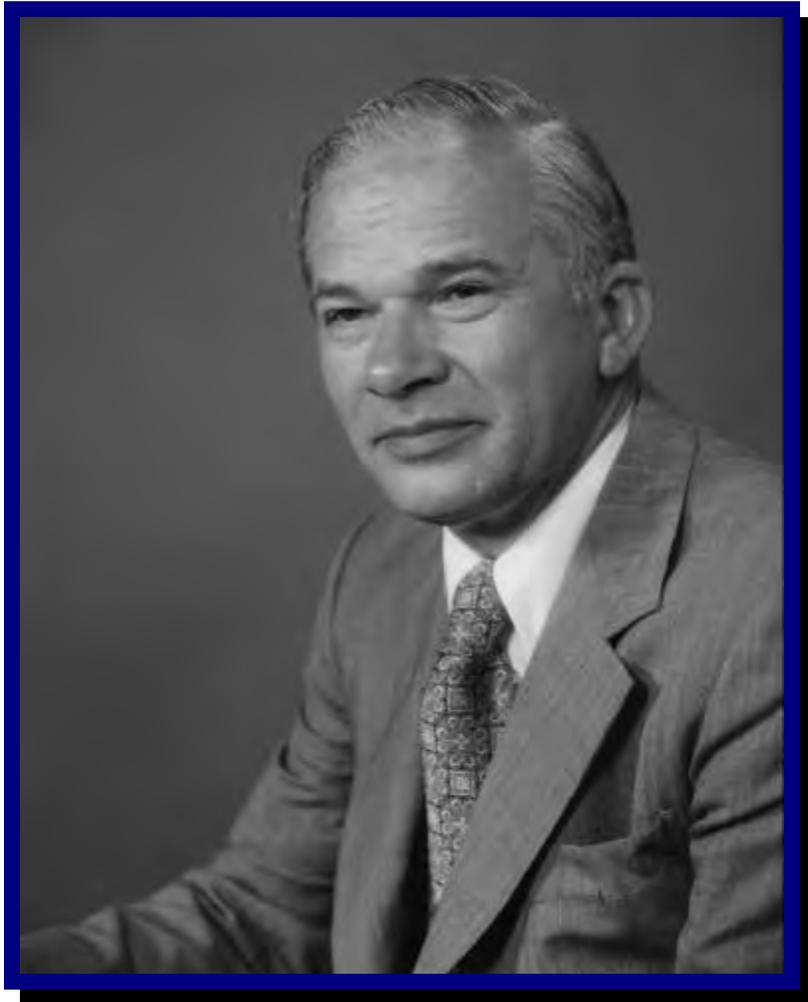
Dirks joined the predecessor office of the Central Intelligence Agency's Directorate of Science and Technology (DS&T) in August 1961 as a physical science intelligence officer with the Office of Scientific Intelligence, Anti-Ballistic Missile Branch. Between 1963 and 1966 he served as chief of the DS&T Plans and Policy Staff, before being made staff chief in the Office of Special Projects, with responsibilities for systems analysis and design of intelligence collections systems, and for liaison with inter-governmental technical panels.

Beginning in 1971, Dirks spent three years as the director, Office of Special Projects. He also founded and became the first director of DS&T's Office of Development and Engineering, between 23 April 1973 and 3 May 1976, and then served as acting associate deputy director, Directorate of Science and Technology, between 3 May 1976 and 31 May 1976. On 1 June 1976, Dirks was named the CIA's deputy director of Science and Technology, a position he held until 3 July 1982. While in the latter position, Dirks served as the director of the Central Intelligence Agency's Program B in the National Reconnaissance Program, administered by the National Reconnaissance Office. His inspiration and technical expertise helped create a new class of satellites that revolutionized intelligence collection. These systems represented a major breakthrough in the nation's ability to achieve intelligence dominance during the closing years of the Cold War.

Following his retirement from government service in 1982, Dirks became the corporate vice president of research and development at the Raytheon Corporation, in Lexington, Massachusetts, and, two years later, vice president of the Space and Communications Group of the Hughes Aircraft Company in El Segundo, California. He retired a second time in 1990 and passed away in Torrance, California, on 7 August 2001. Mr. Dirks was awarded the National Security Medal, the Intelligence Medal of Merit, and the Distinguished Intelligence Medal, and was a member of the National Academy of Engineering and the National Research Council.

Mr. Carl E. Duckett

**Director of Program B, National Reconnaissance Office,
14 January 1967 – 28 May 1976**



Carl Ernest Duckett was born on 22 March 1923, in Swannanoa, North Carolina, near Asheville, and graduated from high school in 1940. In 1942 Duckett joined the U.S. Army and began training in electronics and radio engineering at Johns Hopkins University in Baltimore, Maryland, continuing earlier training undertaken during the previous two years at Danville Technical School in Danville, Virginia. At the completion of this training, and while still in the military, he worked for Westinghouse Electric in Baltimore, as a testing and field engineer on radar systems. From 1943 until 1946, Duckett, now an officer in the U.S. Army, was sent to

England to install and test a moving target indicator anti-aircraft system designed to help counter German V-1 "Buzz Bombs" then being launched against Allied forces in the United Kingdom, and also to install and operate radar systems crucial to the success of the Allied landings in Normandy in June 1944. He was then sent to test and install the same system in the Pacific in 1945 to assist U.S. Naval forces in blunting the attacks of Japanese Kamikaze aircraft then taking place in the Philippine Islands and around Okinawa. During the closing days of the Second World War Duckett was sent to the White Sands Missile Test Range, New Mexico, to work with renowned American and German rocket scientists on a broad spectrum of missile test activities involving captured German V-2 rockets.

Following the war, Duckett worked briefly as an engineer at radio station WMVA in Martinsville, Virginia, before accepting employment in 1946 as the general manager and chief engineer of the Carroll-Grayson Broadcasting Corporation, then operating radio station WBOB in Galax, Virginia. He remained in this position for four years before returning to active duty with the U.S. Army in 1950, after the outbreak of hostilities in Korea. Duckett was again assigned to the White Sands Missile Test Range in New Mexico, as an Army project engineer and chief of plans and programs. After leaving military service in 1953, with the rank of captain, he became the civilian deputy assistant for engineering, plans and programs as part of the Department of the Army Technical Staff at White Sands.

Three years later, in 1956, Duckett joined the U.S. Army Ballistic Missile Agency at Redstone Arsenal in Huntsville, Alabama, as scientific advisor and director of missile intelligence. Having consulted with CIA officials on Soviet missile systems in the early 1960s, Duckett joined the agency in September 1963 as scientific advisor to the deputy director of the Directorate of Science and Technology (DS&T). The following March, he became the first director of the Foreign Missile and Space Analysis Center, a post he held until 16 May 1966, when he was named the assistant deputy director of DS&T. In September 1966, Duckett was appointed acting deputy director of DS&T, and, in April 1967, the deputy director of DS&T, remaining in that post until 26 April 1976. Between 14 January 1967 and 28 May 1976, Duckett concurrently served as director of Program B at the National Reconnaissance Office. Here he played an important role in supervising the development and introduction of key satellite reconnaissance systems. He retired after 28 years of government service in April 1977, and died on 1 April 1992.

Mr. Carl Duckett received numerous awards during his career, including the Distinguished Intelligence Medal and the National Civil Service League's Career Service Award.

Mr. Robert H. Dumais

**Director of IMINT Systems, Acquisitions, and Operations Directorate,
National Reconnaissance Office,
30 July 1995 – 31 October 1996**



Robert Henry Dumais was born on 25 October 1940 in Southbridge, Massachusetts. He received a Bachelor of Arts in Physics from Boston University in 1967, and continued post-graduate work at Northeastern University in Boston, where he received a Master of Science in Mathematics in 1976. While pursuing his education, in 1960, Dumais joined Itek Corporation in Lexington, Massachusetts, as a physicist, and worked on the CORONA imagery satellite project. He also worked on coherent optics, spatial filtering, and photographic research studies. In 1970

he joined EIKONIX Corporation in Bedford, Massachusetts, as a senior staff scientist. Here he worked on post-flight analysis of both strategic and tactical reconnaissance systems, and performed research on image processing, linear system theory, and estimation theory.

Dumais joined the Central Intelligence Agency in December 1974 and was initially assigned to the Office of Research and Development, Directorate of Science and Technology. While in this position, he worked on the first soft copy imagery exploitation systems. He transferred to the Office of Development and Engineering in 1976 and joined a team working on an advanced program. Three years later, in 1979, he was assigned to the Systems Analysis Staff of another program and was appointed its chief in 1983.

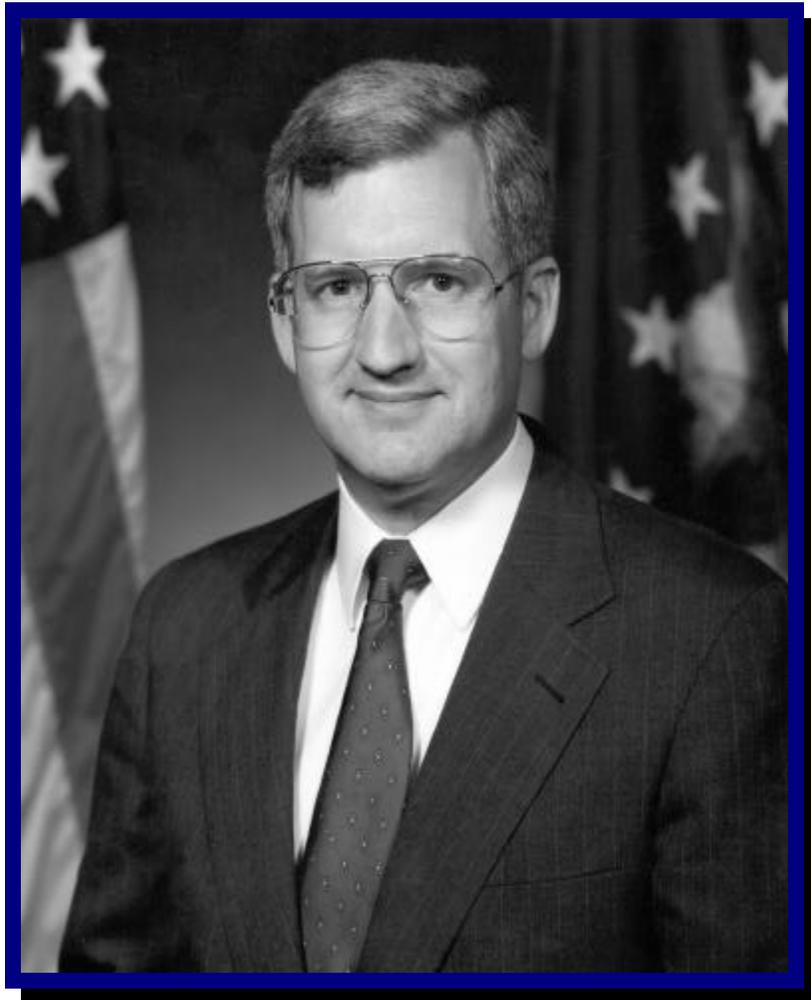
From 1984 until 1986 Dumais served as the deputy director for system collection before becoming the associate director of an NRO space program. Two years later, in September 1988, he became director of the program. He left the National Reconnaissance Office in January 1994 to become the deputy director of the CIA's Office of Technical Collection and served in this capacity until March 1995. He then returned to the National Reconnaissance Office as the deputy director for acquisitions, system development, and operations, in the IMINT Systems Acquisition and Operations Directorate. Three months later, on 1 August 1995, Dumais assumed the position of director of the IMINT Systems Acquisition and Operations Directorate at the National Reconnaissance Office, holding this post until he retired from government service on 31 October 1996.

Shortly after retiring, Mr. Dumais joined Hughes Aircraft Corporation as a corporate vice president and chief operating officer of Hughes Information Technology Systems. In March 1998 he resigned from Hughes and joined Lockheed Martin, Incorporated, as vice president of government programs for corporate strategic development. In November 1999 he became president of the Lockheed Martin Special Program Company, an element of the Lockheed Martin Space Company.

During his years of government service, Dumais received many awards including the Central Intelligence Agency's Intelligence Medal of Merit, awarded in 1985, the Meritorious Officer Award in 1988, the Distinguished Officer Award in 1990, and the Distinguished Intelligence Medal awarded in 1991. In 1996 alone, Mr. Dumais received a second Distinguished Intelligence Medal, as well as the Intelligence Community Distinguished Service Medal, and the National Reconnaissance Office Gold Medal.

Mr. Martin C. Faga

**Director of the National Reconnaissance Office,
28 September 1989 – 5 March 1993**



Born in Bethlehem, Pennsylvania, on 11 June 1941, Martin Clark Faga received a Bachelor of Science degree in 1963 and a Master of Science degree in 1964, both in Electrical Engineering from Lehigh University. At Lehigh, Faga was a member of the U.S. Air Force Reserve Officers Training Corps and received his commission as a second lieutenant upon graduation. He initially served as a research and development officer in the Air Force through 1968, working in the field of infrared reconnaissance and the application of laser technology to reconnaissance. He then worked briefly for the Perkin-Elmer Corporation in customer liaison

before joining MITRE Corporation in 1969 as a member of the technical staff, working in the field of remote sensors.

In 1972 Mr. Faga joined the Central Intelligence Agency where he worked as an engineer on advanced systems for intelligence collection by technical means. He became a member of the professional staff of the Permanent Select Committee on Intelligence of the House of Representatives in 1977, assigned to the Program and Budget Authorization Subcommittee. In 1984 he became the head of the staff assigned to that subcommittee. Here his responsibilities included staff oversight of technical collection programs and coordination of all subcommittee work.

Mr. Faga was appointed assistant secretary of the Air Force for space in September 1989, a position in which he was responsible for the overall planning, budgeting, and supervision of Air Force space matters. His duties also included maintaining cooperative liaison between the Air Force and the other military services, the National Aeronautics and Space Administration, and the executive departments responsible for civil and military space activities. Concurrently, between 28 September 1989 and 5 March 1993, Assistant Secretary of the Air Force Faga served as the director of the National Reconnaissance Office. In that position he declassified the existence of the NRO in September 1992, following over 30 years during which the organization had been classified secret within compartmented channels. He was a strong proponent for improved support to military operations, and appointed the first deputy director for military support and championed increased access by U.S. military forces to NRO products. He began reengineering and upgrading programs for most NRO satellite systems during his tenure and acted to combine the NRO's separate Central Intelligence Agency, U.S. Air Force, and U.S. Navy satellite programs into functional directorates.

In 1993, after leaving government service, Mr. Faga returned to the MITRE Corporation, first as a vice president and later as president and chief executive officer.

Rear Admiral Rand H. Fisher, USN

**Director of Communications Systems, Acquisitions, and Operations
Directorate, National Reconnaissance Office,
1 February 1999 - Present**



Rand Hilton Fisher was born in Hollywood, California, on 21 April 1951. Raised in the San Fernando Valley, he entered the United States Naval Academy, along with his twin brother Rory, in June 1969 and graduated with distinction in 1973. He received a Bachelor of Science in Physics, was commissioned an ensign, and reported to the Naval Air Station at Pensacola, Florida, soon thereafter. He earned his wings as a naval aviator in May 1975. During this time

he earned a Master of Science in Physics and Aeronautical Systems from the University of West Florida in Escambia County.

As a naval aviator, Fisher first served in Attack Squadron 147, flying the A-7E Corsair II, deployed on board the aircraft carrier *USS Constellation* in the Western Pacific. During this tour, between June 1975 and October 1978, Lieutenant Fisher was designated strike flight leader and qualified as an air wing landing signal officer. In October 1978 he reported to Training Squadron 4 at the Naval Air Station, Pensacola, Florida, as a flight instructor in the T-2C.

In July 1980, then Lieutenant Fisher was designated as an aeronautical engineering duty officer and for the next two years attended the Naval Postgraduate School at Monterey, California, receiving a Master of Science in Physics and Ordnance Engineering in October 1982. He then reported as mission avionics officer to the commander of Naval Air Forces Atlantic. Following completion of this tour in June 1985, now Lieutenant Commander Fisher was assigned to the Pacific Missile Test Center at Point Mugu, California, where he served as the Unmanned Aerial Vehicle (UAV) Program officer, planning and executing the successful tests and evaluations of the U.S. Navy Pioneer UAV System aboard the battleship *USS Iowa*.

In October 1988 Commander Fisher reported to the Space and Naval Warfare Systems Command in Washington, D.C., where he spent the next nine years as a research and development program manager, director of the Systems Program Management Division, lead systems engineer for the U.S. Naval Space Technology Program, deputy program manager of the Special Systems Program Office, major program manager of the Special Systems Program Office and, finally, as the program manager of the Advanced Systems Program Office.

Immediately following his promotion to rear admiral (lower half) on 8 December 1997, Fisher was named commander of the Naval Air Warfare Center Weapons Division at China Lake, California, where he simultaneously served as the assistant commander for test and evaluation, Naval Air Systems Command. The Naval Air Warfare Center Weapons Division at that time included 7,650 personnel at four locations including China Lake and Point Mugu, California, as well as the White Sands Missile Range and Albuquerque Detachments in New Mexico.

Rear Admiral Fisher became the director of the Communications Systems Acquisition and Operations Directorate (COMM) at the National Reconnaissance Office on 1 February 1999 and currently holds that position. He is also the Naval Space Technology Systems Program

director and commander of the Space and Naval Warfare Systems Command Space Field Activity. On 1 October 2001, Fisher was promoted to the rank of rear admiral.

Rear Admiral Fisher has over 2,500 career flight hours in numerous aircraft, including the T-2C, TA-4J, A-7E, F-14, C-12, and C-131. He has been awarded the Defense Superior Service Medal, the Legion of Merit, the Defense Meritorious Service Medal, the Meritorious Service Medal, the Joint Service Commendation Medal, the Joint Meritorious Unit Award, the Navy and Marine Corps Commendation Medal, the National Defense Service Medal with one bronze star, the Vietnam Service Medal with one bronze star, and the Sea Service Deployment Ribbon.

Mr. Dennis D. Fitzgerald

**Director of SIGINT Systems, Acquisitions, and Operations Directorate,
National Reconnaissance Office,
1 November 1996 – 11 June 2001**

**Deputy Director, National Reconnaissance Office
10 August 2001 – Present**



Born on 28 February 1943 in New Haven, Connecticut, Dennis David Fitzgerald received his Bachelor of Science degree in Physics from Fairfield University in Fairfield, Connecticut, in June 1964. He also holds four Master of Science degrees in Applied Physics, Mathematics, Electrical Engineering, and Space Technology, all from Johns Hopkins University in Baltimore,

Maryland, where he continued his education between 1968 and 1980. Fitzgerald started his professional career in private industry, working on the Polaris and Poseidon Submarine Launched Ballistic Missile Programs as a field engineer for Sperry Gyroscope, Incorporated. In June 1966 he moved to the Vitro Corporation then located in Silver Spring, Maryland.

In January 1974, Fitzgerald joined the Central Intelligence Agency's Directorate of Science and Technology (DS&T). Through most of his government career he has served with the DS&T's Office of Development and Engineering at the National Reconnaissance Office. At the NRO, he held leadership positions in the predecessor programs of the current Imagery, Signals Intelligence, and Advanced Systems and Technology Directorates. In the Office of Development and Engineering's Systems Analysis Group between 1974 and 1980, he worked on advanced technologies and new concepts for overhead intelligence collection. Starting in 1980 he was involved with collection system procurement as deputy director of the Technology Application Group. In 1982 he served as the deputy director for systems collection, and was responsible for imagery vehicle procurement.

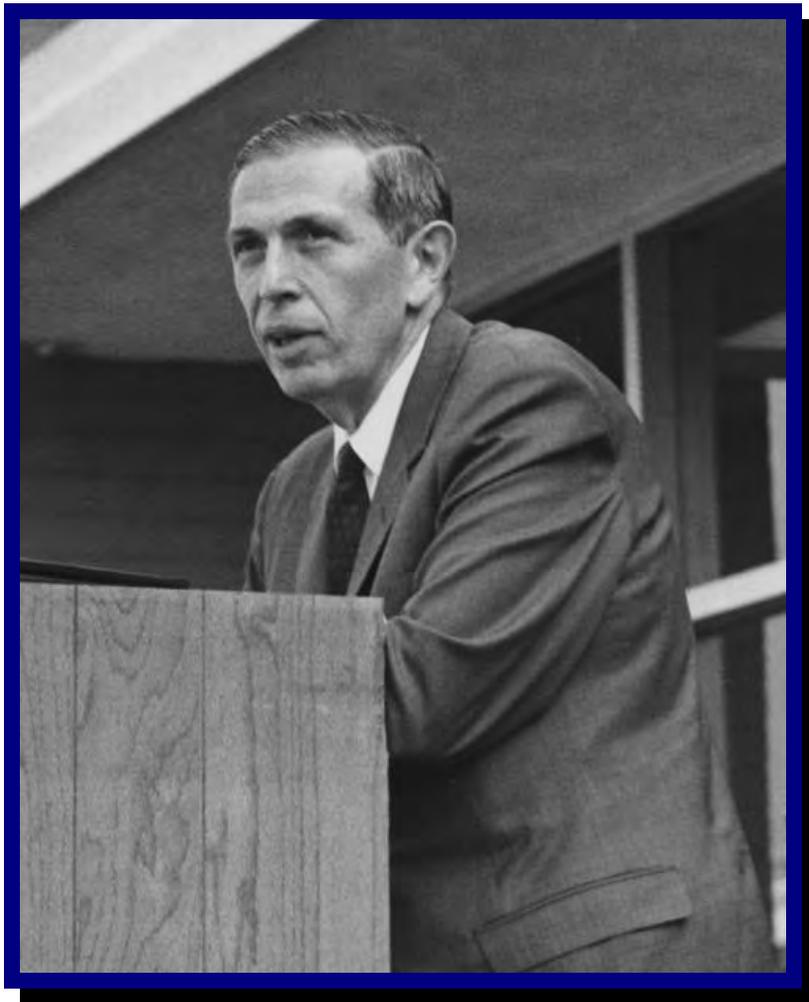
Fitzgerald also served two tours of duty outside of the Office of Development and Engineering, first as the associate director of the National Photographic Interpretation Center, where he supervised the transition of the improved NPIC data system from development through to operation. He served a second outside tour as the deputy director of the Central Intelligence Agency' Office of Research and Development. In October 1994, the director of the National Reconnaissance Office appointed Fitzgerald to lead the newly established Office of Systems Applications. There he coordinated international and commercial affairs and efforts to develop smaller satellites than those currently in use. On 1 November 1996 he became the director of the SIGINT Systems Acquisition and Operations Directorate at the National Reconnaissance Office. He also served concurrently as the director of the Central Intelligence Agency Office of Development and Engineering, an appointment made a few months earlier, in October 1995. On 11 June 2001 Fitzgerald returned to Central Intelligence Agency headquarters as the associate deputy director of DS&T. On 10 August 2001 he returned to the National Reconnaissance Office as deputy director, the position he currently holds.

Fitzgerald's awards include the Senior Intelligence Service Distinguished Officer Award, the Senior Intelligence Service Meritorious Officer Award, the Central Intelligence Agency Medal of Merit, the Central Intelligence Agency Intelligence Commendation Award, and the National Reconnaissance Office Gold Medal. In addition to his interest in horse racing, Mr.

Fitzgerald is an avid human racer and has completed ten marathons. He holds certificates as a professional engineer (in New York and Virginia) and is a licensed master electrician (Virginia).

Dr. Alexander H. Flax

**Director of the National Reconnaissance Office,
1 October 1965 – 17 March 1969**



Alexander Henry Flax was born in Brooklyn, New York, on 18 January 1921. He received a Bachelor of Science in Aeronautical Engineering from New York University in 1940 and a Doctorate of Science in Physics from the University of Buffalo in 1958. Between 1940 and 1944 Flax was employed as a structural and vibration engineer at the Airplane Division of the Curtiss-Wright Corporation, and for the next two years he served as the chief of aerodynamics and structures at the Piasecki Helicopter Corporation. From 1946 until 1963 Flax served in a variety of roles supervising research and development at the Cornell Aeronautical Laboratory.

During these years he also participated on a number of boards and commissions including the National Commission on Aerodynamics from 1952 to 1954, its subcommittee on high-speed aerodynamics between 1954 and 1958, and on the National Aeronautics and Space Administration Advisory Commission on aircraft aerodynamics between 1958 and 1962.

Named chief scientist of the U.S. Air Force in 1959, Flax served in this position until 1961. Then, from 1963 until 1969, he was assistant secretary of the Air Force for research and development. In addition to, and concurrent with, this position, Flax also served as the third director of the National Reconnaissance Office between 1 October 1965 and 11 March 1969. He supported major growth in the National Reconnaissance Program and in critical signals intelligence satellite systems that, in a modified and greatly improved form, are still the major elements of such systems today. Flax also strongly promoted the initial development of a near-real-time imaging satellite reconnaissance system.

Starting in the late 1960s, Flax served as vice president for research, and later president for research, at the Institute for Defense Analyses, while also serving as a member of the U.S. delegation to the Advisory Group on Aerospace Research and Development of the North Atlantic Treaty Organization—activities that followed his earlier membership on the Scientific Committee of the Supreme Headquarters Allied Powers Europe (SHAPE) Technical Center in The Hague, Netherlands.

Flax has received the Department of Defense Distinguished Public Service Medal, the Air Force Exceptional Civilian Service Award on two occasions, the NASA Distinguished Service Medal, the Civilian Service Medal from the Defense Intelligence Agency, and the Theodore von Karman award from the NATO Advisory Group for Aerospace Research and Development. He is a member of the National Academy of Engineers, and the American Institute of Aeronautics and Astronautics.

Rear Admiral Eugene B. Fluckey, USN

**Director of Program C, National Reconnaissance Office,
8 July 1966 – 30 January 1968**



Eugene Bennett Fluckey was born in Washington, D.C., on 5 October 1913. He entered the U.S. Naval Academy in 1931 and graduated with the class of 1935. Initially assigned to surface vessels, including the *USS Nevada* and *USS McCormick*, in June 1938 he reported to the Submarine School in New London, Connecticut, for training prior to assignment to the *USS S-42*. On 11 June 1941 Fluckey transferred to the *USS Bonita* where he later served five war patrols protecting the Panama Canal Zone following the American entry into World War II in December 1941. Selected for a command of his own in November 1943, he underwent further

training before reporting to the Pacific Fleet for duty aboard the *USS Barb*. Fluckey assumed command of that submarine on 27 April 1944 and during five successful war patrols the *Barb* sank more enemy tonnage than any other American submarine during the Second World War. Ending the war in command of the *Barb*, Fluckey was assigned to work for Secretary of the Navy James V. Forrestal on plans for armed services unification. He subsequently joined the War Plans Division and, in December 1945, was selected to be the personal aide of incoming Chief of Naval Operations Fleet Admiral Chester W. Nimitz.

On 9 June 1947, Fluckey returned to submarines, assuming command of the *USS Halfbeak*. Two years later he was ordered to the staff of the commander, Submarine Force, Atlantic Fleet, where he was responsible for setting up the submariner portion of the U.S. Naval Reserve. A year later, he became the flag secretary to Adm. James Fife, Commander Submarine Force, Atlantic Fleet. From October 1950 until July 1953, he served as the naval attaché and naval attaché for air to Portugal. In September 1953 Fluckey assumed command of Submarine Division 52 and, on 11 June 1954, became the commanding officer of the submarine tender *USS Sperry*. He next served as commander of Submarine Squadron Five, and after a year in that position returned to the U.S. Naval Academy to help raise funds to build the Navy-Marine Corps Memorial Stadium before attending the National War College in 1958. In June 1959 he was assigned to the National Security Council in Washington, D.C., as a briefer on nuclear issues for President Dwight D. Eisenhower and Vice President Richard M. Nixon.

Three months after being promoted to the rank of rear admiral in July 1960, Fluckey reported as the commander of Amphibious Group Four. In November 1961 he became president of the Naval Board of Inspection and Survey, and, in March 1964, was assigned temporary duty as task force director of the Shipyards Appraisal Group. In June 1964 he reported as commander Submarine Force, Pacific Fleet, commander Anti-Submarine Warfare Group, commander Submarine Patrol Group, and commander Missile Attack Group, concurrent positions he held until 11 June 1966.

On 8 July 1966, Rear Admiral Fluckey reported as assistant chief of naval operations for intelligence and as the director of the National Reconnaissance Office Program C, positions he held until January 1968. Following service with the NRO, Rear Admiral Fluckey assumed command of the Iberian Atlantic Command and became chief of the Military Assistance Advisory Group, Portugal, with headquarters in Lisbon. He served in this position from early 1968 until his retirement on 1 August 1972. Rear Admiral Fluckey is the author of *Thunder*

Below! The USS Barb Revolutionizes Submarine Warfare in World War II, describing his wartime service.

Rear Admiral Fluckey's decorations include the Medal of Honor for service aboard the *USS Barb*, the Navy Cross with three gold stars, the Distinguished Service Medal, the Legion of Merit with gold star, the Presidential Unit Citation Ribbon, and the Navy Unit Commendation Ribbon. For distinguished service in Portugal, Fluckey received the Medal of Military Merit awarded by the Portuguese Government, the first time this decoration was ever awarded to a foreigner. In 1989 the U.S. Navy honored him by naming the Nuclear Submarine Combat Systems Training Center in New London, Connecticut, Fluckey Hall.

Colonel Paul F. Foley, USAF

Staff Director, National Reconnaissance Office,
15 July 1984 – 31 January 1985



Paul Francis Foley was born in Medford, Massachusetts, on 28 May 1940. He graduated from the U.S. Air Force Academy on 7 June 1961. His initial Air Force assignment was with the 551st Strategic Missile Squadron (Atlas F) at Lincoln, Nebraska. He served on a missile combat crew from December 1961 until June 1965, and was on missile alert duty during the Cuban missile crisis in October 1962.

In July 1965, Foley attended Rensselaer Polytechnic Institute in Troy, New York, as an Air Force graduate student. He completed studies there in June 1966 and was awarded a Master

of Arts in Business Management. He was then assigned to the Space Systems Division at Los Angeles Air Force Station in California. Here Foley worked in the Communications Satellite Program Office planning new communications satellite systems. In July 1968 he was reassigned to the Seventh Air Force at Tan Son Nhut Air Base in Saigon, Republic of South Vietnam, as an operations research analyst. During his tour in Southeast Asia he was a member of a team whose objective was to improve the effectiveness of combat air operations. On his return to the United States in July 1969, Foley attended the U.S. Air Force Command and Staff College in Alabama, and following his June 1970 graduation, received his first National Reconnaissance Office assignment as a project engineer at the Secretary of the Air Force Special Projects Office (SAF/SP) in Los Angeles. Three years later, in 1973, he was designated chief systems engineer for NRO Program A, Special Projects Office. In this role, Foley managed the concept formulation and source selection competition for a major NRO satellite program.

In June 1975 Foley was assigned to the Navy War College in Newport, Rhode Island, where he remained until his graduation in June 1976. He was then assigned to the Air Force Research and Development Staff at the Pentagon in Washington, D.C., before again being assigned to the National Reconnaissance Office in 1978 where he worked to improve communications between the Air Force Special Projects Office, the NRO staff, and the overall Intelligence Community. Foley returned to California in April 1979 to direct a major SIGINT satellite constellation, while also supervising changes to existing systems. Then, on 15 July 1984, Colonel Foley was appointed NRO staff director, serving in this position until 31 January 1985.

Colonel Foley retired from the Air Force in January 1985. Since that time he has served in several industrial management positions involved with the development of space and intelligence collection systems. His service decorations include the Legion of Merit, the Bronze Star Medal, the Combat Readiness Medal, and the Vietnam Service Medal with four campaign stars.

Brigadier General William M. Fraser III, USAF

**Deputy Director for Military Support, National Reconnaissance Office,
11 December 2000 – Present**



William McKinley Fraser III was born on 17 August 1952 in Lakeland, Florida. He entered the U.S. Air Force in 1974 as a distinguished graduate of the Texas A&M University Reserve Officer Training Corps Program, where he also earned a Bachelor of Science in Engineering Technology. Commissioned a second lieutenant on 8 November 1974, he underwent pilot training at Williams Air Force Base in Arizona. Until March 1980 Fraser trained as an instructor pilot at Randolph Air Force Base in Texas. He then served as a T-37 instructor and check pilot with the 96th Flying Training Squadron, and as a T-37 instructor pilot and flight

examiner with the 82nd Flying Training Wing, both at Williams Air Force Base. During this time Captain Fraser completed Squadron Officer School and earned a Master of Science degree in Management Information Systems at the University of Northern Colorado.

Assigned to the Pentagon in Washington, D.C., from March 1980 through May 1981, Fraser served as the Operational Support Aircraft Program element monitor and as the worldwide military command, control, and communications element monitor with the Air Staff Training Program at U.S. Air Force headquarters. Returning to field assignments in October 1981, Fraser underwent training in the B-52H with the 4017th Combat Crew Training Squadron at Castle Air Force Base in California, before deploying as a commander and an instructor pilot in B-52H and B-52G aircraft with the 46th Bombardment Squadron at Grand Forks Air Force Base, North Dakota. Later, Major Fraser served as the chief of the B-52G Standardization and Evaluation Branch with the 319th Bombardment Wing at Grand Forks, an assignment ending in December 1984.

Following completion of U.S. Marine Corps Command and Staff College by correspondence in 1983, and attendance at the Armed Forces Staff College in 1985, Fraser served as chief, European Single Integrated Operational Plan Tactics, with the office of the Joint Strategic Target Planning Staff at Offutt Air Force Base in Nebraska, and then as the executive officer to the chief of staff, Strategic Air Command. He was next assigned overseas between October 1987 and July 1990 as chief of the Nuclear Requirements Cell at Supreme Headquarters Allied Powers Europe, in Mons, Belgium. Returning to the United States in July 1993, then Colonel Fraser served two years, until August 1995, with the 509th Operations Group and 509th Bombardment Wing at Whiteman Air Force Base in Missouri, the U.S. Air Force's only operational base for the B-2 Stealth bomber. He later served as vice commander of the 509th Bombardment Wing before returning to Belgium once again for an additional two years of duty as a special assistant to Supreme Allied Commander Europe.

In February 1997, Fraser became commander of the 28th Bombardment Wing at Ellsworth Air Force Base in South Dakota, before beginning service in May 1998 as the chief of staff of the U.S. Strategic Command at Offutt Air Force Base. One year later, in May 1999, Fraser took command of the 2nd Bombardment Wing at Barksdale Air Force Base in Louisiana, serving in this position until December 2000. Here he was responsible for maintaining the wing in a state of constant readiness to carry out bombardment operations on a global scale by ensuring the organization, training, and equipping of a combined active-duty military and

civilian force of more than 5,400 people. Promoted to brigadier general on 1 January 2000, Fraser was named deputy director for military support at the National Reconnaissance Office on 11 December 2000, a position in which he currently serves.

A command pilot with more than 3,800 flying hours, Brigadier General Fraser has flown the B-1B, B-2, B-52G/ and H, the KC-135R, T-37 and T-38 aircraft. His many awards and decorations include the Defense Superior Service Medal with oak leaf cluster, the Legion of Merit with two oak leaf clusters, the Defense Meritorious Service Medal with oak leaf cluster, the Meritorious Service Medal with oak leaf cluster, the Air Force Commendation Medal with oak leaf cluster, the Air Force Achievement Medal, the Combat Readiness Medal, the National Defense Service Medal, the Armed Forces Expeditionary Medal, the Armed Forces Service Medal, and the Military Outstanding Volunteer Service Medal.

Brigadier General Leo P. Geary, USAF

**Director of Program D, National Reconnaissance Office,
2 May 1962 – 15 July 1966**



Born on 13 October 1917 in Boston, Massachusetts, Leo Paul Geary attended Tufts University and graduated with a Bachelor of Science degree in Chemistry in 1940. He enlisted in the U.S. Army Air Corps as an aviation cadet in April 1941, and completed pursuit and bombardment aircraft flight training between December 1941 and March 1943. He then began a variety of flying assignments that lasted until 1954, including combat duty during World War II as a B-24 Liberator pilot in Italy with the 449th Bombardment Group, Fifteenth U.S. Army Air Force.

In May 1954 Geary was assigned to the Office of the Deputy Chief of Staff for Operations at U.S. Air Force headquarters, where he served as intelligence staff officer, Special Projects Branch, Psychological Warfare Division, and chief, Special Activity Branch, Subsidiary Plans Division. From June 1955 to September 1966, he served as a staff officer and special assistant to the inspector general for special projects, Office of The Inspector General, U.S. Air Force. During this eleven-year period, Geary was assigned to work closely with Dr. Richard M. Bissell, Jr., of the Central Intelligence Agency, providing Air Force support for CIA development, acquisition, and program management of the U-2 and its follow-on supersonic A-12 reconnaissance aircraft.

Geary served as the first director of the National Reconnaissance Office aerial reconnaissance Program D, from 2 May 1962 to 15 July 1966, where managed all Air Force support for CIA U-2 and A-12 flights and served as the original program director of the Air Force SR-71 supersonic reconnaissance aircraft deployment. Moreover, he served concurrently as the assistant for reconnaissance to the deputy chief of staff for research and development at U.S. Air Force headquarters. As the first program director for the National Reconnaissance Office's high altitude air-breathing reconnaissance platforms, Geary pioneered the development and operation of these aerial assets. In July 1966, after duty with the NRO, Geary was reassigned to Kelly Air Force Base, Texas, as deputy commander, San Antonio Air Materiel Area, Air Logistics Command. He remained in that position until his reassignment as defense representative, Rawalpindi, Pakistan, in September 1967. He retired from active military duty on 1 February 1970.

Brigadier General Geary's military awards and decorations include the Legion of Merit with two oak leaf clusters, the Air Medal, the National Defense Service Medal with one service star, the Air Force Longevity Service Award Ribbon with six oak leaf clusters, and the European Theater of Operations service medal with three campaign stars.

Rear Admiral Robert K. Geiger, USN

**Director of Program C, National Reconnaissance Office,
5 January 1971 – 23 July 1975**



Born in White Cloud, Kansas, on 27 October 1923, Robert Keith Geiger attended the Georgia Institute of Technology for two years before enlisting as a private in the U.S. Army, where he served between December 1942 and June 1944. He entered the U.S. Naval Academy in 1944 and graduated with the class of 1948A on 6 June 1947. Following his graduation, Geiger was assigned to the *USS Bairoko* and then served as a physics instructor at the Naval Preparatory School in Bainbridge, Maryland. He entered flight training in May 1949, received his wings in August 1950, and then joined Patrol Squadron 21 the month following. In July 1953 Geiger

reported for instruction at the U.S. Naval Postgraduate School, Monterey, California, from which he received a Bachelor of Science in Ordnance Engineering. He then attended the Massachusetts Institute of Technology where he received a Master of Science degree in Aeronautical Engineering in June 1956. Geiger joined Air Development Squadron One and in July 1958 reported for duty in connection with antisubmarine research and development in the Bureau of Naval Weapons, Department of the Navy, Washington, D.C. In July 1961 he reported as the antisubmarine warfare officer on the staff of the commander, Fleet Air Wing Two, and in September 1963 returned to the Bureau of Naval Weapons as the program manager of an advanced antisubmarine warfare avionics system.

Assigned to the Air Force Special Projects Office, El Segundo, California, in January 1966, Geiger served as assistant deputy director for advanced plans and then deputy director for programs until April 1969. He then reported to the Office of the Under Secretary of the Air Force for Space Systems where he served until December 1970. On 5 January 1971 he was named a project manager of the newly established Navy Space Projects Office, Navy Material Command, concurrently serving as director of the National Reconnaissance Office Program C between that date and 23 July 1975. While still at the NRO, in May 1973, he reported as project manager, Navy Space Projects Office, Naval Electronic Systems Command, Department of the Navy. In July 1974 Geiger was promoted to the rank of rear admiral. On leaving the NRO in July 1975, he was appointed chief of naval research, serving in that capacity from 1975 until his retirement from active military service in 1978.

During his military career Rear Admiral Geiger received the Distinguished Service Medal, the Air Force Legion of Merit with one oak leaf cluster, and the Air Force Commendation Medal. In retirement, Rear Admiral Geiger served as director of the Advisory Group for Aerospace Research and Development, North Atlantic Treaty Organization, from 1982 until 1985. He then became a U.S. delegate to the board of this advisory group and served as its chairman from 1988 until 1991. During this period he was also a member of the Air Force Scientific Advisory Board and the Naval Studies Board Space Panel.

Mr. Jeffrey D. Grant

**Director of Plans & Analysis, National Reconnaissance Office,
6 June 1994 – 2 October 1997**



Jeffrey Donald Grant was born on 16 March 1954 in Akron, Ohio. Raised in the vicinity of Greenville, South Carolina, and in Anchorage, Alaska, he attended Clemson University in Clemson, South Carolina, where he earned a Bachelor of Science in Engineering in 1973. Continuing his education, Grant attended the Florida Institute of Technology in Melbourne, where he earned a further Bachelor of Science in Ocean Engineering in 1975.

Grant joined the Central Intelligence Agency on 6 June 1976 as an engineer and was initially assigned to the Office of Scientific Intelligence in the Directorate of Science and

Technology. He remained in this position until 22 November 1976, specializing in the study of Soviet undersea radar, sonar, and navigational aids. During the next four years, Grant served in a variety of engineering positions within the CIA's Directorate of Science and Technology before joining its Office of Development and Engineering on 13 April 1980. Thereafter, through 1993, Grant served as a project management engineer, as the associate director of systems engineering, as the chief of the Systems Engineering Division, and as the chief of the Systems Analysis Staff.

In July 1993, Mr. Grant began a one-year tour as deputy of the DCI's Community Management Staff Planning Office. Returning to the National Reconnaissance Office on 6 June 1994, Grant became the chief of the office of Plans and Analysis where he remained until he retired from government service on 2 October 1997.

Among Mr. Grant's awards are the Intelligence Medal of Merit and the CIA Certificate of Distinction.

Major General Robert E. Greer, USAF

**Director of Program A, National Reconnaissance Office,
23 July 1962 – 30 June 1965**



Robert Evans Greer was born in Orange, California, on 7 August 1915 and graduated from the U.S. Military Academy with the class of 1939. He entered flying school and received his wings in the U.S. Army Air Corps in July 1940. After serving as a flying instructor, he joined the 58th Bombardment Wing in October 1943 and was a member of the first B-29 Superfortress crew to leave the United States in April 1944 for bases in the China-Burma-India Theater. After serving as the assistant operations officer for the 58th Bombardment Wing, and as the supply officer of the XXth Bomber Command, he accompanied the unit to Tinian in the Marianas

Islands where he served as the deputy chief of staff for supply and maintenance during the final air assaults against Imperial Japan in the spring and summer of 1945.

Returning to the United States at the end of 1945, Greer was assigned to Wright Field, Ohio, where he served as assistant to the chief of administration for technical matters at Air Materiel Command headquarters. After teaching electrical engineering courses at West Point, and attending Columbia University, Greer reported to U.S. Air Force headquarters in June 1949, to the Office of the Assistant for Atomic Energy. He next attended the Air War College, after which he went to Paris in July 1954 to serve on the Special Staff of British Field Marshal Bernard L. Montgomery at Supreme Headquarters Allied Powers Europe (SHAPE). Following this, Greer was assigned to Headquarters, 49th Air Division, and later Headquarters, Third Air Force, in England, where he served as director of operations and deputy chief of staff for operations.

Greer returned to U.S. Air Force headquarters in July 1957, where he became deputy assistant chief of staff and then, promoted to brigadier general in 1959, assistant chief of staff for guided missiles. He subsequently served as vice commander for satellite systems, Air Force Ballistic Missile Division, until a major reorganization of the Air Research and Development Command and the Air Materiel Command occurred on 1 April 1961. At that time he became vice commander, Space System Division, Air Force Systems Command, in Inglewood (the division later moved to El Segundo), California, and was promoted to major general in July 1961. Shortly before he became vice commander of Space Systems Division in late 1960, Greer put on another hat as director of the West Coast SAMOS Program Office, reporting directly to Under Secretary of the Air Force Joseph V. Charyk in the Office of Missile and Satellite Systems (SAF/MSS) at the Pentagon. The following year, 1961, the name of the west coast SAMOS Program Office would be changed to the Office of Special Projects (SAF/SP) when it formally became the Air Force element of the National Reconnaissance Office (called Program A after 23 July 1962). Initially consisting of the SAMOS Program, SAF/SP activity soon expanded to embrace development of the NRO Defense Meteorological Satellite Program and several intelligence satellite programs.

Major General Greer remained director of SAF/SP from 1961 until his retirement on 30 June 1965. After leaving military service, he joined North American Rockwell. During his military career Greer was awarded the Legion of Merit, the Army Commendation Medal, and the

Air Force Longevity Service Award with four bronze oak leaf clusters. He died in Escondido, California, on 11 February 1976.

Mr. Donald L. Haas

**Deputy Director of the National Reconnaissance Office,
9 December 1979 – 11 April 1982**



Donald Leo Haas was born on 16 February 1925 in Norwalk, Ohio. He began his university education at the University of Wisconsin in 1943. As a member of the U.S. Navy V-12 Educational Program, he graduated from Purdue University in 1946 with a Bachelor of Science in Electrical Engineering after which he was assigned to duty aboard a U.S. Navy destroyer as an ensign in charge of communications. Following his military service he was employed as an electronics engineer by the Philco Corporation beginning in March 1947. One year later he moved to the Crosley Division of AVCO Manufacturing Corporation.

Mr. Haas joined the Central Intelligence Agency in April 1951 as an electronics engineer with the Office of Communications, Research and Development Branch. During this time, he also continued his education, earning a Master of Science degree in Electronics and Communications at the Massachusetts Institute of Technology in 1958. Haas left government service in 1960 to work for the Martin Marietta Corporation and the Aerospace Corporation and helped manage the development of military satellite and digital communications systems. He returned to the Central Intelligence Agency in September 1967 when he became the deputy program director of the Office of Special Projects in the Directorate of Science and Technology (DS&T). For one year, beginning in 1974, Haas served as the deputy director of the Office of Development and Engineering, DS&T, before taking the position of director of the Office of Research and Development. He then returned to the Office of Development and Engineering as its director in 1975.

Haas retired from the Central Intelligence Agency in November 1978 after twenty years service, and went to work for the Defense Advanced Research Projects Agency at the Department of Defense in Washington, D.C., where he served as director of the Strategic Technology Office. He subsequently was appointed deputy director of the National Reconnaissance Office, where he served between 9 December 1979 and 9 April 1982. His engineering skills and creativity were vital to the extraordinary success of many National Reconnaissance Office programs, especially those involving sensors and other technical collections systems that he had previously helped design and develop. He strongly supported retaining expendable launch vehicles and was a main proponent of emergency launch systems. Following his service at the National Reconnaissance Office, Haas worked for Electronic Systems Laboratory / TRW in northern Virginia and in Sunnyvale, California, before joining the Perkin-Elmer Corporation in June 1986 as vice president and general manager of the government systems sector.

During his nearly thirty-year government service career, Mr. Haas was awarded the Distinguished Intelligence Medal, the Intelligence Medal of Merit, the National Intelligence Distinguished Service Medal, the Defense Department and Air Force Exceptional Civilian Service Award, a Meritorious Unit Citation, and the Senior Executive Service Presidential Award.

Mr. Keith R. Hall

**Deputy Director of the National Reconnaissance Office,
27 February 1996 – 27 March 1997**

**Director of the National Reconnaissance Office,
27 March 1997 – 13 December 2001**



Keith Ralph Hall was born on 30 June 1947 in Rockville Center, New York. He served the U.S. Intelligence Community for over three decades, beginning in 1970 as a U.S. Army Intelligence Officer. After commanding two overseas Army intelligence units, in 1979 he was competitively selected to be a presidential intern, assigned to the White House Office of Management and Budget as the CIA budget examiner. In 1983 he joined the staff of the Senate

Select Committee on Intelligence (SSCI), eventually becoming the deputy staff director before he was named deputy assistant secretary of defense for intelligence and security in 1991. A few years later in 1995, the DCI selected him to be the Agency's executive director for Intelligence Community affairs.

Keith Hall's career is highlighted by a series of important contributions to U.S. intelligence capabilities. As deputy staff director for the SSCI, he established a panel of experts to advise Senators on critical national intelligences issues. He also created a separate audit staff to streamline accounting of program budget management and execution. As executive director for Intelligence Community affairs, in the wake of the 1994 Aldrich Ames spy case, he played a central role in identifying and implementing counter-intelligence and security improvements across the Intelligence Community. He also became the driving force behind improvements in intelligence dissemination capabilities that included the creation of the Intelligence Community's classified Internet link, and the use of commercial broadcast and satellite communications to deliver critical intelligence globally.

While serving as the executive director of Intelligence Community affairs, Hall, together with the vice chairman of the Joint Chiefs of Staff, led the study that created the National Imagery and Mapping Agency (NIMA). This effort consolidated and coordinated all U.S. imagery and cartographic capabilities. In addition, he spearheaded the development of the current Space Based Infrared (SBIR) architecture, and established the first overarching integrated programming and budgeting process across the Department of Defense and the Intelligence Community. In February 1996 the DCI named Hall deputy director and acting director of the National Reconnaissance Office. The Senate confirmed him as assistant secretary of the Air Force for space and as director of the NRO on 28 March 1997. As NRO director, he instituted a series of management reforms while strengthening critical mission partnerships to more effectively meet the needs of customers worldwide. His transformation of NRO financial management policies, practices, and procedures served as an example for the federal government. Keith Hall retired from government service on 31 December 2001.

In addition to numerous military awards and decorations, Keith Hall received the Director of the Office of Management and Budget Award for Professional Achievement, the Central Intelligence Agency Gold Seal Medallion, the Secretary of Defense Award for Distinguished Civilian Service, and the Air Force Exceptional Civilian Service Award. He also earned the Armed Forces Communications and Electronics Association's Award for

Distinguished Service to the Intelligence Community, the American Astronautical Society's Military Astronautics Award, and the NRO Medal of Distinguished Performance for outstanding leadership. Most recently, for his pivotal role in the evolution and operation of the national security space program, in 2000 the National Space Club recognized him with its most prestigious award, the Robert H. Goddard Memorial Trophy.

Mr. Hall earned a Master of Arts degree in Public Administration from Clark University and a Bachelor of Arts in History and Political Science from Alfred University. He also holds an honorary doctorate from Alfred University.

Brigadier General Donald G. Hard, USAF

**Staff Director, National Reconnaissance Office,
5 November 1987 – 5 February 1989**



Donald Gordon Hard was born on 6 September 1940 in Sunderland, Vermont, and graduated from Arlington High School in 1958. He entered the U.S. Naval Academy that same year, graduated with a bachelor of science degree in 1962, and was commissioned as a second lieutenant in the U.S. Air Force. Assigned to the Air Force Institute of Technology Training Program at the University of Illinois at Champaign-Urbana, Hard continued to study engineering. In July 1963 he was assigned to the Air Force Space Systems Division at the Los Angeles Air

Force Station in California, where he served as the operations planning officer for the DynaSoar and Manned Orbiting Laboratory Programs.

He entered flight training at Reese Air Force Base in Texas, and received his pilot wings in December 1967. After completing C-130 training at Sewart Air Force Base in Tennessee, and at Pope Air Force Base in North Carolina, he was assigned to the 776th Tactical Airlift Squadron at Ching Chuan Kang Air Base, Republic of China, with subsequent duty in Southeast Asia. Following overseas service, Hard was assigned to the 6594th Test Group at Hickam Air Force Base, Hawaii, from November 1969 until June 1974. He then transferred to Sunnyvale Air Force Station in California, where he served as an orbital operations officer, before becoming chief of the Launch Operations Planning Branch, Office of Special Projects, Office of the Secretary of the Air Force, at Los Angeles Air Force Station, in September 1975.

Hard continued his education during this time, completing the Air Command and Staff College course in 1975, and the Industrial College of the Armed Forces course in 1976. He also received a Master of Science in Business Management from California State University in Dominguez Hills. Hard then transferred to Yokota Air Base in Japan, in June 1978, and served first as assistant operations officer of the 345th Tactical Airlift Squadron and, later, as deputy commander for operations of the 316th Tactical Airlift Group.

In October 1980 Hard was assigned to the Office of Space Systems, Office of the Secretary of the Air Force, in Washington, D.C., where he served as the NRO deputy director for policy and security. He then served as director of operations support integration for the deputy commander for space operations at Space Division headquarters in El Segundo, California, from July 1982 to January 1983, when he became director of plans, Space Division. Returning to Hawaii, Hard commanded the 6594th Test Group at Hickam Air Force Base, from May 1984 to May 1985, before returning to Sunnyvale, California, as the commander of the U.S. Air Force Satellite Control Facility.

From July 1986 until February 1987, Hard was the vice director of the NRO's Air Force Office of Special Projects at Los Angeles Air Force Station, before serving as deputy commander for launch and control systems at Space Division headquarters. From 5 November 1987 through 5 February 1989, Hard served as director of space systems, Office of the Secretary of the Air Force in Washington, D.C., as the staff director at the National Reconnaissance Office. In late January 1989, he became the deputy director of operations, and the following September, the deputy director of plans at the Office of the Deputy Chief of Staff, Plans and Operations, at

U.S. Air Force headquarters. In March 1990, Hard served as the director of the Space and Strategic Defense Initiative Programs Office within the Office of the Secretary of the Air Force for Acquisition in Washington, D.C. Here he provided program management direction for development and procurement of Air Force surveillance, navigation, communications, and weather satellites, space launch vehicles, anti-satellite weapons, and ground-based and airborne strategic radars, communications and command centers. Promoted to the rank of major general on 1 February 1991, Hard retired from active military duty on 1 August 1993.

Major General Hard is a command pilot with more than 4,000 flying hours and wears the Master Space Badge. In addition to his graduate degree, Hard attended the Harvard University National and International Security Program for Senior Executives, and is a Massachusetts Institute of Technology Seminar XXI Fellow. His military awards and decorations include the Defense Superior Service Medal, the NASA Distinguished Service Medal, the Air Force Distinguished Service Medal, the Legion of Merit, the Meritorious Service Medal with four oak leaf clusters, the Air Medal with three oak leaf clusters, the Joint Service Commendation Medal and the Air Force Commendation Medal. Major General Hard is an honorary Chief Master Sergeant.

Rear Admiral Frederick J. Harlfinger II, USN

Director of Program C, National Reconnaissance Office,
10 September 1968 – 4 January 1971



Frederick Joseph “Fritz” Harlfinger II was born in Albany, New York, on 14 September 1913. He entered the U.S. Naval Academy in 1931 and graduated with a bachelor of science degree with the class of 1935. He served aboard the *USS Arizona* for two years, before attending the Submarine School at New London, Connecticut. Following sea duty with the Asiatic Fleet, he returned to the United States in July 1940 and reported to the *USS Trout*, where he served between November 1940 and March 1942. Harlfinger was commended for his outstanding service aboard the *Trout* during the early days of the Second World War, when it amassed a

record of 43,000 tons of Imperial Japanese shipping sunk and a further 31,000 tons damaged. Detached from the *Trout*, he next served on the *USS Whale*, before commanding the *USS S-32*, *USS Trigger*, and *USS Sirago*, respectively, during the remaining years of World War II and in the immediate postwar years.

In May 1947 Harlfinger began a series of shore assignments lasting eight years at the Submarine School, at the Advanced Undersea Weapons School in Key West, Florida, with Submarine Squadron 4, at the Armed Forces Staff College in Norfolk, Virginia, and at the Navy Department in Washington, D.C., where he served as head of Submarine Warfare, Research and Development Division, Office of the Chief of Naval Operations. Following attendance at the Industrial College of the Armed Forces in 1954 and 1955, Harlfinger became the naval attaché and naval attaché for air, Bonn, Federal Republic of Germany. Returning to sea in June 1957, he commanded the *USS Mauna Loa* before assuming command of Submarine Squadron 12. In August 1959 he became the head of the Submarine Branch in the Office of the Chief of Naval Operations, completing that tour in October 1962, before assuming command of Submarine Flotilla One.

On 29 January 1964 Admiral Harlfinger reported as assistant director for acquisition, Defense Intelligence Agency, Washington, D.C., a post he held until assuming command of the South Atlantic Force, U.S. Atlantic Fleet. In August 1968, he reported as assistant chief of naval operations for intelligence, Commander Naval Intelligence Command, Navy Department, and in March 1971 he became the director of support programs in the Office of the Chief of Naval Operations. Concurrently, he served as director of the National Reconnaissance Office Program C between 10 September 1968 and 4 January 1971. Following service at the NRO, in October 1971, Harlfinger was promoted to vice admiral, continuing in the post of director of support programs in the Office of the Chief of Naval Operations. He retired on 1 April 1974 and died on 21 December 1993.

In addition to the Navy Cross, Vice Admiral Harlfinger was awarded the Distinguished Service Medal, Silver Star Medal with two gold stars, the Legion of Merit with gold star, the Bronze Star with combat "V," the Navy Commendation Medal with "V," a Presidential Unit Citation, and Navy Unit Commendation.

Mr. Jeffrey K. Harris

**Director of the National Reconnaissance Office,
19 May 1994 – 26 February 1996**



Jeffrey King Harris was born on 28 June 1953 in White Plains, New York. He graduated from the Rochester Institute of Technology in 1975 with a Bachelor of Science in Photographic Science and Instrumentation. He began his career with the Central Intelligence Agency in 1975 as a photo technologist at the National Photographic Interpretation Center. Three years later he joined the CIA's Office of Development and Engineering's National Reconnaissance Office satellite development programs and served as chief of systems analysis and as associate director for several system acquisitions. These responsibilities included the acquisition and operation of

several NRO space-based reconnaissance and intelligence systems. During this time Harris also managed research and development for space technologies and identified emerging technologies for application to the space reconnaissance and ground processing functions. In June 1993 Harris was named associate executive director for Intelligence Community affairs. In that capacity, he advised the director of the Central Intelligence Agency (DCI) on intelligence space systems and supervised the Community Management Staff that supported the DCI in his role as principal intelligence advisor to the president.

Harris became director of the National Reconnaissance Office on 19 May 1994. During his two years as assistant secretary of the Air Force for space and director of the National Reconnaissance Office, which concluded on 26 February 1996, Harris supervised the integration of NRO programs into functional directorates. Having served as a member of the R. James Woolsey Panel that studied the future of National Reconnaissance Office systems, he was a major proponent and architect of consolidating signals intelligence systems in a new partnership with the National Security Agency. Harris also directed declassification of the CORONA imaging satellite program, an action approved by Director of Central Intelligence R. James Woolsey and President Bill Clinton in early 1995. Harris also established a public affairs program at the National Reconnaissance Office.

Following his government service, Harris became the president of Space Imaging Corporation in July 1996, the first firm to build, launch, and operate commercial imaging satellites.

Colonel Frank W. Hartley, Jr., USAF

**Director of Program D, National Reconnaissance Office,
1 November 1967 – 30 June 1972**



Frank William Hartley, Jr., was born on 12 March 1918. Following completion of his education, he joined the U.S. Army Air Forces on 16 February 1943 and underwent flight training in California. During his flying career he logged 9,000 flying hours and completed 34 combat missions. After World War II he was stationed in Japan, Germany, and Italy, and at Hamilton, Maxwell, and McCoy Air Force Bases in the United States. Hartley served as director of aerial reconnaissance, National Reconnaissance Office Program D, between 1 November 1967

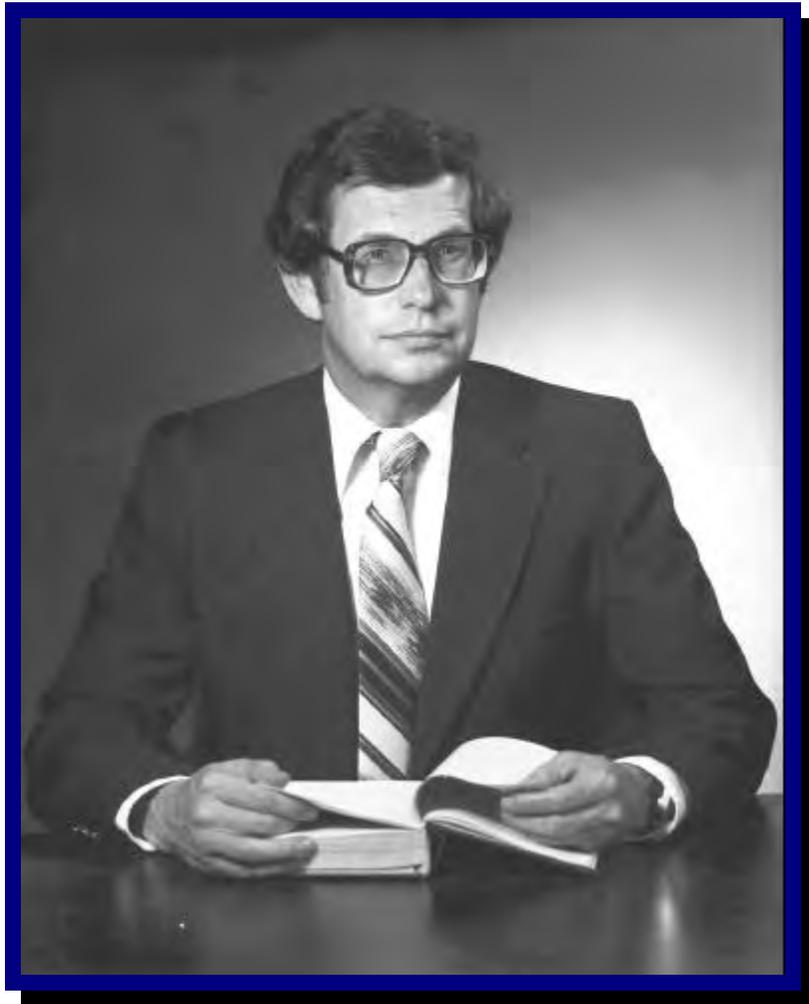
and 30 June 1972, and as chief of special projects at Inspector General headquarters, U.S. Air Force.

At the National Reconnaissance Office, his leadership and initiative resulted in the success of several projects vital to the security of the United States. Yet during this period, working with difficult schedules, he directed and coordinated the efforts of many contractors, elements of the Department of Defense, and other agencies of the government and foreign nations. He also performed as a program manager of a major support system. The test squadron under his direction attained operational readiness with a zero accident rate and an outstanding rating on the aerospace safety survey. In conjunction with other major operational systems, he managed and exercised operational control of widely diversified test activities.

Upon his retirement, Colonel Hartley was awarded the Distinguished Service Medal. He died on 16 February 1992.

Dr. Robert J. Hermann

**Director of the National Reconnaissance Office,
8 October 1979 – 2 August 1981**



Robert Jay Hermann was born on 6 April 1933 in Sheidahl, Iowa. He received a Bachelor of Science degree in Electrical Engineering in 1954, a Master of Science in Electrical Engineering in 1959, and a Doctorate of Science in 1963, all from the Iowa State University in Ames, Iowa. He was a first lieutenant in the U.S. Air Force between 1955 and 1957.

Following sixteen years of work on programs that are still classified, Hermann spent from 1973 until 1975 as the deputy director of research and engineering at the National Security Agency (NSA), Fort George G. Meade, Maryland. Here he helped shape NSA's expanding role

in space reconnaissance. On leaving that organization in 1975, he became special assistant to the Supreme Allied Commander, Supreme Headquarters Allied Powers Europe (SHAPE) in Casteau, Belgium, a position he held until 1977. Returning to the United States, Hermann was appointed deputy under secretary of defense for research and engineering, before taking on similar duties as assistant secretary of the Air Force for research, development, and logistics between 1979 and 1981. In the latter post, Hermann also served concurrently as director of the National Reconnaissance Office between 8 October 1979 and 2 August 1981. During his tenure, he advocated broadening the NRO's support to tactical military customers through establishment of the Defense Reconnaissance Support Program in the Office of Joint Chiefs of Staff. For his significant contributions to national defense, Hermann received the Air Force Distinguished Service Medal in 1980.

Following his service at the National Reconnaissance Office, Hermann remained the assistant secretary of the Air Force for research, development and logistics, before becoming special assistant for intelligence to the under secretary of defense for research and engineering. He retired from government service in 1982. At that time he returned to private industry where he served as vice president for systems technology of United Technologies, Incorporated, of Advanced Systems Defense and Space Group, and of Ultra Systems, Incorporated. Hermann continued to serve as a consultant to the Department of Defense, the Naval Studies Board, the Department of Commerce, and the National Institute of Standards and Technology. He also serves on the board of directors of the Charles Stark Draper Laboratory of the American National Standards Institute. Hermann is a member of the National Academy of Engineers, the American Institute of Aeronautics and Astronautics, and the Armed Forces Communications and Electronics Association, and the Security Affairs Support Association.

Mr. Jimmie D. Hill

**Staff Director, National Reconnaissance Office,
12 June 1978 – 9 April 1982**

**Deputy Director of the National Reconnaissance Office,
11 April 1982 – 26 February 1996**



Born on 28 December 1933 in Fort Worth, Texas, Jimmie Dale Hill enlisted in the U.S. Air Force in 1951 and after receiving a commission through Officer Candidate School in 1960, rose through the ranks to major by 1974. He also studied business and mathematics at Del Mar College between 1955 and 1957, business at the University of Oklahoma between 1957 and

1958, mathematics at San Antonio College between 1960 and 1961, and accounting at the University of Wichita between 1963 and 1964.

Prior to being commissioned in the U.S. Air Force, Hill served as an aircraft mechanic and as a training non-commissioned officer. After completing Officer Candidate School he became involved in a variety of comptroller activities related to Air Force weapon systems acquisition through 1966. During the next five years, he was assigned to the Secretary of the Air Force's Special Projects Office in El Segundo, California, which comprised Program A of the National Reconnaissance Office. In 1971, he transferred to the Office of the Under Secretary of the Air Force and the National Reconnaissance Office in Washington, D.C., for duty with Program B, the Central Intelligence Agency's element of the National Reconnaissance Program. In 1973, he was reassigned from Program B to the NRO director's staff, where he remained until his retirement from the U.S. Air Force in February 1974.

On separating from the Air Force, Hill was appointed comptroller of the National Reconnaissance Office and special assistant to the under secretary of the Air Force, as an Air Force civilian. In 1978 he was named director, Office of Space Systems, Office of the Secretary of the Air Force, an assignment that also made him staff director of the National Reconnaissance Office. He became the deputy director of the National Reconnaissance Office and deputy under secretary of the Air Force for space on 11 April 1982, positions he retained until he retired from government service on 26 February 1996.

Beginning in 1967, Hill served a total of twenty-nine years at the National Reconnaissance Office at all levels, fourteen of them as deputy director. During this time he participated in the decisions for all new NRO overhead reconnaissance systems. At the end of the Cold War, Hill was instrumental in the restructuring of the National Reconnaissance Office that replaced the separate program elements with functional directorates, and collocating them in a new headquarters facility.

Jimmie Hill's Air Force awards include the Legion of Merit, the Meritorious Service Medal, and the Commendation Medal with three oak leaf clusters. As a member of the Air Force senior executive service, he was selected to receive the Presidential Rank Award of Distinguished Executive in 1981 and 1991. He also received the Presidential Rank Award of Meritorious Executive in 1980 and 1988. Hill received the Department of Defense Distinguished Civilian Service Award in 1977, 1981, 1987, and 1996, and the Air Force Exceptional Civilian Service Award in 1988 and 1996. He has also received the National Intelligence Distinguished

Service Medal, the Central Intelligence Agency Distinguished Intelligence Medal, the NASA Distinguished Service Medal, the Defense Intelligence Agency Director's Award, the NRO Distinguished Service Medal, and the National Security Agency Bronze Medal. In 1996 Hill was selected to receive the Goddard Memorial Trophy by the National Space Club. In 1998 he received the Goddard Astronautics Award from the American Institute of Aeronautics and Astronautics.

Mr. R. Evans Hineman

**Director of Program B, National Reconnaissance Office,
3 July 1982 – 28 August 1989**



Born on 29 June 1934 in Claymont, Delaware, Richard Evans “Evan” Hineman graduated in 1956 with a Bachelor of Science in Mechanical Engineering from Lafayette College in Easton, Pennsylvania, and worked briefly for Pratt and Whitney Aircraft Company. He entered the U.S. Army in 1956 as a second lieutenant, serving at Aberdeen Proving Ground, Maryland, as a technical intelligence officer in the Ordnance Corps. Upon leaving active duty in 1958, he joined the Ordnance Technical Intelligence Agency, where he worked as an intelligence

analyst specializing in Soviet guided missile and space programs. In 1962 he joined the U.S. Army Foreign Science Technology Center as an aerospace engineer.

In 1964 Hineman joined the Central Intelligence Agency as a physical scientist leading trajectory analysis efforts in the newly formed Foreign Missile and Space Analysis Center (FMSAC). In 1967 he became chief of the Systems Division, FMSAC, holding that position until 1973, when he was promoted to deputy director of the Office of Weapons Intelligence. In addition, Hineman was appointed chairman of the Guided Missiles and Aeronautics Committee (GMAIC) where he oversaw Intelligence Community missile and space analysis activities for Directors of Central Intelligence (DCI) Richard M. Helms, James R. Schlesinger, and William E. Colby. In 1976 Hineman became the director of weapons intelligence, and shortly thereafter DCI George H. W. Bush appointed him chairman of the director's Weapons and Space System Intelligence Committee, a successor of GMAIC. From 1979 until 1982 Hineman served as the associate deputy director of intelligence and in that position assisted in the management of all of the Central Intelligence Agency's analytic and intelligence production activities.

Hineman was appointed the CIA's deputy director for Science and Technology and director of Program B in the National Reconnaissance Program on 3 July 1982, serving in that position until September 1989. As the deputy director of the Directorate of Science and Technology, he also was responsible for the management of an organization engaged in research, development, engineering, and operations of various intelligence collection and information processing systems, and for advising the DCI on scientific and technical matters.

Following his retirement after thirty-three years of government service in September 1989, Hineman became vice president for intelligence, Information Systems Group, at Litton Industries. Previously he had served as president of Litton/TASC and in various other leadership positions in TASC, supporting customers in the Intelligence Community and other government entities. On the occasion of the Central Intelligence Agency's fiftieth anniversary, Hineman received one of fifty Trailblazer Awards for his service. He holds the CIA Distinguished Intelligence Medal, the National Reconnaissance Office Distinguished Service Medal, and two National Intelligence Distinguished Service Medals.

Brigadier General Ralph H. Jacobson, USAF

**Director of Program A, National Reconnaissance Office,
20 January 1983 – 19 February 1987**



Ralph Henry Jacobson was born on 31 December 1931 in Salt Lake City and grew up in nearby Bountiful, Utah. He attended the University of Utah until 1952, when he entered the U.S. Naval Academy, graduating with a bachelor of science degree with the class of 1956. Shortly after receiving his wings, in August 1957, he joined the 778th Troop Carrier Squadron at Pope Air Force Base, North Carolina, as a C-119 and C-123 pilot. He entered the aeronautical engineering course at the Air Force Institute of Technology in September 1960, and, following his graduation with a Master of Science degree in Astronautics in August 1962, he was assigned

to the Air Force Ballistics Systems Division at Norton Air Force Base, California, as a project officer for the inertial guidance system used in the Titan II intercontinental ballistic missile.

From July 1965 until July 1966 Jacobson attended the Air Command and Staff College at Maxwell Air Force Base in Alabama, and then earned a second Master of Science degree in Business Administration from The George Washington University in Washington, D.C. He then served for three years in the Directorate of Plans at U.S. Air Force headquarters in Washington, D.C. Jacobson volunteered for combat service in Southeast Asia, and, from July 1969 to July 1970, was assigned as wing operations officer with the 14th Special Operations Wing at Nha Trang Air Base, Republic of South Vietnam, where he flew 299 sorties in UC-123K's.

Following combat service in Vietnam, Jacobson was assigned to the Secretary of the Air Force Special Projects Office (SAF/SP), National Reconnaissance Office Program A, in El Segundo, California. He served successively as a research and development project officer, division chief, and deputy director for research. Following graduation from the Industrial College of the Armed Forces in 1974, and the Naval War College in 1976, he returned to the west coast as commander of the Air Force Satellite Control Facility in Sunnyvale, California. In March 1979 he was assigned to the Office of the Deputy Chief of Staff for Research, Development, and Acquisition at Air Force headquarters in Washington, D.C., initially as assistant deputy chief of staff for space shuttle development and operations. In June 1980, promoted to brigadier general, he was named director of space systems and command, control, and communications.

On 20 January 1983 Jacobson was appointed director of the Secretary of the Air Force Special Projects Office, NRO Program A, and as assistant deputy commander of the Air Force Space Division, El Segundo, California. He was promoted to major general in April 1983. He remained director of the NRO's Program A until 19 February 1987 and retired from active military duty on 28 February of that year.

In retirement, Jacobson served as president and chief executive officer of the Charles Stark Draper Laboratory in Cambridge, Massachusetts. His military awards and decorations include the Defense Department, National Intelligence Community, and Air Force Distinguished Service Medals, the Legion of Merit with one oak leaf cluster, the Distinguished Flying Cross, the Air Medal with two oak leaf clusters, the Joint Service Commendation Medal, and the Air Force Commendation Medal with two oak leaf clusters.

Mr. Eugene P. Kiefer

**Deputy Director of the National Reconnaissance Office,
2 July 1963 – 18 February 1965**



Eugene Peter Kiefer was born on 28 May 1918 in Buffalo, New York. He earned a bachelor of science degree at Notre Dame University in 1940 and studied at the University of Dayton in 1940 and 1941. From July 1940 through December 1951 Keifer served in the U.S. Air Force at Wright-Patterson Air Force Base, Ohio, as an aeronautical engineer. Beginning in January 1952 he served as development executive officer to Col. Bernard A. Schriever, the deputy chief of staff, Office for Development Planning, where he worked closely with Col. Richard S. Leghorn in the preparation of Air Force development planning objectives for

intelligence and reconnaissance. Leaving military service in 1955, Kiefer became a senior associate manager at the Planning Research Corporation, while he completed a Master of Business Administration degree at The American University in Washington, D.C.

In May 1958 Keifer joined the Central Intelligence Agency as a special assistant for technical analysis, first to the chief, Development Projects Division, and then to Deputy Director (Plans) Richard M. Bissell, Jr., whom he had come to know earlier at the inception of the U-2 aerial reconnaissance project in 1955. He subsequently served in the newly formed Directorate of Science and Technology, and as the first deputy director of the National Reconnaissance Office between 2 July 1963 and 18 February 1965. During his tenure as deputy director, Kiefer attempted to mediate the differences that existed at that time between the Department of Defense and the Central Intelligence Agency over the National Reconnaissance Program and the authority of the National Reconnaissance Office that managed it. Kiefer left government service in February 1965 and was employed as a senior official with the E-Systems Division of Raytheon Corporation. He died on 17 June 1998.

Mr. David A. Kier

**Deputy Director of the National Reconnaissance Office,
31 May 1997 – 9 August 2001**



David Allen Kier is a native of Pittsburgh, Pennsylvania, where he was born on 15 February 1943. He received a Bachelor of Science degree in Physics from Washington and Jefferson College in 1964. After a tour in the U.S. Army, Kier joined the National Aeronautics and Space Administration (NASA) Flight Research Center at Edwards Air Force Base, California, in 1966 as a flight test engineer. He provided technical support to a variety of flight research programs such as the X-15, XB-70, various Lifting Bodies, and the F-111 fighter-bomber. In 1970 NASA detailed Kier to the Prototype Program Office at Wright-Patterson Air

Force Base, which was responsible for the streamlined acquisition of the Light Weight Fighters, the YF-16 and YF-17, and the Advanced Medium STOL Transport, the YC-14 and the YC-15.

After graduate work at the University of Southern California in aerospace systems engineering between 1967 and 1973, Kier was selected for the government's Executive Leadership Development Program. This one-year program involved special training and rotational assignments to the Science and Technology Committee of the U.S. House of Representatives, National Aeronautics and Space Administration headquarters, and the Department of Commerce. At the conclusion of the program in 1974 he accepted a position at NASA headquarters as the program manager for the High-Speed Vehicles Program, Office of Aeronautics and Space Technology. While serving in this position, he attended the National War College in 1977 and 1978.

In 1981 Kier joined the Central Intelligence Agency's Office of Development and Engineering in the Directorate of Science and Technology. Here he managed several large budget intelligence programs through May 1994, when he accepted a rotational assignment to the U.S. Navy. In March 1996 he was named technical director at the National Reconnaissance Office, providing oversight and technical direction for all NRO programs. A year later, on 31 May 1997, Kier assumed the position of deputy director, National Reconnaissance Office, and principal deputy assistant secretary of the Air Force for space. He served in this position until his retirement from government service on 9 August 2001.

Brigadier General William G. King, Jr., USAF

**Director of Program A, National Reconnaissance Office,
1 August 1969 – 31 March 1971**



William Gregg King, Jr., was born in Topeka, Kansas, on 14 December 1918. He attended Kansas State University where, in 1937, he entered the Reserve Officer Training Corps (ROTC) and later received his commission as a second lieutenant in the Coastal Artillery Corps in 1941. The Second World War interrupted his education and he spent 39 months in the Pacific Theater as an antiaircraft artillery officer participating in operations on Guam, in the Philippine Islands, and on Okinawa. Returning to Kansas State University after the war, he completed a Bachelor of Science degree in Engineering in January 1946.

King accepted a regular commission and returned to active military duty in 1947 as a member of the U.S. Army Corps of Engineers, joining the U.S. Air Force after its formation that same year. After additional training, he was assigned to the newly formed Joint Long Range Proving Center at Patrick Air Force Base in Florida in 1950. In this assignment he participated in the initial exploration and surveys of the islands that became the downrange stations of the Eastern Test Range at Cape Canaveral. After completing a Master of Business Administration degree at the University of Chicago in 1955, King was assigned to the Air Research and Development Command at Wright-Patterson Air Force Base as a weapons system project officer for the SNARK Intercontinental Missile Program and the WS-117L (SAMOS) satellite reconnaissance system. In July 1959 King began a series of assignments with the Air Force Space Systems Division (later the Space and Missile Systems Organization). He served first in the SAMOS Program Office, which became the NRO Office of Special Projects in 1961. Between 1962 and 1966 he served as deputy director of the Office of Special Projects. In September 1966 he was named commander of the Air Force Satellite Control Facility in Sunnyvale, California. A year later he moved to Andrews Air Force Base in Maryland as assistant deputy chief of staff for operations, Air Force Systems Command.

Promoted to brigadier general in 1968, King returned to the west coast in January 1969 as assistant to the director, Office of Special Projects, National Reconnaissance Office Program A. He was named director a few months later in July. Brigadier General King remained as the Program A director until 31 March 1971 when he retired from active duty.

Brigadier General King's military decorations include the Distinguished Service Medal, the Legion of Merit with one oak leaf cluster, the Bronze Star Medal, and the Air Force Commendation Medal with one oak leaf cluster. In 1989 and 1997 he received honors as a space pioneer from the Smithsonian Institution and the U.S. Air Force Space Command.

Brigadier General John E. Kulpa, Jr., USAF

**Staff Director, National Reconnaissance Office,
8 January 1973 – 30 September 1974**

**Director of Program A, National Reconnaissance Office,
1 August 1975 – 19 January 1983**



John Edward Kulpa, Jr., was born on 11 May 1929 in Newark, New Jersey. He entered the U.S. Military Academy in 1946 and graduated with a bachelor of science degree with the class of 1950. After receiving navigator wings in September 1951, Kulpa was assigned to the Strategic Air Command's 343rd Strategic Reconnaissance Squadron at Ramey Air Force Base, Puerto Rico, and in March 1952 was sent to Yokota Air Base, Japan, on temporary duty, where

he completed a Korean War combat tour. In November 1952 he returned to the 343rd Strategic Reconnaissance Squadron, and in March 1954 was assigned to the 55th Strategic Reconnaissance Wing at the Royal Air Force bases at Mildenhall and Lakenheath in England. Upon his return to the United States in late 1954, he joined the 4024th Bombardment Squadron and later the 97th Bombardment Wing at Biggs Air Force Base, Texas.

After completing a master of science degree at the Air Force Institute of Technology at Wright-Patterson Air Force Base in August 1957, Kulpa was assigned to the Wright Air Development Center as a project engineer for propulsion and flight-testing in the Snark Project Office and later the GAM-77 Hound Dog Project Office. From August 1962 until July 1963, Kulpa attended the Air Command and Staff College, and was then assigned to the Secretary of the Air Force Special Projects Office (SAF/SP) in El Segundo, California, as a project manager. In February 1965 he was named director of the Defense Meteorological Satellite Program. In August 1969, following graduation from the National War College, Kulpa became commander and director of the Air Force Avionics Laboratory at Wright-Patterson Air Force Base, before serving, between August 1971 and August 1972, as the deputy for engineering at the Aeronautical Systems Division, also at Wright-Patterson Air Force Base.

Promoted to brigadier general in 1973, Kulpa was assigned to the Office of the Secretary of the Air Force, Office of Space Systems, where he served as the staff director of the National Reconnaissance Office from 8 January 1973 until 30 September 1974. He then was appointed principal deputy for plans to the deputy director of the Central Intelligence Agency where he remained until 1 August 1975, when he was named director of the Secretary of the Air Force Special Projects Office (SAF/SP), National Reconnaissance Office Program A, with additional duty as deputy commander of the Air Force Space and Missile Systems Organization in El Segundo, California. He served in this capacity until 19 January 1983 and retired shortly thereafter on 1 April 1983.

After retirement, Major General Kulpa served as chairman of the board of trustees of the Environmental Research Institute of Michigan. His military decorations and awards include the Distinguished Service Medal with one oak leaf cluster, the Legion of Merit with one oak leaf cluster, the Distinguished Flying Cross, the Air Medal, the Air Force Commendation Medal with one oak leaf cluster, and the Distinguished Unit Citation emblem.

Brigadier General Robert E. Larned, USAF

**Director of SIGINT Systems, Acquisitions, and Operations Directorate,
National Reconnaissance Office,
15 August 1996 - 31 October 1996**

**Director of IMINT Systems, Acquisitions, and Operations Directorate,
National Reconnaissance Office,
1 November 1996 - 29 November 1998**



Robert Eric Larned was born in Portland, Oregon, on 28 July 1946. He attended the University of Washington at Seattle where he earned a Bachelor of Science in Electrical Engineering in 1968. He entered the U.S. Air Force as a second lieutenant through Officer

Training School that same year, and was assigned as a development engineer on the Minuteman reentry vehicle heat shield, as an Air Force plant representative on the Minuteman Advanced Ballistic Re-entry Systems Program, and then as the commander's aide with the U.S. Air Force Contract Management Division in Stratford, Connecticut, Wilmington, Massachusetts, and Los Angeles, California. These assignments were followed by a three-year tour, between September 1973 and August 1976, at the Air Force Weapons Laboratory at Kirtland Air Force Base in New Mexico, where Larned worked as both a technical programs manager and as a project officer improving the survivability of Air Force nuclear command, control, and communications systems. During these years, 1972, 1973, and 1977 respectively, Larned completed Squadron Officer School at Maxwell Air Force Base in Alabama, earned a Master of Science in Business Administration at the University of Southern California in Los Angeles, and completed studies at the Air Command and Staff College.

In June 1977 Larned began a five-year series of assignments in the Washington, D.C., area, lasting until June 1983, when he completed studies at the Industrial College of the Armed Forces. Larned served for two years as a congressional activity specialist with the deputy chief of staff for research and development, before working as the executive officer to the secretary of the Air Force and then as the assistant for the Defense Space Operations Committee in the Office of the Secretary of the Air Force. He then became the deputy for program control at the Defense Support Project Office in the Office of the Secretary of Defense and in this position he wrote the first congressional budget justification book for the new Defense Reconnaissance Support Program.

Moving to Colorado Springs, Colorado, in 1983, now Lieutenant Colonel Larned became the plans and programs officer at the North American Aerospace Defense Command and at U.S. Air Force Space Command, before moving once again in June 1985 to take a post with the Office of Special Projects in Los Angeles. While at the Air Force Space Command, he co-authored the Air Force's innovation task force concept for information warfare. Two years later, in 1987, then Colonel Larned returned to Washington, D.C., as the director of programming with the Office of Space Systems, before once again returning to Los Angeles, this time as the vice director of the Office of Special Projects.

Larned served as vice commander of the 50th Space Wing at Falcon Air Force Base in Colorado, for two years between June 1991 and June 1993, then as deputy director of operations at Air Force Space Command. Following these assignments and his promotion to the rank of

brigadier general on 15 July 1994, Larned commanded the 341st Missile Wing at Malmstrom Air Force Base, Montana. In 1995, while in command of the 341st Missile Wing, the "First Aces" won the Blanchard Trophy as the best missile wing in the U.S. Air Force.

In September 1995, Brigadier General Larned became the director of space programs with the Office of the Assistant Secretary of the Air Force for Acquisition in Washington, D.C., and, one year later, on 15 August 1996, began service as the director of the National Reconnaissance Office SIGINT Systems Acquisition and Operations Directorate. Staying within the National Reconnaissance Office, Larned next became the director of IMINT Systems Acquisition and Operations Directorate on 1 November 1996, serving in that position until 29 November 1998. As IMINT director, Larned was responsible to the assistant secretary of the Air Force for space, or the director of the National Reconnaissance Office, for acquiring, operating, and directing space activities for national space systems supporting the Department of Defense and the Intelligence Community. Concurrently with his NRO duties, Larned served as the director, Office of Special Projects, U.S. Air Force. Brigadier General Larned retired from active military duty on 1 March 1999.

Following his retirement from military service, Larned became a senior vice president and director of the Decision Technologies Division of GRC International in Vienna, Virginia.

In addition to wearing the Master Space Badge and the Basic Missile Operator's Badge, Brigadier General Larned's military awards and decorations include the Defense Superior Service Medal, the Legion of Merit, the Defense Meritorious Service Medal with three oak leaf clusters, the Meritorious Service Medal, and the Air Force Commendation Medal with oak leaf cluster.

Mr. John A. Lauder

**Deputy Director for National Support, National Reconnaissance Office,
22 March 2001 - Present**



John Allfree Lauder was born on 31 August 1946 in Sandusky, Ohio. He received his bachelor of arts degree, summa cum laude, from Hiram College in Hiram, Ohio, in June 1968, and a Master of Arts in International Relations from Yale University in December 1973. He has also attended courses at the University of Edinburgh in the United Kingdom and at the John F. Kennedy School of Government at Harvard University.

Upon completing his undergraduate education, Lauder served in the U.S. Army, between May 1969 and January 1972, as a sergeant stationed at Fort Bragg, North Carolina. Upon his

return to civilian life, he served for six months on the staff of the Committee on Standards of Official Conduct of the U.S. House of Representatives in Washington, D.C.

Lauder joined the Central Intelligence Agency in 1974 through the Career Training Program. His first agency posting was in the former Office of Strategic Research, where he conducted analyses on Soviet and, later, Middle Eastern military and conventional arms control issues. He subsequently served as an assistant national intelligence officer for the Near East and South Asia, and in other management positions overseeing aspects of Near Eastern, South Asian, and European analysis. In 1985 he was named chief of the European Assessments Division in the Office of Soviet Affairs. Lauder served for nearly four years in Vienna, Austria, between August 1987 and June 1991, as a senior adviser to several U.S. delegations negotiating various conventional arms control issues between the Warsaw Pact and the North Atlantic Treaty Organization. During this time, among other duties, he helped oversee the preparation of the verification protocol for the Treaty on Continental Forces in Europe.

Upon his return to the Central Intelligence Agency, Mr. Lauder served as the deputy chief for intelligence in the director's Counter-terrorist Center, before becoming the executive secretary to the DCI. Between April 1994 and November 1997, Lauder was special assistant to the DCI for arms control and also served as the director of the DCI's Arms Control Intelligence Staff. Following service in these posts, Lauder served as the DCI's special assistant for nonproliferation, as the Intelligence Community's and the CIA's issue manager for nonproliferation, and as director of the DCI's Nonproliferation Center.

On 26 March 2001, Lauder joined the National Reconnaissance Office as the deputy director for the office of National Support. He also serves concurrently as the associate head of the National Reconnaissance Office Corporate Support Career Service, which manages the careers, development, and evaluation of non-engineering Central Intelligence Agency employees assigned to the NRO.

Lauder is the recipient of the Distinguished Intelligence Medal for his work in leading the Arms Control Intelligence Community during a time of extraordinary change and challenge.

Brigadier General Jack C. Ledford, USAF

**Director of Program B, National Reconnaissance Office,
12 August 1963 – 27 September 1965**



Jack Clarence Ledford was born on 1 September 1920 in Blairsville, Georgia. He graduated from Massanutten Military Academy, Woodstock, Virginia, in 1938, and attended The Ohio State University, majoring in physics. In 1940 he entered the U.S. Army Air Corps Aviation Cadet Program, graduated in October 1941, and was assigned as a flight instructor at Goodfellow Field, Texas, prior to entering B-24 Liberator transition training. Six months later he became one of the first B-29 Superfortress pilots when he joined the 45th Bombardment Squadron of the 40th Bombardment Group. Sent to India with that group, he flew 21 combat

missions in the Asiatic-Pacific Theater before returning to the United States in May 1945. Ledford then graduated with honors from the U.S. Army Command and General Staff School at Fort Leavenworth, Kansas, and remained as an instructor until June 1946 when he transferred to Tyndall Field, Florida. During this time he returned to attend The Ohio State University and completed a bachelor of science degree in 1949.

Ledford began a series of assignments thereafter, with the Strategic Air Command at Carswell Air Force Base, Texas, with the 7th Bombardment Wing, and as a B-36 bomber instructor pilot and executive officer with the 26th Bombardment Squadron, 11th Bombardment Group. In December 1950 he became the chief of the plans section, director of plans, Eighth Air Force. This duty was followed with assignment as officer in charge of the Nuclear Bomb Commander's School and later the Special Weapons Unit Training Group at Sandia Air Force Base, New Mexico. After a tour as special weapons advisor to the British Royal Air Force in the Federal Republic of Germany, in September 1956, he became the commander of Etain Air Base, France. His final assignment in Europe was as director of materiel, 49th Fighter-Bomber Wing, U.S. Air Forces Europe.

Returning to the United States in August 1958, Ledford was assigned as deputy chief of staff for weapons effects and tests at the Defense Atomic Support Agency headquarters in Washington, D.C. He also attended the Industrial College of the Armed Forces, graduating with distinction in August 1962. During this time he also earned a Master of Business Administration and Management degree from The George Washington University. In September 1962 he was assigned to the 1040th Air Force Field Activity Squadron at Bolling Air Force Base, and to duty with the Central Intelligence Agency. At the CIA in 1963, he was named to succeed Herbert Scoville as director of National Reconnaissance Office Program B, a position in which he served between 12 August 1963 and 27 September 1965. Concurrently, Ledford led the CIA's Office of Special Activities between 4 September 1962 and 6 July 1966.

Following his service at the CIA, Ledford became director of inspection, Norton Air Force Base, California, from August 1966 to July 1968. There, as one of three directors assigned to the office of the Deputy Inspector General for Inspection and Safety, he was responsible for monitoring the combat readiness and management efficiency of the U.S. Air Force. Brigadier General Ledford then assumed command of the 12th Strategic Aerospace Division, Davis-Monthan Air Force Base, Arizona, in July 1968. He retired on 1 October 1970.

A command pilot with more than 8,000 hours of flying time, Brigadier General Ledford has been awarded the Distinguished Service Cross, the Air Force Distinguished Service Medal with one oak leaf cluster, the NRO Distinguished Service Medal, the Legion of Merit, the Air Medal with one oak leaf cluster, the Air Force Commendation Medal with one oak leaf cluster, the Purple Heart, the Distinguished Unit Citation Emblem with two oak leaf clusters, and the Republic of China Cravat Medal of Cloud and Banner.

Brigadier General Nathan J. Lindsay, USAF

**Director of Program A, National Reconnaissance Office,
20 February 1987 – 31 December 1992**



Born on 24 May 1936 in Monroe, Wisconsin, Nathan James Lindsay earned a Bachelor of Science in Mechanical Engineering and a military commission through the Air Force Reserve Officer's Training Corps at the University of Wisconsin in 1958. He entered the U.S. Air Force in January 1959 and, after completing the ammunition officer course at Lowry Air Force Base, served in the Air Force Europe Weapons Center, Wheelus Air Base, Libya, as the base munitions officer. In December 1960 he transferred to Lindsey Air Station, Federal Republic of Germany,

as a staff officer for conventional munitions and logistics at Headquarters, U.S. Air Force Europe.

Lindsay entered advanced courses at the Air Force Institute of Technology in June 1963, while he completed a Master of Science in Mechanical Engineering at the University of Wisconsin. Following graduation from the Institute of Technology in February 1965, he was assigned to the Propulsion Directorate, Titan III System Program Office, Space Systems Division, in El Segundo, California, as a development project officer for large solid rocket boosters. Five years later he was assigned to the Development Division, Air Force Armament Laboratory, Elgin Air Force Base, Florida, as chief of the Guns and Rockets Branch. He graduated from the Armed Forces Staff College in January 1971 and was assigned to Air Force Systems Command headquarters at Andrews Air Force Base, Maryland, as a program management auditor in the Office of the Inspector General. He completed Defense Systems Management School in June 1973.

From July 1973 to August 1978, Lindsay served consecutively as assistant deputy for policy, chief of the Launch Vehicle Integration Division, and deputy director of launch systems integration, Secretary of the Air Force Special Projects Office (SAF/SP), National Reconnaissance Office Program A, in El Segundo, California, while also completing a Master of Science in Systems Management at the University of Southern California. He then transferred to NRO headquarters in Washington, D.C., where he was responsible for space systems policy, plans, and security. In November 1980 he returned to Los Angeles as director of operations support and integration in the Air Force Space Systems Division. In April 1982 he became assistant deputy commander for space operations and, in March 1983, assistant deputy commander for launch and control systems.

In December 1984 he was named commander of the Eastern Space and Missile Center, Patrick Air Force Base, Florida, and was promoted to the rank of brigadier general in April 1986. In June of that year he returned to the west coast as deputy commander of launch and control systems at Air Force Space Systems Division, where he was responsible for acquisition of Air Force launch vehicles, management of Air Force elements of the Space Shuttle Program, and management oversight of the Air Force Satellite Control Network.

Lindsay was designated director, Secretary of the Air Force Special Projects Office, and assistant commander, Headquarters, Space Systems Division, Los Angeles Air Force Base, in February 1987. At the same time he served as the last full-time director of the National

Reconnaissance Office Program A on the west coast between 20 February 1987 and 31 December 1992, when the separate NRO institutional programs were combined into functional directorates. During his tenure he focused on program integration, user satisfaction, launch successes, and new technologies. He retired from military service in 1993, subsequently serving Lockheed Martin Aerospace as vice president of commercial programs at East Windsor, New Jersey, and as vice president of advanced launch systems at Denver, Colorado. Upon retirement from Lockheed Martin, he continued to contribute to space activities as a consultant on space systems management and processes.

Major General Lindsay's awards and decorations include the Defense Distinguished Service Medal, the National Intelligence Medal, the NASA Distinguished Service Medal, the National Geographic Society's General Thomas D. White U.S. Air Force Space Trophy, the American Astronomical Society Military Space Trophy, the Defense Superior Service Medal, the Legion of Merit with oak leaf cluster, the Meritorious Service Medal with oak leaf cluster, the Joint Service Commendation Medal, and the Air Force Commendation Medal with oak leaf cluster.

Rear Admiral Vernon L. Lowrance, USN

**Director of Program C, National Reconnaissance Office,
23 July 1962 – 19 June 1963**



Vernon Long Lowrance was born on 19 April 1909 in Catawba, North Carolina. He entered the U.S. Naval Academy in 1926 and graduated with the class of 1930. He served on both surface ships and submarines until August 1937, when he returned to Annapolis for instruction at the Naval Postgraduate School. He then completed a tour of duty in the Hydrographic Office, Washington, D.C., and a year of service aboard the *USS Bushnell* on survey and mapping duty in the South Pacific.

During World War II Lowrance commanded three submarines, the *USS R-16*, the *USS Kingfish*, and the *USS Seadog*. On seven war patrols in these vessels, Lowrance and his crews destroyed more than 56,000 tons of Imperial Japanese shipping and severely damaged tens of thousands of additional tons. Near the end of the war, and into the immediate postwar years, Lowrance commanded Submarine Divisions 121 and 72. In 1949 he was assigned as reserve coordinator on the staff of the commander, Submarine Force, Atlantic Fleet, before taking command of Submarine Squadron 8.

From 1951 until 1953, Lowrance served as a plans officer on the staff of the commander-in-chief, Atlantic Fleet, before spending nearly a year as a student at the National War College. Then, in July 1954, he assumed command of the cruiser *USS Macon* before returning to Washington, D.C., in September 1956, to serve as the deputy director of naval intelligence for security in the Office of the Chief of Naval Operations. Returning to sea duty in December 1958, Lowrance commanded Cruiser Division 3 and, in December 1959, assumed command of the Training Command, U.S. Pacific Fleet.

In September 1960 Rear Admiral Lowrance was designated assistant chief of naval operations for intelligence and director of naval intelligence. While in this position he also served as the first director of National Reconnaissance Office Program C, between 23 July 1962 and 19 June 1963. During this crucial time in the nation's history, as the U.S. Navy developed its first sea-based missile systems, Rear Admiral Lowrance directed development of a Navy signals intelligence satellite system and significant advances in antisubmarine warfare weapons systems. Following service with the NRO, he reported for duty as the deputy commander, Submarine Force, U.S. Atlantic Fleet and took command of that unit the following year. He held this position until 19 November 1966 when he became the deputy director of the Defense Intelligence Agency, a post he held until his retirement on 1 November 1969. He died on 12 May 1995.

During his career, Vice Admiral Lowrance received the Navy Cross, the Distinguished Service Medal with gold star, the Silver Star Medal with two gold stars, and the Bronze Star Medal with gold star and combat "V," in addition to several other campaign and service medals.

Mr. Brian A. Malone

**Director, Management Services & Operations Office,
National Reconnaissance Office,
16 July 2001 – Present**



Brian Andrew Malone was born in Washington, D.C., on 31 August 1958. A third generation Central Intelligence Agency employee, he was raised in Annandale, Virginia, and joined the CIA in April 1977 as a cooperative education student. He earned a Bachelor of Arts in Management from the Georgia Institute of Technology in June 1981, and six years later completed a Master of Arts in Public Administration at The George Washington University in Washington, D.C.

Mr. Malone began full-time duty with the Central Intelligence Agency in July 1981 as a contracting officer in the Office of Logistics. In February 1983 he was assigned to the Directorate of Intelligence, as a contracting officer, where he remained until March 1985 when he was reassigned to the National Reconnaissance Office. Here he supported a large-scale competitive systems acquisition program. In June 1988 Malone was assigned to the National Photographic Interpretation Center as chief of the contracts staff and, in October 1990, was reassigned to the Procurement Management Staff where he was responsible for CIA procurement policy, personnel, and training. In September 1991, he was selected for a rotational assignment to the CIA's Directorate of Administration, Management Staff, where he was responsible for budget formulation and implementation.

On 13 June 1993, Malone was reassigned to the National Reconnaissance Office where he spent two and one half years as the deputy chief of support. He was then assigned as the chief of acquisition management within the Office of Finance and Logistics at the Central Intelligence Agency. Malone returned once more to the National Reconnaissance Office on 3 January 1997, where he assumed duties as the director of the Office of Contracts. On 16 July 2001 he assumed duties as the second director of the National Reconnaissance Office Management Services and Operations Office. Mr. Malone is a recipient of the NRO Director's Circle Award and has had his career accomplishments recognized with the award of the NRO Gold Medal for Distinguished Service.

Rear Admiral Daniel P. March, USN

**Deputy Director for Military Support, National Reconnaissance Office,
9 March 1992 – 31 March 1994**



Daniel Peter March was born in La Jolla, California, on 7 August 1939. Raised in California, Texas, and Florida, he entered the U.S. Naval Academy in July 1957 and graduated with a Bachelor of Science in Naval Science with the class of 1961. March trained as a naval aviator at the Pensacola Naval Air Station in Florida, earning his wings in May 1962, before beginning a five-year series of assignments with training and attack squadrons (during his career he would serve with Training Squadrons 2 and 30, Fighter Antisubmarine Squadron 1, and Attack Squadrons 27, 66, 122, 125, 152, 165, and 174). Following a shore assignment and

attendance at the Naval Post Graduate School in Monterrey, California, where he earned a Master of Science in Financial Management in December 1969, then Lieutenant Commander March continued his service as a pilot in attack squadrons, flying one hundred sixty-seven combat missions in A-1H, A-4B, and A-7E aircraft aboard the *USS Coral Sea* and the *USS Enterprise* in Southeast Asia during the Vietnam War.

Between November 1974 and March 1976, Commander March lead Attack Squadron 66 aboard the *USS Independence*, and, following a further shore assignment, took command of Carrier Air Wing One aboard the *USS John F. Kennedy* between June 1978 and April 1980. Between April 1981 and December 1982, Captain March served as the commanding officer aboard the *USS Ponce*, and between March 1984 and December 1985, as the commanding officer of the aircraft carrier *USS Forrestal*.

In addition to his multiple sea and combat commands, March served in various shore assignments including two tours at the Navy Bureau of Personnel, from December 1966 to December 1968 and from March 1976 to June 1978, respectively. In these assignments, he was the aviation lieutenant and below shore assignment officer, then financial assistant, and finally the executive assistant to the assistant chief of naval personnel for officer development and distribution. March also served in the Strategic Plans and Policy Division of the Chief of Naval Operations' staff as tactical Air Forces objectives plans officer between July 1972 and April 1973. Additionally, he served as deputy chief of staff, Commander Operational Test and Evaluation Force, between December 1982 and March 1984, and as assistant chief of staff for operations, commander-in-chief, U.S. Pacific Fleet, between December 1985 and June 1987. Following his promotion to rear admiral (lower half) in June 1987, he next served in a shore assignment as the director of the Programs Resources Appraisal Division, Office of the Chief of Naval Operations.

An experienced naval officer with a varied combat and administrative background, March returned to sea duty in January 1989 as the commander of Carrier Group Three, a post he held until June 1990 when he then took command of Carrier Group Five. While serving with Carrier Group Five, on 1 February 1991, March was promoted to rear admiral. During this period, March commanded Task Force 154 in the Persian Gulf for Operations Desert Shield and Desert Storm, leading the largest carrier force deployed since World War II. Following his assignment as the deputy director of space and electronic warfare with the Office of the Chief of Naval Operations, between January and March 1992, Rear Admiral March served as the deputy

director for operations, National Systems Support, J-3, also known as the deputy director for office of Military Support at the National Reconnaissance Office. He held this position at the National Reconnaissance Office until 31 March 1994.

After retiring on 1 April 1994, March joined Booz, Allen & Hamilton. Following his second retirement in January 2001, he remained active as an independent consultant. Rear Admiral March's military decorations and awards include the Defense Distinguished Service Medal, the National Intelligence Community Distinguished Service Medal, the Distinguished Service Medal, the Legion of Merit with four gold stars, the Distinguished Flying Cross, the Meritorious Service Medal with one gold star, the Air Medal with Numeral "14," the Navy Commendation Medal with combat "V" and one gold star, the Navy Unit Commendation with one bronze star, a Meritorious Unit Commendation, the National Defense Service Medal with one bronze star, the Armed Forces Expeditionary Medal with one bronze star, the Vietnam Service Medal with three bronze stars, the Southwest Asia Campaign Medal with one bronze star, the Sea Service Deployment Ribbon with three bronze stars, the Republic of Vietnam Cross of Gallantry, the Republic of Vietnam Gallantry Cross Unit Citation, and the Republic of Vietnam Campaign Medal.

Dr. Hans M. Mark

**Director of the National Reconnaissance Office,
3 August 1977 – 8 October 1979**



Hans Michael Mark was born in Mannheim, Germany, on 17 June 1929. He immigrated to the United States in 1940 and became a naturalized citizen in 1945. Educated at the University of California, Berkeley, he received a Bachelor of Arts in Physics in 1951, and a doctorate of philosophy from the Massachusetts Institute of Technology in 1954. From 1954 to 1955, he served as acting head of the Massachusetts Institute of Technology's Neutron Physics Group.

From 1955 until 1969, Mark was associated with the University of California at Berkeley and at Livermore, California. He served as a professor of nuclear engineering and as department

chairman at the University of California in Berkeley, and as a research scientist and division leader at the Lawrence Livermore National Laboratory. Mark led research groups working in nuclear and atomic physics and also contributed to astrophysics and to programs developing instrumentation used in the testing of nuclear weapons.

Appointed the director of the National Aeronautics and Space Administration Ames Research Center in Mountain View, California, in 1969, Mark served in this capacity until 1977. During his term as director, Mark was responsible for initiating the Bell XV-15 Experimental Tilt Rotor Aircraft Program that led to the later development of the V-22 "Osprey" tilt rotor transport aircraft. While at Ames, he also supervised the management of the Pioneer Planetary Exploration Program, and, in 1975 and 1976, served as a member of the President's Advisory Group on Science and Technology. He also lectured in the Department of Applied Science at the University of California, Davis, and served as a professor of engineering at Stanford University.

Moving to Washington, D.C., in 1977, Mark entered full-time government service in August of that year as under secretary of the Air Force and, concurrently, director of the National Reconnaissance Office, positions he held until 8 October 1979. During his tenure he was an advocate of reusable launch vehicles and supervised major upgrades to existing satellite systems, while beginning a second major NRO expansion in budget and personnel. In April 1979 President Jimmy Carter appointed Mark secretary of the Air Force, a position he held until February 1981. As secretary, Mark helped create the Air Force Space Command. After leaving the Air Force, he was appointed deputy administrator, National Aeronautics and Space Administration, where he served from 1981 until 1984.

Mark became chancellor of the University of Texas System in 1984, serving in this capacity until 1992. He is currently a professor of aerospace engineering and engineering mechanics at the University of Texas at Austin, on leave-of-absence from the university. Between July 1998 and February 2001, Mark was director of defense research and engineering in the Department of Defense. In this position he was the chief technical advisor to the secretary of defense and the under secretary of defense for acquisition, technology, and logistics on defense research, development, testing, and evaluation.

Recognized as a public servant, educator, physicist, and engineer, Mark also worked with the Institute of Defense Analyses from 1958 until 1961, the National Science Foundation from 1966 until 1969, the Air Force Scientific Advisory Board from 1969 until 1976, the President's Advisory Group on Science and Technology between 1975 and 1976, and the Defense Science

Board from 1975. He has served on the board of directors of the MITRE Corporation, BDM International, Astronautics Corporation of America, MAC Equipment Company, and Texas Biotech Corporation.

Mark is the author or co-author of more than 190 scholarly articles and numerous books including *Experiments in Modern Physics*, *The Management of Research Institutions*, *Power and Security*, *The Space Station: A Personal Journey*, and *Adventures in Celestial Mechanics*. He holds four honorary doctorates and has received numerous awards including the Distinguished Service Medal from NASA, given on two occasions, the Department of Defense Distinguished Public Service Medal, the Air Force Exceptional Civilian Service Award, and the NASA Exceptional Scientific Achievement and Exceptional Engineering Achievement Medals. He was elected to the National Academy of Engineering in 1976 and is a fellow of the American Physical Society, the American Institute of Aeronautics and Astronautics, and the American Association for the Advancement of Science.

Mr. Roger C. Marsh

**Director, Management Services & Operations Office,
National Reconnaissance Office,
15 January 1992 – 16 July 2001**



The first director of the Management Services and Operations Office at the National Reconnaissance Office, Roger Carroll Marsh, was born on 22 December 1945 in Charlottesville, Virginia. Raised and educated in Virginia, Marsh entered the U.S. Army in December 1965 and served in South Carolina, in Maryland, and in the Republic of South Vietnam.

In November 1967 Marsh joined the Central Intelligence Agency and was initially assigned to the Directorate of Intelligence. In 1971, he moved to the Directorate of Science and

Technology (DS&T), Office of Development and Engineering. During the next ten years, he held a series of management positions of increasing responsibility within the directorate. In March 1982, he was assigned as special assistant to the director of the Office of Development and Engineering. During this time, in 1977, he received a Bachelor of Science degree in Business Administration from George Mason University in Fairfax, Virginia.

On 15 January 1992, Marsh was named director of the newly formed Management Services and Operations office at the NRO. As the senior administrative officer, he became responsible for providing all support services, which included facilities development and operations, headquarters security, human and personnel resources, information management, program services, logistics, and employee assistance programs. He retired on 16 July 2001, after nearly thirty-six years of government service.

During his career, Marsh received numerous awards and commendations. Of special significance was the National Reconnaissance Office Gold Medal for Distinguished Service, recognizing his contribution in the consolidation and collocation of NRO headquarters in the Westfields facility in Chantilly, Virginia, between 1992 and 1996. He also received the Central Intelligence Agency's Intelligence Medal of Merit in 1977 for his outstanding service in the development, acquisition, deployment, and operation of a sophisticated space-based technical intelligence collection system.

Brigadier General John L. Martin, Jr., USAF

**Staff Director, National Reconnaissance Office,
14 June 1962 – 2 August 1964**

**Director of Program A, National Reconnaissance Office,
1 July 1965 – 31 July 1969**



John Landrum Martin, Jr., was born near Spartanburg, South Carolina, on 18 October 1920. He studied mechanical engineering at Clemson A&M College from 1937 until July 1940, when he entered the U.S. Army Air Corps as a flying cadet. He received his wings in March 1941. After two years as a flight instructor, and after completing additional training in B-24 Liberator heavy bombers, in April 1943 Martin was assigned to the 444th Bombardment Group,

58th Bombardment Wing, XX Bomber Command, which took the first B-29s Superfortress bombers to the China-Burma-India Theater in April 1944 to begin bombing targets in enemy-occupied territories in Manchuria, China, and the Japanese home islands. He was one of the original B-29 aircraft commanders and was also his squadron's operations officer. He flew fourteen combat missions before returning to the United States in March 1945 to serve as the commander of a B-29 training group.

Following World War II, Martin earned a Bachelor of Science in Aeronautical Engineering from the Polytechnic Institute of Brooklyn in 1948, and a Master of Science in Aeronautical Engineering from the Massachusetts Institute of Technology in 1951. He then served three years as an assistant professor on the faculty of the Air Force Institute of Technology at Wright-Patterson Air Force Base, Ohio. In July 1954 he was assigned to the Wright Air Development Center at that base, where he was chief of the Flight Control Laboratory until reassigned to U.S. Air Force headquarters in Washington, D.C., in July 1958. In the summer of 1960, after serving two years on the Air Staff, he was reassigned to the Office of the Secretary of the Air Force as deputy director of the Office of Missile and Satellite Systems (SAF/MS), led by Under Secretary of the Air Force Dr. Joseph V. Charyk. When SAF/MS became the Office of Space Systems (SAF/SS) and when the Headquarters, National Reconnaissance Office was organized following September 1961, Martin served as the second NRO staff director.

Promoted to the rank of brigadier general in 1963, Martin was reassigned in August 1964 as the vice director, Office of Special Projects (SAF/SP), also known as NRO Program A, in El Segundo, California. On 1 July 1965 Martin was named director of Program A, with additional duty as deputy commander for satellite programs at the Space Systems Division of the Air Force Systems Command (which later became the Air Force Space and Missile Systems Organization). He held these positions until 31 July 1969, when he was assigned to the Air Force Systems Command headquarters at Andrews Air Force Base in Maryland, as assistant to the commander for systems acquisition management. While serving as the director of the National Reconnaissance Office Program A, Martin devised and implemented a special incentive contract structure for satellite projects that is still in use thirty years later, and he introduced important changes in component and system testing and factory-to-pad system of processing satellite payloads and launch vehicles.

Major General Martin retired from the Air Force in 1970 after thirty years of military service. Among his decorations and awards are the Distinguished Service Medal, the Legion of Merit with one oak leaf cluster, the Distinguished Flying Cross with one oak leaf cluster, and the Air Medal with two oak leaf clusters.

Dr. John L. McLucas

**Director of the National Reconnaissance Office,
17 March 1969 – 20 December 1973**



John Luther McLucas was born in Fayetteville, North Carolina, on 22 August 1920. He received a Bachelor of Science in Physics from Davidson College in 1941, and a Master of Science in Physics and Mathematics from Tulane University in 1943. Following military service in the U.S. Navy as a radar, communications, and counterintelligence officer between 1943 and 1946, McLucas returned to school and completed a Doctorate of Science in Physics at Pennsylvania State University in 1950. Between 1946 and 1950 he served as a radar officer in the Pennsylvania Air National Guard and as a physicist at the U.S. Air Force Cambridge

Research Center. McLucas then was named vice president and technical director of Haller, Raymond, and Brown, Incorporated, located in State College, Pennsylvania. He served as president of that company following its merger with Singer Corporation in 1957. He also founded and served as president of C-COR Electronics between 1953 and 1958.

In 1962 McLucas entered government service as deputy director of research and engineering, Tactical Warfare Programs, Department of Defense, where he stayed for two years. Going overseas, he then served as the assistant secretary general for scientific affairs, North Atlantic Treaty Organization, in Paris, France. Returning to private industry in 1966, McLucas became the president and chief executive officer of MITRE Corporation, in Bedford, Massachusetts, while also serving the first of two terms as a member of the U.S. Air Force Scientific Advisory Board (1966-1969 and 1977-1984). During this period he was also a member of the Advisory Committee of the Defense Intelligence Agency and the Defense Science Board.

In 1969 McLucas returned to government service as under secretary of the Air Force and director of the National Reconnaissance Office. At the NRO, he supervised the final operations of the CORONA Project and guided development of a new generation of imaging satellites. Under his leadership, between 17 March 1969 and 20 December 1973, the National Reconnaissance Office significantly improved signals collection.

Appointed secretary of the Air Force in 1973, McLucas become the first director of the National Reconnaissance Office to serve in both roles. At the request of President Gerald R. Ford, in November 1975, he became the administrator of the Federal Aviation Administration, serving for two years before returning to private industry in 1977 as president of Communications Satellite General Corporation, a subsidiary of the Communications Satellite Corporation in Washington, D.C., a post he held through 1985. Following his government service, McLucas also served as the chairman of the National Aeronautics and Space Administration Advisory Council and as a member of the Air Force Studies Board, the Federal Aviation Administration Advisory Committee, and as a board member of External Tanks, Incorporated, of Orbital Sciences Corporation, and of Space Destinations Services, and as chairman of the board of the International Space University.

In recognition of government service, McLucas received the Department of Defense Distinguished Service Award with bronze and silver palms. Among many other associations and groups, he is an honorary fellow of the American Institute of Aeronautics and Astronautics, a fellow of the Institute of Electrical and Electronic Engineers and the American Association for

the Advancement of Science, a member of the International Academy of Astronautics, and of the National Academy of Engineering.

Dr. Brockway McMillan

**Director of the National Reconnaissance Office,
1 March 1963 – 1 October 1965**



Brockway McMillan was born in Minneapolis, Minnesota, on 30 March 1915. Raised in Hinsdale, Illinois, he attended the Armour Institute of Technology and later the Massachusetts Institute of Technology where he received a Bachelor of Science degree in Mathematics in 1936. In 1939 he received a doctorate of science, also at the Massachusetts Institute of Technology. Between 1936 and 1939 McMillan served as a part-time instructor at MIT and in 1941 and 1942 held a research instructorship at Princeton University. Entering the U.S. Navy in 1942, he served

at the Naval Proving Ground in Dahlgren, Virginia, and later at the Los Alamos Laboratory in New Mexico.

Following World War II, McMillan worked at the Bell Telephone Laboratories in New Jersey, eventually becoming director of military research. An advisor and consultant to the Department of Defense on weapons development in the late 1950s, he entered government service on 1 June 1961 as assistant secretary of the Air Force for research and development.

On 1 March 1963, McMillan was appointed the second director of the National Reconnaissance Office and, on 12 June of that year, became under secretary of the Air Force. During his tenure as NRO director, until 1 October 1965, he guided the CORONA and Defense Meteorological Satellite Programs (DMSP) from fledgling status to continuing productive operation.

Following his service with the National Reconnaissance Office, McMillan returned to the Bell Telephone Laboratories. From 1969 until his retirement in 1979, he served as vice president for military systems. McMillan is a member of the National Academy of Engineering, a member and fellow of the Institute of Electrical and Electronic Engineers, a member and fellow of the American Association for the Advancement of Science, a member of the American Mathematical Society, and a former president of the Society for Industrial and Applied Mathematics.

Brigadier General Howard J. Mitchell, USAF

**Director of Communications Systems, Acquisitions, and Operations
Directorate, National Reconnaissance Office,
17 July 1995 – 14 August 1998**

**Director, Office of Space Launch, National Reconnaissance Office
2 July 1996 – 1 July 1998**



Howard John “Mitch” Mitchell was born in LaCrosse, Wisconsin, on 28 March 1951. He entered the U.S. Air Force as a second lieutenant on 6 June 1973 following his graduation from the Air Force Academy with a Bachelor of Science in Engineering Mechanics. From November 1973 until July 1976, he served as a deputy missile combat crew commander and, later, as a

senior instructor and deputy commander with the 321st Strategic Missile Wing at the Grand Forks Air Force Base in Grand Forks, North Dakota. Mitchell next served as the manager of mechanical systems, and later as the chief of the Spacecraft Operations Branch, and then as the chief of satellite and launch vehicle integration with the Defense Meteorological Satellite Program (DMSP) at Space Division headquarters at the Los Angeles Air Force Station in California, between August 1977 and August 1982. Continuing his formal education, he completed a master of science degree at the Air Force Institute of Technology at the University of Michigan at Ann Arbor in 1977, then Squadron Officer School at Maxwell Air Force Base in Alabama, in 1978, as well as a Master of Arts in Business Administration at the University of North Dakota at Grand Forks in 1980.

Following one further year of study at the Air Command and Staff College at Maxwell Air Force Base in 1983, Major Mitchell served as the space shuttle acquisition manager with the Directorate of Space Systems, Command, Control and Communications, Office of the Deputy Chief of Staff for Research, Development, and Acquisition at Air Force headquarters in Washington, D. C. Following two more years as the chief of the Legislative Liaison Space Branch, Directorate of Legislative Liaison, Office of the Secretary of the Air Force in Washington, D.C., Mitchell attended the Defense Systems Management College at Fort Belvoir, Virginia, and completed studies at the Air War College by correspondence. During the next two years, between December 1986 and June 1988, he served as the director of special activities with the Office of the Deputy Chief of Staff for Systems at the Air Force Systems Command headquarters at Andrews Air Force Base in Maryland. He attended the Naval War College in Newport, Rhode Island, earning a Master of Arts in National Security Affairs in 1989, and then another Master of Arts degree in International Relations that same year at Salve Regina College, also in Newport.

Lieutenant Colonel Mitchell was named deputy director of engineering for the B-2 Systems Program Office at Aeronautical Systems Division headquarters at Wright-Patterson Air Force Base in Ohio, in 1989, and, for two more years, beginning in December 1990 and ending in July 1992, served as the program director of the Small Intercontinental Ballistic Missile System Organization at Norton Air Force Base in California. He was then assigned as program director to the Air Force Ballistic Missile Defense Systems Program Office at the Space and Missiles System Center headquarters at the Los Angeles Air Force Base, later serving as the director of developmental planning there.

On 17 July 1995, Mitchell was assigned to the Office of Space Systems, Office of the Assistant Secretary of the Air Force for Space, in Washington, D.C., serving as staff director, the director of space launch, and then as the director of the Communications Systems Acquisition and Operations Directorate (COMM) all at the National Reconnaissance Office. During his time at the NRO Mitchell also completed CAPSTONE at the National Defense University at Fort Lesley J. McNair and on 1 February 1997 was promoted to the rank of brigadier general.

Leaving the NRO on 14 August 1998, Mitchell spent the next two years as director of the office of the National Security Space Architect, Office of the Secretary of Defense for Command, Control, Communications, and Intelligence (C3I), in Alexandria, Virginia, and in the Office of the Deputy Director of Central Intelligence for Community Management at Central Intelligence Agency headquarters in Langley, Virginia. Following his promotion to major general on 1 June 2000, Mitchell served as a special assistant in the Office of the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence (C3I), as Defense Department liaison to the Commission to Assess U.S. National Security Space Management and Organization, Office of the Secretary of Defense, Washington, D.C., also known as the Space Commission, under the chairmanship of Donald H. Rumsfeld. In March 2001, Major General Mitchell was appointed director of operations, Air Force Space Command headquarters at Peterson Air Force Base in Colorado. In this position he is responsible for the development and conduct of the command's space and intercontinental ballistic missile operational missions.

Major General Mitchell has earned the Master Space Badge, the Master Acquisition Badge, the Master Communications Badge, and the Senior Missile Badge. In addition to his many military awards and decorations he has earned the Defense Distinguished Service Medal with oak leaf cluster, the Defense Superior Service Medal, the Legion of Merit, the Meritorious Service Medal with three oak leaf clusters, the Air Force Commendation Medal with two oak leaf clusters, the Air Force Achievement Medal, and the Combat Crew Readiness Medal. Mitchell was named outstanding program director by the Gen. Bernard A. Schriever Chapter of the U.S. Air Force Association, and also has received the National Reconnaissance Office Gold Medal for Distinguished Service, and the National Intelligence Distinguished Service Medal.

Brigadier General Thomas S. Moorman, Jr., USAF

**Staff Director, National Reconnaissance Office,
5 February 1985 – 18 October 1987**



Thomas Samuel Moorman, Jr., was born on 16 November 1940, in Washington, D.C. He was commissioned through the Air Force Reserve Officer Training Corps as a distinguished military graduate in 1962 at Dartmouth College in Hanover, New Hampshire, where he also received Bachelor of Arts degrees in History and Political Science. His first Air Force assignment was as an intelligence officer with a B-47 wing at Schilling Air Force Base in Kansas, between July 1962 and August 1965. Moorman then served fourteen months as an SR-71 mission planner with the 9th Strategic Reconnaissance Wing at Beale Air Force Base in

California, while also completing Squadron Officer School at Maxwell Air Force Base. Going overseas, Moorman served thirteen months as the operations officer of the 432nd Reconnaissance Technical Squadron at Udorn Air Force Base in Thailand, then supporting U.S. combat operations in Southeast Asia, until November 1967. He next served as a reconnaissance intelligence staff officer with the 497th Reconnaissance Technical Group at Schierstein, Federal Republic of Germany.

Returning to the United States, Moorman served between November 1970 and August 1975 as assistant director, later as executive officer, of the U.S. Air Force Special Photographic Processing Facility at Westover Air Force Base in Massachusetts. The Air Force Special Photographic Processing Facility, a component of the National Reconnaissance Office, processed film retrieved from space-based reconnaissance satellites including CORONA, ARGON, and LANYARD. During this time he continued his education, earning a Master of Arts degree in Business Administration at Western New England College in Springfield, Massachusetts. In 1975, he also completed studies as a distinguished graduate at the Air Command and Staff College while he earned a Master of Arts degree in Political Science at Auburn University. That August, Moorman began four years of NRO service as the staff executive director and, later, as deputy director of plans and programs. Immediately following this tour, Moorman completed studies at the National War College, before becoming the deputy military assistant to two secretaries of the Air Force. He also completed studies at the Air War College by correspondence.

In August 1981 Moorman began a series of assignments in Colorado, first as director of space operations at the North American Aerospace Defense Command, then as deputy director of space defense with the Office of the Deputy Chief of Staff for Plans, Peterson Air Force Base, and then, between August 1982 and July 1984, as the first director of the Commander's Group, U.S. Air Force Space Command. While here he became deeply involved in the planning and establishment of the U.S. Air Force Space Command and is considered one of its founders. Moorman's next assignment was as the vice commander of the 1st Space Wing, a position held between July 1984 and March 1985.

Returning to Washington, D.C., now Brigadier General Moorman served as the NRO staff director, between 5 February 1985 and 18 October 1987, before being appointed to serve as the director of Space and Strategic Defense Initiative Programs Office within the Office of the Assistant Secretary of the Air Force for Acquisitions, at the Pentagon, between October 1987 and

March 1990. Promoted twice in the interim, now Lieutenant General Moorman returned to Colorado to serve as the commander and vice commander of Air Force Space Command, where he was responsible for operating military space systems, ground-based radars, and missile warning satellites, as well as the nation's space launch centers at Patrick Air Force Base, Florida, and Vandenberg Air Force Base, California, and the worldwide network of space surveillance radars and intercontinental ballistic missile force. Moorman was also responsible for providing U.S. Air Force space support to coalition forces during Operations Desert Shield and Desert Storm in 1990 and 1991. Promoted to the rank of general in July 1994, Moorman returned to Washington, D.C., to serve as vice chief of staff of the Air Force, before retiring in August 1997 after more than thirty-five years of service.

After his retirement, Moorman became a vice president at Booz, Allen & Hamilton. In addition to holding the Master Space Badge, General Moorman's awards include the Defense Distinguished Service Medal, the Air Force Distinguished Service Medal with oak leaf cluster, the Defense Superior Service Medal, the Legion of Merit with oak leaf cluster, the Meritorious Service Medal with oak leaf cluster, the Air Force Commendation Medal with oak leaf cluster, and the National Intelligence Distinguished Service Medal with oak leaf cluster. In 1991, he received the National Geographic Society's General Thomas D. White U.S. Air Force Space Trophy, followed in 1993 by the bestowing of the Eugene M. Zuckert Management Award. In 1994 he received the Ira C. Eaker Fellowship Award, sponsored by the Air Force Association Aerospace Education Foundation, and in 1995 he received the Dr. Robert H. Goddard Memorial Trophy, presented annually by the National Space Club. In 1997 the American Astronautical Society presented General Moorman with its Military Aeronautics award and in 1998 he received the U.S. Space Foundation's Space Achievement award.

Mr. Michael F. Munson

**Deputy Director for National Support, National Reconnaissance Office,
11 October 1996 – 16 November 1998**



Michael Frederick Munson was born in San Luis Obispo, California, on 10 October 1944. He attended the University of Wisconsin where he received a Bachelor of Arts in History in 1967. He began his professional career with the Defense Intelligence Agency in Washington, D.C., on 15 May 1967. The early stages of his career included positions in intelligence information systems management, culminating with his assignment as the chief of the Intelligence Production Systems Division at the Defense Intelligence Agency. Continuing his education, he earned a master's degree from The American University in 1975, and later

completed a course of studies at the Industrial College of the Armed Forces at Fort Lesley J. McNair in Washington, D.C., in 1981. Soon thereafter, Munson became the chief of the Intelligence Production Functional Management Office at the Defense Intelligence Agency.

From 1981 until 1985, Munson served as the assistant to the director for Defense Agency Programs, General Defense Intelligence Program staff. In this role, he supervised the development, implementation, review, and evaluation of intelligence programs and activities managed by the Defense Intelligence Agency. In 1986 he became the special assistant to the executive director of the Defense Intelligence Agency, responsible for policy direction, management, and administration of DIA resources and support operations. In 1987, he became a member of the defense intelligence senior executive service and assumed the responsibilities as deputy director for resources. The responsibilities of this position included day-to-day policy guidance, management, and operations of the Defense Intelligence Agency's personnel, contracting, training, photographic laboratory, library, printing, graphics, logistics, travel, and building services. During this time, in 1990, he also attended the Harvard University Executive Seminar on National Security.

In 1991, Munson established the Intelligence Program Support Group and became its first director. This support activity provided the assistant secretary of defense for command, control, communications, and intelligence with program analysis and evaluation of national and tactical intelligence programs and budgets, defense intelligence product reviews and evaluations, and management of defense intelligence architecture programs. Following this assignment, from January 1995 until March 1996, he served as the deputy director of the Defense Intelligence Agency.

On 11 October 1996, Munson was appointed the first deputy director of the NRO office for national support. He was especially well qualified as he had previously served as the study director for the 1992 Jeremiah Panel that reviewed the National Reconnaissance Office and provided recommendations for the nation's reconnaissance needs in the 21st century. He held this position until 16 November 1998 and retired from government service on 31 December.

During his career, Mr. Munson has received several awards, including the Director of Central Intelligence's National Intelligence Certificate of Distinction in 1986, the Secretary of Defense Medal for Meritorious Civilian Service in 1993, and Presidential Meritorious Executive Rank in 1994.

Dr. F. Robert Naka

**Deputy Director of the National Reconnaissance Office,
1 July 1969 – 31 August 1972**



Fumio Robert Naka was born on 18 July 1923 in San Francisco, California. He attended the University of California at Los Angeles, but was removed from school in early 1942 and confined with other west coast Japanese-Americans in an internment camp for nine months during World War II. Released to attend school, he completed his Bachelor of Science in Electrical Engineering at the University of Missouri in 1945, and subsequently earned a Master of Science degree in Electrical Engineering at the University of Minnesota in 1947. Continuing his education at Harvard University, he completed a Doctorate of Science in Electron Optics in

June 1951. Naka began his career as a staff member at the Lincoln Laboratory of the Massachusetts Institute of Technology, where he engaged in, and supervised, radar research. At the request of Edwin H. "Din" Land in the mid-1950s, he became involved in efforts to reduce the radar cross section of the U-2 high altitude reconnaissance aircraft for the Central Intelligence Agency. In January 1959, he joined the MITRE Corporation, eventually becoming its chief scientist in 1969.

Dr. Naka served briefly as a consultant to the deputy director of the Central Intelligence Agency Directorate of Science and Technology from April 1969 until 1 July 1969 when he became the deputy director of the National Reconnaissance Office. He served in this position until 31 August 1972, while concurrently serving as deputy under secretary of the Air Force for space systems. Naka was the first official of the National Reconnaissance Office to be hired directly from private industry. As chairman of the Naka Panel, he worked to devise, and later implement, a successful strategy that significantly improved overhead signals intelligence collection. He also supported research on what later became a new imagery satellite program.

Following his service with the National Reconnaissance Office, Naka spent three years, from 1972 until 1975, as the director of detection and instrumentation systems at the Raytheon Corporation, while also serving on the Air Force Studies Board of the National Research Council. He then was appointed chief scientist of the U.S. Air Force. Already a member of the National Aeronautics and Space Administration's Space Program Advisory Council, Naka continued in both of these positions until 1977 and 1978, when he became corporate vice president of the Science Applications International Corporation (SAIC). Between 1978 and 1988 he also served as a director, consultant, or as a member of several high-technology aerospace companies and defense groups including the Institute for Defense Analyses, Simmons Precision Products Incorporated, Hercules Aerospace Corporation, GTE Government Systems Corporation, the Aerospace Corporation, CAE Electronics, and CERA Incorporated, where he remained as president and chief executive officer through 2000. He also served as a member and vice chairman of the Air Force Scientific Advisory Board for over twenty years between 1975 and 1998.

Dr. Naka is a visiting scholar at Northeastern University in Boston and a member of the National Academy of Engineering, the Institute of Electrical and Electronics Engineers, the American Association for the Advancement of Science, the New York Academy of Sciences, and a fellow of the Explorers Club. He has received the U.S. Air Force Exceptional Service

award on four occasions as well as the University of Missouri Honor Award for Engineering, and the Faculty Alumni Award.

Mr. John F. Nelson

**Deputy Director for Resource Oversight and Management,
National Reconnaissance Office,
23 October 1995 – 12 January 1998**



John Frederick Nelson was born on 12 August 1952 in Niskayuna, New York. Raised in New York, he graduated from Scotia-Glenville High School in 1970 and that fall entered Northeastern University in Boston, where he graduated in 1975 with a Bachelor of Arts in Political Science. Continuing his education, he enrolled at the University of California, Berkeley, and completed a Master of Arts degree in Public Policy in 1977.

Moving to Washington, D.C., Nelson worked in the Congressional Budget Office between October 1977 and October 1978, before serving as senior budget analyst with the Senate budget committee between July 1978 and April 1984. During this time he also earned a Master of Science degree in Accounting at Georgetown University in 1983.

Nelson joined the Central Intelligence Agency on 29 April 1984 as a program manager in the Directorate of Science and Technology's Office of Development and Engineering and left one year later, on 9 March 1985, to serve as a senior staff member and director of audits for the Senate Select Committee on Intelligence. He spent five years with that committee during which time he established and directed the audit and investigations staff. Leaving government service on 1 June 1990, Mr. Nelson served briefly as vice president of HM Technologies, Incorporated, in Sterling, Virginia, and then as the treasurer and chief financial officer of Zeta Associates, a systems engineering firm in Fairfax, Virginia. He returned to the Central Intelligence Agency on 23 October 1995 and was assigned as the deputy director of the Office of Resource Oversight and Management at the National Reconnaissance Office. Here, until 12 January 1998, he served as the NRO's chief financial officer and supervised all financial, accounting, and budgetary operations in addition to restructuring and modernizing the NRO's financial management system, making it a model for other departments of the federal government.

Following service at the National Reconnaissance Office, Nelson served as chief of staff for Director of Central Intelligence George J. Tenet, between 1998 and 1999, before being named CIA associate deputy director for operations, resources, plans, and policy in September 1999.

Mr. Nelson received the National Intelligence Distinguished Service Medal and the National Reconnaissance Gold Medal in 1998, and the Director's Medal in 1999.

Rear Admiral Richard J. Nibe, Jr., USN

**Deputy Director for Military Support, National Reconnaissance Office,
11 September 1997 – 30 April 1999**



Richard Jerome Nibe, Jr., was born in Boone, Iowa, on 17 February 1946. He entered the U.S. Naval Academy in June 1964 and graduated with a bachelor of science degree and a commission as an ensign with the class of 1968. Following the completion of pilot training at the Pensacola Naval Air Station in Florida, in June 1971, and after completing postgraduate work in aeronautical engineering at Princeton University, Nibe was assigned to Training Squadron 21. In November of that same year he was assigned to Attack Squadron 127 as an instructor pilot flying the A-4F Skyhawk. He subsequently served in three carrier-based light attack squadrons flying A-4F and A-7E Corsair II aircraft, including Attack Squadron 164, from April 1973 until

October 1975, Attack Squadron 147, from June 1979 until January 1982, and in Attack Squadron 83, from August 1984 until August 1987, where he served as the squadron executive officer and commanding officer.

During these years Nibe also served two assignments in Washington, D.C., first, between October 1975 and October 1978, as a research and development project officer at Defense Nuclear Agency headquarters, and, between March 1983 and April 1984, as a staff officer in the Office of the Chief of Naval Operations, Plans and Policy Division, Strategic Concepts Branch. In 1984 he completed studies at the Naval War College.

Following a brief assignment between December 1987 and May 1988 with Carrier Group Four, as the air operations officer, then Commander Nibe entered nuclear propulsion training. He then served as executive officer aboard the aircraft carrier *USS Nimitz*, from December 1989 to May 1991, before taking command of the Third Fleet command ship *USS Coronado*. Under his leadership the *Coronado* was awarded the Battle Efficiency "E." In August 1993 Captain Nibe assumed command of the aircraft carrier *USS Abraham Lincoln* while on deployment to the Arabian Gulf. During this tour, the vessel won the Battle Efficiency "E" and earned an unprecedented second "Excellent" for the operational reactor safeguards examination.

From September 1995 until August 1997, Nibe was director for intelligence, J-2, at the North American Aerospace Defense Command and U.S. Space Command at Peterson Air Force Base in Colorado Springs, Colorado. During this tour, on 1 March 1996, Nibe was promoted to the rank of rear admiral (lower half). On 11 September 1997 Rear Admiral Nibe was named the deputy director for military support at the National Reconnaissance Office, serving concurrently as the deputy director for operations, J-3, Joint Staff, and as the deputy director of the Defense Support Project Office. Rear Admiral Nibe retired from active military duty on 1 May 1999.

Rear Admiral Nibe flew over 3,300 hours in tactical jet aircraft during his career, including the F-18 Hornet, and completed over 750 carrier landings. Among his many awards and decorations are the Defense Superior Service Medal, the Legion of Merit with one gold star, the Meritorious Service Medal with one gold star, the Navy Commendation Medal, the Navy Unit Commendation Medal, the Meritorious Unit Commendation with one bronze star, the Navy Expeditionary Medal, and the Armed Forces Expeditionary Medal.

Mr. Edmund H. Nowinski

**Director of IMINT Systems, Acquisitions, and Operations Directorate,
National Reconnaissance Office,
17 October 1993 – 30 July 1995**



Edmund Henry Nowinski was born on 2 August 1944 in Newark, New Jersey. He received a Bachelor of Science degree in Electrical Engineering in 1967 from the Newark College of Engineering. Nowinski began his career as a research engineer with the Central Intelligence Agency on 11 June 1967, assigned to the Office of Special Projects, the predecessor organization to the Office of Development and Engineering within the Directorate of Science and Technology. From 1967 through 1969, he engaged in a variety of research and development

projects supporting early satellite reconnaissance systems for the National Reconnaissance Program, as a member of the Design and Analysis Division of the Office of Special Projects. In late 1969, Nowinski was assigned to the system analysis staff where he was responsible for overall system product quality. During the period 1969 through 1977, he held positions of increasing responsibility and played a significant role in the design and development of several satellite systems. In 1978, he was designated chief of the system analysis staff, and in 1980 was elevated to the position of deputy director of the Program Group.

In August 1981 Mr. Nowinski was designated director of the newly formed Data Communications Group within the Office of Development and Engineering, with responsibility for the development and operations of a number of satellite-based communications systems. A few years later, in August 1985, he was appointed deputy director of the Office of Development and Engineering, with overall management responsibility for imagery and signals intelligence and communications systems under the NRO's Program B. In late December 1992, following the reorganization of the National Reconnaissance Office into functional directorates, Nowinski was assigned as the NRO's chief systems engineer. He was named the director of the Office of Development and Engineering in the CIA's Directorate of Science and Technology and the director of the IMINT Systems Acquisition and Operations Directorate at the National Reconnaissance Office on 17 October 1993, serving in the latter position until 30 July 1995. He retired from the Central Intelligence Agency on 31 October 1995.

Since his retirement, Nowinski has served as a consultant to the aerospace industry and as vice president for business development of the Harris Corporation in Melbourne, Florida. He is presently a vice president and Future Imagery Architecture Program manager with the Boeing Company in Seal Beach, California. During his career, he was awarded two CIA Intelligence Medals of Merit, the CIA's Distinguished Intelligence Medal, and the National Reconnaissance Office Medals for Exceptional and Superior Accomplishments.

Captain Lee Roy Patterson, USN

**Director of Program C, National Reconnaissance Office,
31 August 1981 – 10 September 1982**



Lee Roy Patterson was born in Stockton, California, on 10 March 1931. He entered the U.S. Naval Academy in July 1950 and graduated with a bachelor of science degree with the class of 1954. After completing flight training at the Pensacola Naval Air Station in Florida, in 1955, and having been designated a naval aviator in February 1956, Lieutenant Patterson was assigned to Hutchison Naval Air Station, Kansas, where he served as a flight instructor before joining Patrol Squadron 19 as a commander and avionics officer.

Following completion of a Master of Science degree in Chemistry at the Naval Postgraduate School in Monterey, California, in 1963, Patterson served for two years as a maintenance officer with Antisubmarine Squadron 26. Returning to the U.S. Naval Academy in September 1965, Patterson served as the chairman of the Chemistry Department until July 1968 when he was assigned as the assistant projects officer, Anti-Radiation Missile Systems Program, Naval Systems Command. Following a three-year assignment at the Bureau of Naval Personnel, between February 1971 and August 1973, Patterson was named head of the Ground Support Equipment Department at the Naval Air Engineering Center. Going overseas for his next assignment, Patterson served as the commander of the branch office of the Office of Naval Research in London, England, before returning to the United States in August 1978 to become the deputy manager of the High-Energy Laser Program at the Naval Sea Systems Command.

In August 1979 Captain Patterson was appointed deputy director of the Navy Space Project, Naval Electronics Command, later serving as director of that office between August 1980 and September 1982. Patterson also served concurrently as director of the Navy's National Reconnaissance Office Program C between 31 August 1981 and 10 September 1982. As director of Program C, Captain Patterson was instrumental in the development, acquisition, and operation of several joint service surveillance programs. After his tour at the National Reconnaissance Office, Patterson retired from military duty on 1 October 1982.

Captain Patterson's military awards and decorations include the Legion of Merit, the Meritorious Service Medal, the Navy Unit Commendation Medal, and the National Defense Service Medal.

Mr. Robert A. Pattishall

**Director, Advanced Systems & Technology Directorate,
National Reconnaissance Office,
31 March 1997 – 28 February 2000**



Robert A. Pattishall graduated from the University of Maryland in College Park in 1969 with a Bachelor of Science degree in Aerospace Engineering. After graduation he worked for the McDonnell-Douglas Corporation as a structural design engineer on the F-15. He also worked for Fairchild Space and Electronics Company as a dynamicist and attitude-control engineer on NASA's Advanced Communications Technology Satellite Program.

Pattishall joined the Central Intelligence Agency in 1975, serving initially in the Office of Development and Engineering, Directorate of Science and Technology. Here he served in a wide variety of engineering management positions involving the development of state-of-the-art reconnaissance satellite systems. While in the Office of Development and Engineering he also performed two rotational assignments. The first was between 1978 and 1980, as a national collection program element monitor at the National Reconnaissance Office. The second assignment, between 1985 and 1987, was to a NRO field site where he served as chief of engineering for operations and maintenance of a major satellite system.

Between 1987 and 1992, Pattishall served as the associate director of a program, while concurrently serving as a key member of the intelligence architecture advanced development team that assisted with development of future SIGINT satellite architecture. With broad experience in these systems, Pattishall was appointed director of a program group within the National Reconnaissance Office SIGINT Directorate, from its inception as a separate directorate on 1 January 1993.

On 31 March 1997 Pattishall was named the director of the newly formed Advanced Systems and Technology (AS&T) Directorate at the National Reconnaissance Office. In this role he was responsible for conducting an aggressive customer focused research and development program that provided advanced technologies for global satellite reconnaissance. He served as the director of AS&T until 28 February 2000, when he retired from the Central Intelligence Agency.

During his long career with the Intelligence Community, Pattishall has received numerous awards including the Certificate of Merit in 1978, the National Intelligence Certificate of Distinction in 1981, the Intelligence Medal of Merit in 1985, and selection as the Central Intelligence Agency Engineer of the Year in 1986. In 1991 Pattishall received a unit citation for his work on the Telemetry Denial Working Group that supported the Strategic Arms Reduction Talks (START) between the United States and the former Soviet Union on critical data denial provisions.

Dr. Stephanie J. Platz-Vieno

**Director, Office of Human Resources
National Reconnaissance Office
5 November 2001 – Present**



Stephanie Jeannette Platz-Vieno was born in Houston, Texas, on 26 February 1957. Raised in Texas, she received a Bachelor of Science degree in Biology and Psychology from Boston College in May 1979. In May 1985, she completed a Doctorate of Philosophy in Industrial and Organizational Psychology at Louisiana State University.

Dr. Platz-Vieno began her intelligence career in December 1985, when she joined the Central Intelligence Agency's Directorate of Administration, Office of Training and Education. In this position she taught courses that focused on employee development at all levels of

seniority and skill, and served as the program director for the highly acclaimed Program on Creative Management for which she received accolades for her insightful program redesign. She was also cited for her design and development of such CIA courses as *Leadership Styles and Behavior*, *Managing and Leading in the CIA*, and the *Executive Development Program*, tailored to the educational needs of employees, new supervisors, and newly promoted Senior Intelligence Service officers.

Assigned to positions of increasing responsibilities, Dr. Platz-Vieno became chief of the Training Branch in the Career Training Division that conducted training programs for high-potential CIA recruits in July 1989 and chief of the Management Training Branch in the Leadership Development Division that provided training to all levels of CIA managers from new supervisors to executive managers in July 1991. While chief of the Training Branch, Dr. Platz-Vieno introduced the CIA's Senior Intelligence Service women's group to the research conducted on the "Glass Ceiling," which eventually resulted in an Agency-wide study designed to identify the barriers preventing women and minorities from reaching the CIA's top levels of management. This groundbreaking 1991 study was instrumental in changing a number of practices at the CIA. She then merged the two divisions, the Leadership Development Division and the Career Training Division in June 1993 to create the Leadership and Career Development Division. In this position, she introduced diversity training to the Central Intelligence Agency in December 1993 and designed and delivered the Agency's Sexual Harassment Prevention Training Program and subsequent Racial Harassment Prevention Training Program. She also managed the Business Development Division, responsible for improving customer service by refocusing efforts on client registrations and training needs. Under her leadership, the Business Development Division implemented the concept of one-stop shopping to training in February 1995, with the introduction of the LEARN line, still in use today.

After ten years with the Office of Training and Education, Dr. Platz-Vieno was assigned as the Directorate of Administration referent in the Comptroller's Office of the Director of Central Intelligence. From October 1995 through May 1998, she played a major role in formulating the budgets for fiscal years 1998 and 1999, reconciling the complex breadth of issues for which the Directorate of Administration was then responsible. In September 1998 she became chief of the Strategic Human Resources Analysis Staff in the Directorate of Administration, where she transformed the staff from one that was primarily transactional to one that provided strategic human resource services. In January 2000, she designed and deployed the

first legally defensible performance appraisal system to include an on-line automated tool for completing the Directorate of Administration's "Performance Appraisal Report."

Joining the National Reconnaissance Office in November 2000, Dr. Platz-Vieno worked to solve the myriad challenging human resource issues associated with creating a new Central Intelligence Agency career service. On 11 February 2001, the Central Intelligence Agency established the National Reconnaissance Office Corporate Support (NCS) Career Service, the Agency's sixth career service. On 5 November 2001, she was appointed director of the Office of Human Resources to develop strategic and corporate-level human resource programs for the National Reconnaissance Office.

Dr. Platz-Vieno has published several articles on leadership, performance appraisals, and cross-racial eyewitness identification during her career. She also volunteers in her community, and has served as president of the Junior League of Washington, D.C. from 2000-2001, an organization of over 3,000 women committed to promoting volunteerism, developing the potential of women, and to improving the community through the effective action and leadership of trained volunteers. She has also served on the board of directors of the Langley Children's Center.

Mr. James W. Plummer

**Director of the National Reconnaissance Office,
21 December 1973 – 28 June 1976**



James Walter Plummer was born on 29 January 1920 in Idaho Springs, Colorado. He earned a Bachelor of Science degree in Electrical Engineering at the University of California, Berkeley, in 1942, and a Master of Science degree in Electrical Engineering, at the University of Maryland in 1953. During the Second World War Plummer served in the U.S. Navy in the Pacific as a member of Air Groups 10 and 90 aboard the *USS Enterprise*. He stayed in the U.S. Naval Reserve, rising to the rank of lieutenant commander by 1946. Following his military service, and during the completion of his education, Plummer served as a branch head of the Electronics Test Division of the U.S. Naval Test Center from 1947 until 1955. In that later year,

Plummer joined the Lockheed Missiles Systems Division (later the Lockheed Missile and Space Company) where he stayed until 1983, serving in various positions relating to military research and development, and national security space programs.

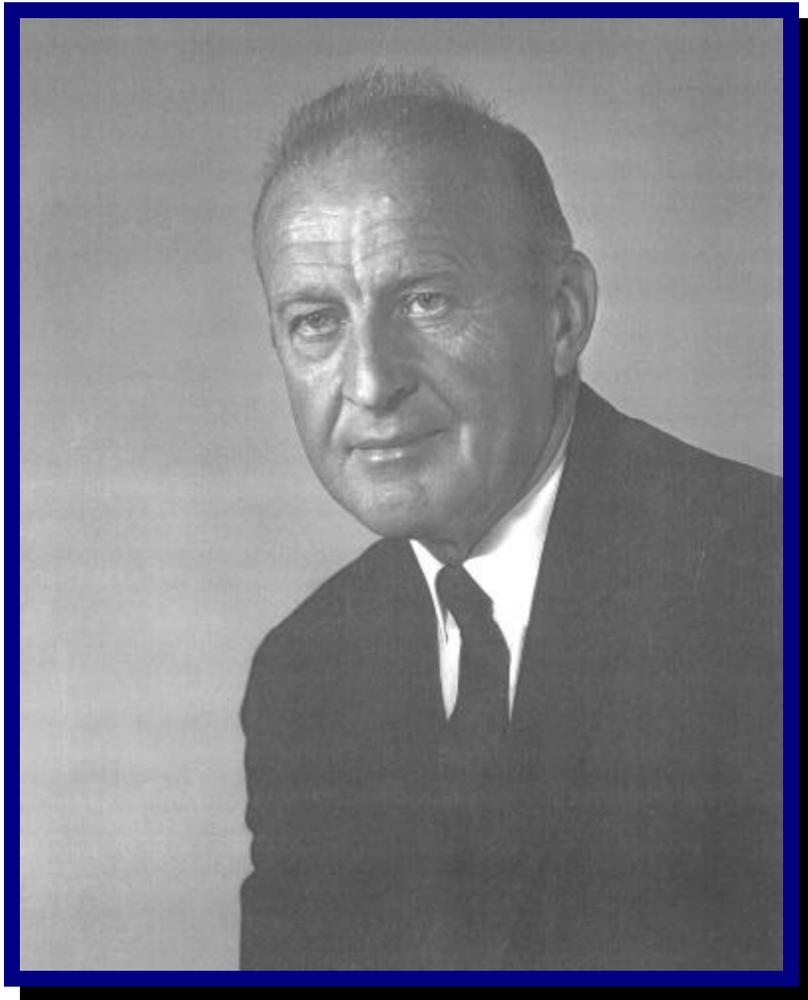
During this time with the Lockheed Missile and Space Company, Plummer was closely involved with the National Reconnaissance Office as Lockheed's program manager of the CORONA, ARGON, and LANYARD systems, among other satellite programs. Given this background, Plummer became the first National Reconnaissance Office director to come from private industry rather than from a military or government background. His National Reconnaissance Office tenure extended from 21 December 1973 until 28 June 1976. During his time as director, Plummer focused much of his efforts on developing electro-optical imaging systems.

Mr. Plummer was a member of the advisory board of the Naval Weapons Center, China Lake, California, between 1971 and 1973, a member of the Defense Science Board in 1972, a consultant to the Office of the Secretary of Defense, and, for a period of five years, a member of the Air Force Scientific Advisory Board. In 1976 he returned to Lockheed Missiles and Space Company as an executive vice president, before retiring in 1983.

After retirement Mr. Plummer remained active in scientific, technological, and space affairs, serving on numerous panels and boards, and for a period of ten years as the chairman of the board of trustees of the Aerospace Corporation in El Segundo, California. Among his more notable decorations and awards are the Air Medal, the Defense Department Distinguished Public Service Award with oak leaf palm, the Air Force Meritorious Service and Exceptional Civilian Service Awards, the Robert H. Goddard Astronautics Award, the Air Force Association Jimmy Doolittle Award, and the Silver Knight of Management Award given by the Lockheed Missiles and Space Company Management Association. A published author, Plummer is also an honorary fellow of the American Institute of Aeronautics and Astronautics, a member of the American Astronautical Society, and the National Academy of Engineering.

Dr. James Q. Reber

**Deputy Director of the National Reconnaissance Office,
1 September 1965 – 30 June 1969**



James Quinter Reber was born on 16 July 1911 in Elizabethtown, Pennsylvania. He completed a Bachelor of Arts in History and Biological Sciences at Manchester College, Indiana, in 1933, and a Master of Arts in History at the University of Chicago in 1935. From 1933 until 1937 he taught biology and social sciences in public schools before beginning work on a Doctorate of Philosophy in International Relations at the University of Chicago, a degree he completed in 1939.

Following employment as a public school teacher in Wabash, Indiana, and as an instructor at Washburn College in Kansas, at Wilson City College in Chicago, at Manchester College in Indiana, and then at the University of Chicago, Reber joined the U.S. State Department in August 1943. He remained at the State Department for seven years working as a research associate, an economist, a foreign affairs specialist, and, eventually, chief of the Committee Coordinating Section, chief of the Staff Committee Secretariat, and chief of the Committee Secretariat. He also continued to teach part-time at The American University in Washington, D.C., between 1946 and 1947.

Reber joined the Central Intelligence Agency in 1950 where he served as the assistant director of the Office of the Intelligence Coordinator until 1954, and then as the special assistant to the director for planning and coordination, Office of Intelligence Coordinator, until 1957. During the latter period, Reber chaired the Committee on Overhead Reconnaissance (COMOR) and its ad hoc predecessor that selected the targets for U-2 reconnaissance overflights of the U.S.S.R. that began on 4 July 1956. This committee included representatives of all elements of the U.S. Intelligence Community and established the Highest Priority Targets list for reconnaissance overflight missions—a list that eventually would embrace targets for satellite reconnaissance as well.

Following other assignments in the Central Intelligence Agency's Directorate of Science and Technology, Reber was named deputy director of the National Reconnaissance Office, a position in which he served between 2 September 1965 and 30 June 1969. During this time he established a more effective working relationship between the Central Intelligence Agency and the Department of Defense in the conduct and operation of the National Reconnaissance Program. Highly respected within the U.S. Intelligence Community, and regarded as entirely unprejudiced in service affiliations, Reber received the support of key CIA and Defense Department officials as the NRO deputy director. He retired from the Central Intelligence Agency in July 1972.

Mr. Thomas C. Reed

**Director of the National Reconnaissance Office,
9 August 1976 – 7 April 1977**



Born on 1 March 1934 in New York City, Thomas Care Reed received a Bachelor of Science in Mechanical Engineering in 1956 at Cornell University, graduating first in his class. He received a Master of Science in Electrical Engineering at the University of Southern California in 1959. At Cornell, having enrolled in the Air Force Reserve Officer Training Corps as an undergraduate, Reed received his commission in June 1956 and served on active duty with the U.S. Air Force until May 1961. He completed his service as a first lieutenant. Reed's duty assignments included time with the Air Force Ballistic Missile Division, where he served as the

first technical project officer for the Minuteman reentry vehicle, and at the University of California's Lawrence Livermore National Laboratory where he helped design devices fired in the DOMINIC nuclear test series of 1962. Thereafter he continued as a consultant to Livermore Laboratory through 1966 then rejoined the laboratory in that capacity again in 1988. In 1962 Reed founded and became the managing partner of Supercon, Ltd., of Houston, Texas. That firm developed and produced alloys that were super conducting at cryogenic temperatures. He remained with this company until 1965, when he organized and became the chief executive officer of the Quaker Hill Development Corporation in San Rafael, California.

Reed returned to government service in 1973, serving most of that year as an assistant to the secretary and deputy secretary of defense for various special projects. He served as director of telecommunications and command and control systems in the Office of the Secretary of Defense during the years 1974 and 1975, before being named secretary of the Air Force in 1976, the first secretary to have served previously as an Air Force officer. As secretary of the Air Force, between 9 August 1976 and 7 April 1977, a period that covered the elections of 1976 and the transitions from the administrations of Republican President Gerald R. Ford to Democratic President Jimmy Carter, Reed also served as the director of the National Reconnaissance Office. NRO Director Reed served during a time when the already operational film-return and signals intelligence satellite systems continued to extend their on-orbit lifetimes, and while the electro-optical imaging systems envisioned by his predecessors became operational. The latter project revolutionized overhead imaging.

Following his service as Air Force secretary, Reed returned to the business world. He continued to contribute to the Defense Science Board, and in January 1982 was recalled to government service. From that time until May 1983 he served as a special assistant for national security policy to President Ronald Reagan. He has remained active in national security matters since, serving as a member of the Strategic Advisory Group of the Joint Strategic Target Planning Staff, Office of the Joint Chiefs of Staff, and as a continuing advisor to the directors of the Lawrence Livermore National Laboratory. He serves on the board of directors of the Charles Stark Draper Laboratory in Cambridge, Massachusetts, and he continues as chairman and chief executive officer of Quaker Hill Development Corporation.

Colonel Clason B. Saunders, USAF

**Director of Program D, National Reconnaissance Office,
15 July 1966 – 31 October 1967**



Clason Bastable “Clay” Saunders was born in Westfield, New Jersey, on 15 July 1918. He received a bachelor of arts degree from Northern Ohio University and participated in the Aviation Cadet Corps of the U.S. Army. Following flight training in fighters, he went to England where he flew 57 combat missions over Europe during World War II.

After the war, Saunders began a career in military reconnaissance as commanding officer of the 30th Tactical Reconnaissance Squadron, Tactical Air Command. He went on to become the chief of the Air Operations Center at Twelfth Air Force headquarters in Europe and chief of the

Special Reconnaissance Division under the deputy chief of staff for operations with the U.S. Air Force Europe.

Colonel Saunders' last career posting was as the director of the National Reconnaissance Office Program D from 15 July 1966 to 31 October 1967. Here he managed and supported the operations of high altitude reconnaissance aircraft including the U-2, A-12, and SR-71. His technical expertise in optics and first hand knowledge of the aerial requirements of high-altitude reconnaissance greatly assisted Central Intelligence Agency and National Reconnaissance Office leaders.

After his retirement from government service in 1967, Colonel Saunders worked for Itek Corporation, first managing an optics manufacturing operation and then marketing optical products to foreign governments. He retired as vice president of Itek in 1979. Colonel Saunders died on 28 February 1995 in Washington, D.C.

During his military career Colonel Saunders received the French croix de guerre, the Belgian Ferragere, the Distinguished Flying Cross, two Air Medals, the Legion of Merit, and U.S. Air Force Commendation Medals.

Brig. Gen. Thomas J. Scanlan, Jr., USAF

**Director of Communications Systems, Acquisitions, and Operations
Directorate, National Reconnaissance Office,
1 January 1993 – 16 July 1995**

**Director of SIGINT Systems, Acquisitions, and Operations Directorate,
National Reconnaissance Office,
17 July 1995 – 26 August 1996**



Thomas Joseph Scanlan, Jr., was born on 24 March 1946 in Albany, Georgia. He attended the University of New Mexico in Albuquerque, where he graduated with a Bachelor of

Science degree in Mechanical Engineering in 1969. He was also a distinguished graduate of the University of New Mexico Reserve Office Training Corps Program.

Second Lieutenant Scanlan's first U.S. Air Force assignment between February 1969 and December 1971 was as the space systems manager of the 4754th Radar Evaluation Squadron at Hill Air Force Base, Utah. Later, he served as the aide-de-camp to the commander at the Air Force Logistics Center also at Hill Air Force Base. In 1973 he went to Turkey where he served as the chief of the space object identification section with the U.S. Logistics Group, Detachment 8. On his return to the United States, then Captain Scanlon completed Squadron Officer School, before transferring to California where he spent three years as chief of data systems operations, Detachment 1, at the Air Force Satellite Control Facility, Sunnyvale Air Force Station. Between July 1977 and August 1978, Scanlan served as the chief of the Data Systems Operations Branch and then as the Real-Time Systems Program manager, also at the Air Force Satellite Control Facility.

In 1979 Scanlan completed a Master of Science degree in Systems Management at the Air Force Institute of Technology at Wright-Patterson Air Force Base, Ohio, before assignment as the program manager of the Program Management Assistance Group, Air Force Systems Command headquarters, at Andrews Air Force Base in Maryland, between December 1979 and July 1981. He also completed studies at the Air Command and Staff College in the latter year. During the next five years, between July 1981 and July 1986, Scanlan served at the Pentagon as the program element monitor for the Air Force Satellite Control Facility, then in research, development and acquisition, then as the special assistant for plans, research, development and acquisition, and then as the executive officer with the Office of the Deputy Chief of Staff, Research, Development and Acquisition, at U.S. Air Force headquarters. Between July 1984 and June 1985, then Lieutenant Colonel Scanlan completed further studies at the Industrial College of the Armed Forces.

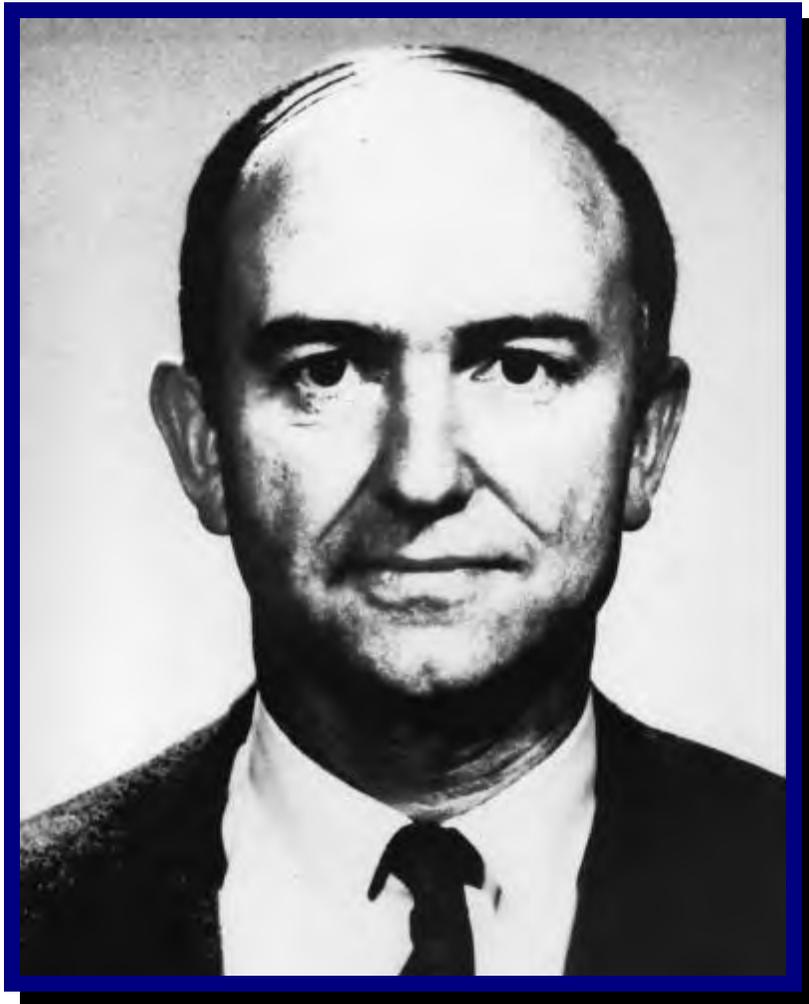
Returning to California in July 1986, Scanlan spent the next four years as the program director of advanced systems with the Space Systems Division at Los Angeles Air Force Base, before becoming program director for space surveillance and tracking systems, also at Los Angeles Air Force Base. Following the completion of studies at the Defense Systems Management College in 1989, Brigadier General Scanlan took command of the 1st Wing, Air Force Space Command, at Peterson Air Force Base, Colorado. Two years later, in October 1992, he became the vice director of plans at the U.S. Space Command.

The following January, in 1993, Scanlan returned to Washington, D.C., where he served in the Office of Space Systems, Office of the Assistant Secretary of the Air Force for Space, in the Pentagon, as both the staff director of the National Reconnaissance Office and as the director of the NRO Communications Systems Acquisition and Operations (COMM) Directorate until 16 July 1995. On 17 July 1995, Scanlan was named director of the NRO Signals Intelligence (SIGINT) Systems Acquisition and Operations Directorate, while also serving as the director of the NRO Office of Space Launch. Following his NRO tours, ending on 26 August 1996, Brigadier General Scanlan became the director of operations at U.S. Space Command, before retiring from active duty on 1 July 1997.

In addition to holding the Master Space Badge and the Master Acquisition Badge, Brigadier General Scanlan's awards and decorations include the Defense Superior Service Medal with oak leaf cluster, the Legion of Merit with oak leaf cluster, the Defense Meritorious Service Medal, the Meritorious Service Medal with four oak leaf clusters, the Air Force Commendation Medal with two oak leaf clusters, the Air Force Achievement Medal with oak leaf cluster, the National Intelligence Distinguished Service Medal, and the Air Force Systems Command Junior Officer of the Year.

Dr. Herbert Scoville, Jr.

**Director of Program B, National Reconnaissance Office,
1 March 1962 – 14 June 1963**



Herbert “Pete” Scoville, Jr., was born on 16 March 1915 in New York City. He graduated from Yale University with a Bachelor of Science in Physics and Chemistry in 1937, before earning a Doctorate of Science in Physics and Chemistry at the University of Rochester in 1942. He began his professional career as a chemist with the National Defense Research Committee in 1941. After World War II, between 1946 and 1948, he served as a senior scientist for the Atomic Energy Commission at the Los Alamos Laboratory in New Mexico. He was also the technical director of the Armed Forces Special Weapons project from 1948 to 1955, where he helped

develop the nation's nuclear arsenal. As early as 1954, however, Scoville called for negotiation of a U.S.-Soviet nuclear test ban treaty.

Scoville joined the Central Intelligence Agency in August 1952 as assistant director of the Office of Scientific Intelligence, the unit that tracked the development of nuclear energy and missile technology in the U.S.S.R. In the late 1950s he became one of the early developers of the satellite technology required for peacetime strategic reconnaissance and eventual independent verification of the number and location of strategic nuclear weapons, an essential ingredient for arms control treaties. He was named the first director of the National Reconnaissance Office Program B and, as a deputy director of the Central Intelligence Agency, served between March 1962 and 14 June 1963, when he resigned from the CIA. He is credited as one of the original developers of verification methods that became essential for insuring compliance with later nuclear arms control treaties. Following his tenure as director of Program B, Scoville served from 1963 until 1969 as the assistant director for science and technology of the U.S. Arms Control and Disarmament Agency, where he helped establish American positions on the Limited Test Ban Treaty and the Nuclear Non-Proliferation Treaty. He also participated in the original planning for the Strategic Arms Limitation Talks that resulted in the SALT I Treaty in 1972.

After leaving government service in 1969, until his death in July 1985, Dr. Scoville devoted significant effort toward promoting international peace, disarmament, and cooperation. He spearheaded battles against the MX Missile, MIRVed warheads, and the later space-based, anti-ballistic missile Strategic Defense Initiative Program, popularly known as "Star Wars." He was a founder of the Arms Control Association and the Arms Control Project of the Carnegie Endowment for International Peace. Following his retirement he wrote three books, *Towards a Strategic Arms Limitation Agreement*, *Missile Madness*, and *MX: Prescription for Disaster*, as well as dozens of articles and editorials. He was a frequent witness before the U.S. Congress on arms control and nuclear weapons issues. Scoville was a member of the American Association for the Advancement of Science, the Arms Control Association, the Union of Concerned Scientists, and the Center for Defense Information.

Brigadier General William L. Shields, Jr., USAF

**Staff Director, National Reconnaissance Office,
18 March 1976 – 12 June 1978**



William L. Shields, Jr., was born on 2 January 1928, in Napa, California. He graduated from high school in Biggs, California, in 1944, and attended the University of California. In 1948 he entered the U.S. Military Academy at West Point where he received a bachelor of science degree in 1952. Although Shields began his military career as a U.S. Army private in 1946, he was commissioned a second lieutenant in the U.S. Air Force upon graduation from West Point. He completed pilot training in August 1953 at Williams Air Force Base, Arizona, and in December of that year completed fighter-gunnery training at Nellis Air Force Base in

Nevada. He was then assigned as a fighter-interceptor pilot in the 71st Fighter-Interceptor Squadron in Pittsburgh, Pennsylvania.

Continuing his education, Shields completed a Master of Science in Nuclear Engineering from the University of Michigan in 1958, before joining the Air Force Intelligence Center in Arlington, Virginia, as an analyst specializing in Soviet and Chinese nuclear weapons programs. In September 1965, after further graduate studies, Shields earned a Doctorate of Science in Aeronautics and Astronautics from Stanford University. He then moved to the Air Force Weapons Laboratory at Kirtland Air Force Base in New Mexico, where he served as chief of the Aircraft Section in the Weapons Integration Branch bearing responsibility for compatibility testing of nuclear weapons with tactical and strategic aircraft.

Shields returned to operational flying in October 1966 when he entered a F-4 Phantom operational training course at Davis-Monthan Air Force Base in Arizona. In June 1967 he left for the Republic of South Vietnam and served with the 12th Tactical Fighter Wing at the Cam Ranh Bay Air Base. During his service in Southeast Asia, he flew one hundred and four combat missions. In December 1967 he was assigned as an operations staff officer in the Directorate of Operational Requirements, Seventh Air Force headquarters at Tan Son Nhut Air Base in Saigon, Republic of South Vietnam.

When he returned to the United States in July 1968, Shields served as a project scientist in the Mechanics Division, Air Force Office of Scientific Research in Arlington, Virginia. Here he was responsible for research in aerophysics and aeroacoustics, and established that agency's scientific research program in aircraft wake turbulence. In September 1969 he transferred to U.S. Air Force headquarters in Washington, D.C., to serve as chief of the Analysis Division in the Directorate of Operational Requirements and Development Plans where he managed long-range development planning studies and served as the directorate's representative on the Program Review Committee of the Air Staff Board. In June 1971, Shields became executive assistant to the undersecretary of the Air Force and served in this position until July 1973. The following month Shields attended the missile staff officers course at Vandenberg Air Force Base and was then assigned as vice commander of the 44th Strategic Missile Wing at Ellsworth Air Force Base in South Dakota in September. Shortly thereafter, in February 1974, he became commander of the 321st Strategic Missile Wing at Grand Forks Air Force Base in North Dakota. On 15 December 1975 he was promoted to the rank of brigadier general.

Brigadier General Shields became the director, Office of Space Systems, Office of the Secretary of the Air Force, in March 1976. It was during this time that he served as the staff director at the National Reconnaissance Office. Following his service at the NRO, which ended in June 1978, he was assigned as inspector general of the Air Force Systems Command at Andrews Air Force Base in Maryland. Then, in October 1979, he assumed the position of deputy chief of staff for space surveillance and missile warning systems, Strategic Air Command headquarters at Offutt Air Force Base in Omaha, Nebraska, where he remained until his retirement on 1 October 1981.

A command pilot with more than 3,500 flying hours, Brigadier General Shields wears the Senior Missileman Badge. His military decorations and awards include the Legion of Merit with two oak leaf clusters, the Distinguished Flying Cross, the Bronze Star, the Air Medal with five oak leaf clusters, the Air Force Commendation Medal, the Air Force Outstanding Unit Award ribbon with "V" device, and the Republic of South Vietnam Cross of Gallantry with palm.

Mr. Huntington D. Sheldon

**Director of Program B, National Reconnaissance Office,
27 September 1965 – 13 January 1967**



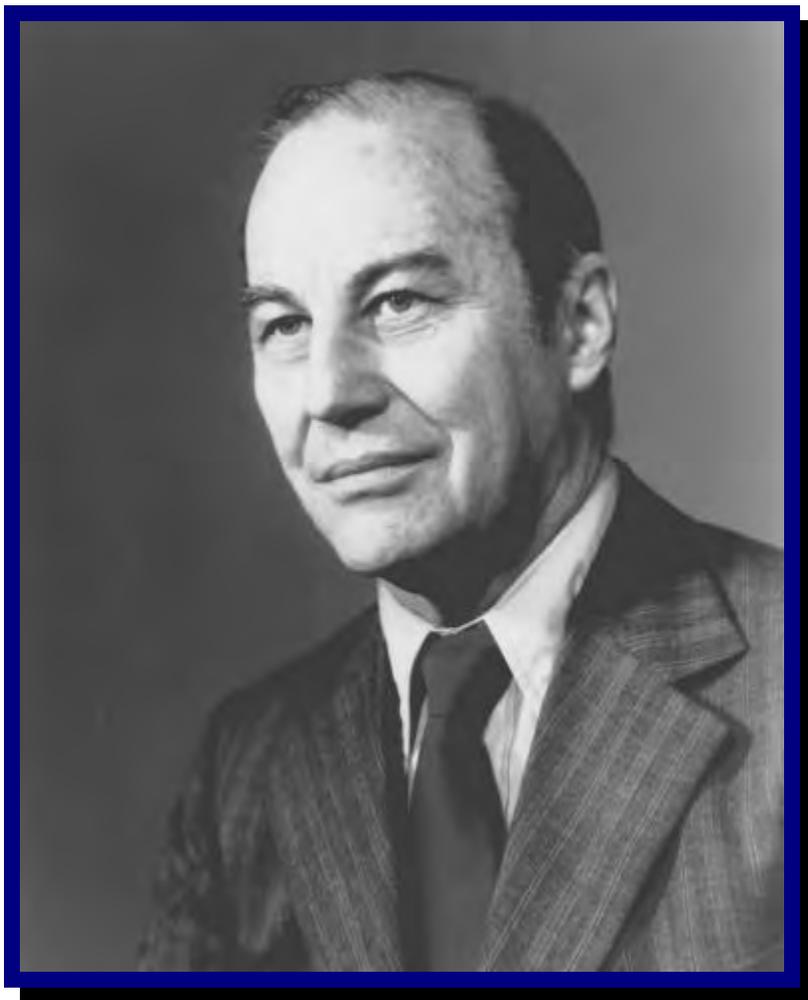
Huntington Denton “Ting” Sheldon was born on 14 February 1903 in Greenwich, Connecticut. Raised in England and France, Sheldon attended Eton in England between 1916 and 1921, and graduated from Yale University with a Bachelor of Arts in Economics in 1925. Sheldon first worked for Price Waterhouse as an auditor before accepting employment as an investment banker with Blair and Company in New York City, where he remained between 1927 and 1934. In the midst of the Great Depression, Sheldon became the president of the Petroleum Corporation of American, and stayed with this firm through 1942 when he joined the U.S. Army

Air Forces, rising to the rank of colonel before the end of World War II. For several years following the war, Sheldon owned and operated a fish hatchery in Toms River, New Jersey.

In June 1952 Sheldon joined the Central Intelligence Agency and served in a variety of positions involving signals intelligence and with the United States Intelligence Board (USIB), before becoming special assistant to the deputy director, Directorate of Science and Technology, in November 1963. Two years later he was named director of the CIA's Program B in the National Reconnaissance Program, a position in which he served from 27 September 1965 to 13 January 1967. During this time he focused much of his efforts on management restructuring and the start of major imaging and signals intelligence satellite programs. Sheldon also helped mend strained relations between the Department of Defense and the Central Intelligence Agency over the control of the National Reconnaissance Program. Sheldon engaged in other duties with the Central Intelligence Agency following his assignment with the National Reconnaissance Office, and retired from government service on 9 January 1970. For outstanding performance during his government career, Sheldon was awarded the Distinguished Intelligence Medal. He died on 19 May 1987 in McLean, Virginia.

Mr. Robert D. Singel

**Deputy Director of the National Reconnaissance Office,
18 September 1972 – 15 July 1974**



Robert Duane Singel was born in Eau Claire, Wisconsin, on 4 December 1919. He entered the University of Wisconsin in February 1939 and received a Bachelor of Science in Geology in June 1942. Upon graduation, Singel began working as a cartographic draftsman and hydrographic and geodetic engineer for the U.S. Department of Commerce, Coast and Geodetic Survey, Division of Charts. During World War II he was assigned to the U.S. Navy as a lieutenant (j.g.) and received his wings as a naval aviator in February 1947.

Singel remained with the Department of Commerce until joining the Central Intelligence Agency Geophysics Division as a seismologist in December 1950. During this time he also studied geography at The George Washington University in Washington, D.C. At the Central Intelligence Agency he served in a variety of positions dealing with military, scientific, and space requirements between 1952 and 1965 with the Space Division and the Directorate of Science and Technology. He completed a Master of Business Administration degree at The George Washington University in 1967. In that same year he also completed a course of study in business administration at the Industrial College of the Armed Forces. He was the first assignee from the Office of Science and Technology to the CIA Office of the Inspector General where he served for two years.

In May 1970 Singel was assigned as deputy director for special activities, the CIA office in the Directorate of Science and Technology responsible for U-2 reconnaissance aircraft. Two years later, on 18 September 1972, he was assigned to the National Reconnaissance Office as its deputy director, a position in which he served until 29 July 1974. Singel was prominent in the field of electronic intercept, an area in which he possessed exceptional knowledge, having earlier developed procedures to interpret foreign telemetry. During his career he introduced many important changes in signals collection. Following his tenure at the National Reconnaissance Office, Singel returned to the Central Intelligence Agency's Office of Special Activities, Directorate of Science and Technology, to direct its Office of Development and Engineering. Singel, who began his career in aerial photographic reconnaissance during World War II, served a total of twenty-five years at the Central Intelligence Agency before retiring in July 1975.

Robert Singel has been awarded the Intelligence Medal of Merit for managing the reconfiguration of P-3A Orion aircraft for low-level reconnaissance, the Air Force Outstanding Unit Award, and the Meritorious Unit Citation for successful U-2 deployments.

Brigadier General Joseph B. Sovey, USAF

**Director of IMINT Systems, Acquisitions, and Operations Directorate,
National Reconnaissance Office,
30 November 1998 – 6 May 2001**



Joseph Bert Sovey was born in Cleveland, Ohio, on 25 August 1951. Admitted to the U.S. Air Force Academy in 1969, Sovey graduated with a Bachelor of Science in Engineering Management with the class of 1973. Commissioned as an Air Force second lieutenant in June of that year, Sovey's first assignment was as a project manager with the Satellite Test Program at the U.S. Air Force Space Systems Division located at the Los Angeles Air Force Station in

California. During his four-year tour at the Space Systems Division, he completed a Master of Science in Systems Management at the University of Southern California.

For the next five years, between March 1977 and January 1983, Sovey served as a staff officer for command, control, and communications with the Developmental Plans Office of the Air Force Systems Command at Andrews Air Force Base in Maryland. While at Andrews, he also served as assistant for officer evaluation management in manpower and personnel and then as the aide-de-camp to the commander of Air Force Systems Command. Following completion of studies at the Armed Forces Staff College in Norfolk, Virginia, in July 1983, Sovey was assigned as the program control chief and class II program manager of the Joint Tactical Information Distribution System Program Office at Hanscom Air Force Base in Massachusetts. This was the first in a series of assignments at Hanscom that lasted until July 1988. During this time, and while he was a lieutenant colonel, Sovey served as the program director for the Joint Services Imagery Processing System for the Deputy Commander for Intelligence, then as the deputy base commander of the 3245th Air Base Group, and finally as the deputy system program director of the Joint Surveillance Target Attack Radar System.

Sovey's next assignments were in Washington, D.C., where he served between July 1988 and July 1992 as the deputy chief of congressional affairs and then as the chief of the Program Integration and Congressional Affairs Division, both with the Office of the Assistant Secretary of the Air Force for Acquisition. While in Washington, D.C., Sovey was also a student at both the Defense Systems Management College at Fort Belvoir, Virginia, and the Industrial College of the Armed Forces at Fort Lesley J. McNair. In August 1992 Colonel Sovey began a new series of assignments with the Space and Missile Systems Center at the Los Angeles Air Force Base, California. First he served as the director of the Satellite Communications Program Office, and then as the deputy director, and then director, of the Titan Systems Program Office. With broad experience in acquisition, Sovey transferred back to Washington, D.C., in July 1995 to serve as the associate deputy assistant secretary for management policy and program integration with the Office of the Assistant Secretary of the Air Force for Acquisition. Then, in April 1996, Colonel Sovey was named program director of the Military Satellite Communications Joint Program Office and he returned to the Space and Missile Systems Center in Los Angeles. In this assignment, he was responsible for integrated systems management of satellites, mission control systems, and communication terminals for Department of Defense space communications programs.

On 1 August 1998 Sovey was promoted to the rank of brigadier general, and on 30 November 1998 he was appointed director of the Imagery Intelligence (IMINT) Systems Acquisition and Operations Directorate at the National Reconnaissance Office. Brigadier General Sovey served as the IMINT director until 6 May 2001. His responsibilities included acquiring, operating, and directing space activities for national space imagery systems supporting the Department of Defense and the Intelligence Community. During his NRO service, Sovey was selected for major general rank. He was then reassigned as the director of space and nuclear deterrence with the Office of the Assistant Secretary of the Air Force for Acquisition.

Among Brigadier General Sovey's many military awards and decorations are the Defense Superior Service Medal with one oak leaf cluster, the Legion of Merit with one oak leaf cluster, the Defense Meritorious Service Medal, the Meritorious Service Medal with three oak leaf clusters, and the Air Force Commendation Medal with one oak leaf cluster.

Rear Admiral Jay W. Sprague, USN

**Director of Program C, National Reconnaissance Office,
31 January 1992 – 31 December 1992**



Born in St. Louis, Missouri, on 13 May 1943, Jay Woodrow Sprague entered the U.S. Naval Academy in June 1961 and completed a bachelor of science degree, graduating with the class of 1965. After flight training in Florida and Georgia, Sprague earned his wings in August 1966 and completed a Master of Science in Computer Science at the Naval Postgraduate School in 1972. He subsequently served at sea with Carrier Airborne Early Warning Squadron 11, and as an avionics officer in VAW-113, completing two combat deployments to Southeast Asia during the Vietnam War. Sprague was operations officer in VAW-125 during that squadron's

first deployment of the E-2C Hawkeye airborne early warning aircraft. He also served, between February 1979 and July 1981, as executive officer, and then as commander, of VAW-121 during its first E-2C deployment. During his tenure as commander, the squadron was awarded three consecutive Battle "E"s, the CNO Safety "S," and the Airborne Early Warning Excellence Award.

Ashore between 1981 and 1987, Sprague served as an instructor for the E-2B aircraft fleet introduction and as project officer for the first E-2C tactics trainer procurement. He was the naval flight officer in charge of training, and later commanding officer of VAW-120 and the E-2/C-2 training squadron during fleet introduction of the C-2A Greyhound. In Washington, D.C., he served as special assistant to the director, Naval Warfare, on the staff of the deputy commander for research and development at the Naval Air Systems Command, and as the military assistant to the deputy assistant secretary of the Navy.

In July 1987 Sprague reported to the Naval Air Systems Command as deputy to the U.S. Navy air acquisition executive and deputy commander for operations. Following this position, from May 1988 to January 1992, Sprague served as program manager for the E-2C and the C-2A at the Naval Air Systems Command. Promoted to rear admiral, Sprague reported in January 1992 as the assistant commander for space technology and as the last director of the U.S. Navy's National Reconnaissance Program C, serving in this post until 31 December 1992, when the separate NRO programs were combined into functional directorates. He retired from active military duty on 1 October 1993.

Rear Admiral Sprague has been awarded the Legion of Merit, the Meritorious Service Medal, the Air Medal, the U.S. Navy "E" Ribbon, and the Republic of South Vietnam Air Gallantry Cross.

Ms. Carol A. Staubach

**Director, Advanced Systems & Technology Directorate,
National Reconnaissance Office,
1 May 2000 – 26 August 2001**

**Director, IMINT Systems Acquisition and Operations Directorate,
National Reconnaissance Office,
27 August 2001 – Present**



Carol Annice Staubach was born in Johnstown, Pennsylvania, on 1 February 1947. Raised in Pennsylvania, she graduated from the University of Pittsburgh in June 1968 with Bachelor of Science degrees in Mathematics and Physics. She did graduate work in mathematics at the University of Pittsburgh, while teaching high school in the Pittsburgh school system from

January 1968 until April 1970. Staubach joined the Central Intelligence Agency in April 1970 and subsequently served in a variety of positions in the Office of Joint Computer Services, Directorate of Administration, while continuing graduate studies at The George Washington University in Washington, D.C. In 1984 she transferred to the Office of Communications and led the New Building Communications Program, at that time the second largest procurement program in Central Intelligence Agency history.

In 1988 Staubach joined the National Reconnaissance Office as a deputy division chief assigned to assist development of advanced technology to support the NRO's imagery satellite collection programs. Three years later, in October 1991, she managed a leading edge supercomputer development program within one of the NRO's operational program offices. In June 1992 she was named associate director, and then director, of the IMINT Systems Operations sector. In November 1996, Ms. Staubach was appointed director of the GEOSPO in the NRO SIGINT Directorate, and the next year, in October 1997, after a directorate-wide reorganization, she was named director of the Ground Systems Program Office. In the course of these assignments she had responsibility for running the largest NRO signals intelligence program office.

On 1 May 2000, Staubach was named the director of the NRO Advanced Systems and Technology Directorate where she served until being reassigned as director of the NRO Imagery Intelligence (IMINT) Systems Acquisition and Operations Directorate on 27 August 2001, a position in which she continues to serve.

Ms. Staubach was named to the Senior Intelligence Service in July 1985. She received the Distinguished Officer Award in January 1987, the Meritorious Officer Award in January 1993, and a National Intelligence Distinguished Service Medal in August 1997. She received the NRO Director's Circle Award in 2001.

Captain James M. Stephenson, USN

**Director, Operational Support Office, National Reconnaissance Office,
28 August 1992 – 1 September 1993**



James Mell Stephenson was born in Athens, Georgia, on 9 August 1946. He attended Valdosta State University where he earned a Bachelor of Science in Business Administration in 1968. Following flight training at the U.S. Naval Air Station, Pensacola, Florida, between March 1969 and March 1970, Stephenson began his career as a naval flight officer in an EC-121M aircraft conducting reconnaissance missions in support of military operations in the Republic of South Vietnam, as well as national priority collections throughout the Western Pacific as part of Fleet Air Reconnaissance Squadron 1. Stephenson remained with this unit from August 1970

until March 1973, where he also qualified as a senior evaluator and accumulated over 3,000 flight hours in various aircraft, including the EC-121, EP-3E and EA-3B. Subsequently, between March 1973 and March 1976, he was assigned to the Joint Strategic Target Planning Staff at Strategic Air Command headquarters at Offutt Air Force Base in Bellevue, Nebraska, south of Omaha, where he was responsible for special targeting operations in support of the Single Integrated Operational Plan (SIOP). Additionally, he was singly responsible for the threat and route analysis for all planned manned bomber sorties.

In April 1976, then Lieutenant Stephenson began a thirteen-year association with the EA-6B "Prowler" community. During this period, he served in two operational squadrons, and with the Fleet Replacement Training Squadron. His first operational squadron tour was with Tactical Electronic Warfare Squadron 130 from 1976 until 1979. Then, from 1979 until 1982, he served as head of the Electronic Warfare Department in Tactical Electronic Warfare Squadron 129 and was promoted to the rank of lieutenant commander. In 1982, he was assigned to the Naval Air (NAVAIR) Systems Command in Washington, D.C. During this assignment, Lieutenant Commander Stephenson was responsible for the development and deployment of the EA-6B Tactical, EA-6B Mission Support System (TEAMS), as well as the advanced tactical jammer and exciter for the Improved Capability II (ICAP II) ALQ-99 System. While assigned to NAVAIR, Lieutenant Commander Stephenson was one of the key managers in the integration of the High Speed Anti-Radiation Missile (HARM) on the EA-6B aircraft. Promoted to the rank of commander, Stephenson was selected for aviation command and returned to the Naval Air Station at Whidbey Island, Washington, with Squadron 140.

Commander Stephenson subsequently was assigned to the U.S. Navy's Space Technology Program Office between May 1989 and August 1992, where he managed the evolution and deployment of the Tactical Receive and Related Applications Broadcast Program and the multi-mission advanced tactical receiver. In 1990 he established and directed the Systems Application Program Office, which provided crucial support to the Joint U.S. and multinational coalition forces later deployed against Iraq during Operations Desert Shield and Desert Storm. On 28 August 1992 Captain Stephenson was assigned to the National Reconnaissance Office, where he became director of the newly formed Operational Support Office, established to provide closer liaison between the NRO and its customers and mission partners adapting to lessons learned during the Gulf War. He served in this position until 1 September 1993, when he retired from the U.S. Navy.

During his 25 years of active military duty, Captain Stephenson engaged in tactical and strategic strike operations, tactical reconnaissance, and electronic warfare. Besides attending Valdosta State University, he completed courses of study at Creighton University in Omaha, Nebraska, and at the Defense Management College. In recognition of his service, Captain Stephenson received the Defense Superior Service Medal, the Meritorious Service Medal, the Air Medal with three gold stars, the Navy Commendation Medal with Combat "V," the Joint Service Commendation Medal, and numerous other awards and citations.

Brigadier General James T. Stewart, USAF

**Staff Director, National Reconnaissance Office,
3 August 1964 – 1 February 1967**



James T. Stewart was born in St. Louis, Missouri in 1921, and graduated from Roosevelt High School in that city in 1938. He attended the University of Michigan and in 1941 enlisted as an aviation cadet and received his pilot wings and a commission as a second lieutenant in the U.S. Army Air Corps Reserve at Brooks Field, Texas. In 1942 Stewart was assigned to the 116th Observation Squadron at Fort Lewis, Washington, where he flew coastal patrol missions during the early months of World War II. That fall, he was assigned to B-17 Flying Fortress transition training at Geiger Field, Washington, where he became an instructor pilot. Shortly thereafter, he was assigned as a flight leader in a newly activated B-17 bombardment group that was sent to

England in May 1943. The next month, Stewart was appointed commander of the 508th Bombardment Squadron, 351st Bombardment Group, Eighth U.S. Army Air Force, stationed in Polebrook, England, and subsequently flew combat missions against Axis targets in Europe until V-E Day in May 1945. Following World War II, Stewart returned to the University of Michigan and graduated in June 1948 with a Bachelor of Science in Aeronautical Engineering.

Following the completion of his education, Stewart was assigned to the Air Proving Ground Command at Eglin Air Force Base in Florida, where for the next four years he held key posts in operational suitability test organizations. During his tour at Eglin, he helped pioneer techniques for long-range cruise control and dive-bombing delivery of nuclear weapons in jet fighter aircraft. In 1952, Stewart was assigned to the Far East Air Force headquarters in Tokyo, Japan, at the height of the Korean War. There he helped establish requirements for war materiel, supervised local modifications of equipment, and was a key planner in the development of nuclear delivery capability of F-84 aircraft. During the last year of his tour he was the assistant deputy for operations for the Far Eastern Air Force. In 1955, he was assigned to U.S. Air Force headquarters in Washington, D.C., in a research and development planning and programming capacity, and, subsequently, became the assistant for development planning. In 1958 he published a book entitled *Airpower: The Decisive Force in Korea*.

Stewart continued his education and attended the Industrial College of the Armed Forces from August 1959 until June 1960, before being assigned to the Air Research and Development Command (ARDC) at Andrews Air Force Base in Maryland as the assistant for programming, and later as the assistant deputy chief of staff for systems when ARDC became the Air Force Systems Command. In 1962 Stewart returned to Air Force headquarters as the executive officer to the deputy chief of staff for research and development. The next year, he became the director of science and technology, while also attending night classes at The George Washington University in Washington, D.C., where he earned a Master of Business Administration degree.

The following year, in August 1964, Stewart was assigned to the Office of the Secretary of the Air Force as the director, Office of Space Systems. During this three-year period, between August 1964 and February 1967, Stewart served as the staff director of the National Reconnaissance Office. Following NRO service, Stewart was briefly assigned to the Air Staff as director of space, before assuming duty as the vice director of the Manned Orbiting Laboratory Program. Following assignment as the deputy chief of staff of systems, Air Force Systems Command, Andrews Air Force Base, in June 1970 Stewart took command of the Aeronautical

Systems Division at Wright-Patterson Air Force Base in Ohio, where he was responsible for developing and buying all Air Force aircraft, engines, and atmospheric missiles. At the same time that Stewart took this command, he was promoted to the rank of lieutenant general. Stewart retired from active military duty after thirty-five years of service on 1 September 1976. He died on 3 September 1990.

For his service, Lieutenant General Stewart was awarded the Air Medal seven times as well as the French croix de guerre. He also received the Distinguished Flying Cross twice, as well as the Distinguished Service Medal, the Legion of Merit with oak leaf cluster, the Bronze Star, the Air Force and Army Commendation Medals, the European-African-Middle Eastern Campaign Medal with six service stars, the World War II Victory Medal, the Korean Service Medal, and the United Nations Service Medal.

Mr. Garnett R. Stowe, Jr.

**Chief of Staff, National Reconnaissance Office,
6 September 1994 – Present**



The current National Reconnaissance Office Chief of Staff, Garnett Reddie Stowe, Jr., was born in Brooklyn, New York, on 4 April 1949. Raised in the New York City metropolitan area, he received his Bachelor of Arts in History from Howard University in the District of Columbia in June 1972, where he was also designated a distinguished military graduate of the U.S. Army Reserve Officer Training Corps. Stowe also has a graduate certificate in aerodynamics and has attended the Harvard Seminar on Intelligence and Policy.

Upon graduation from Howard University, Stowe was commissioned a second lieutenant in the Regular U.S. Army and was assigned to the armor branch. During his military career he held command and staff positions from platoon to brigade level. Beginning in 1990, in Operation Desert Shield, and subsequently in Operation Desert Storm, he commanded an aviation task force and participated in combat operations against Iraqi forces. With the 1991 conclusion of Operation Desert Storm, then Colonel Stowe assumed command of the Aviation Brigade, 2nd Armored Division, then at Fort Hood, Texas. Starting in January 1992, and until his retirement from the military that December, Stowe conducted special projects and intelligence analyses and reviews for the Office of the Secretary of Defense.

Stowe joined the Central Intelligence Agency on 26 April 1993, initially serving with the Director of Central Intelligence Staff Group. After several months he moved to the Community Management Staff as a senior planning and policy officer, responsible for coordinating strategic planning efforts and policy positions for senior level decision makers across the federal government. Appointed as director of the Systems and Architectures Office, Community Management Staff, in March 1994, he was responsible for coordinating the full spectrum of intelligence collection programs across the U.S. Intelligence Community and other federal government agencies for Director of Central Intelligence R. James Woolsey. With this broad perspective, Stowe was assigned to the National Reconnaissance Office in August 1994 as the executive assistant to the director. On 6 September 1994, he was appointed the first chief of staff of the NRO. In this position, he directs staff functions and provides advice and counsel to the director and deputy director, NRO, on key topics ranging from congressional issues to senior staffing decisions.

Mr. Stowe is a member of the Senior Intelligence Service and is a Director of Central Intelligence Fellow. A decorated combat aviator, Stowe has received several civilian awards including the NRO Distinguished Service Medal.

Mr. Boyd D. Sutton

**Director of Plans & Analysis, National Reconnaissance Office,
1 October 1992 – 5 June 1994**



Boyd Davis Sutton was born in Phoenix, Arizona, on 29 July 1941. He lived overseas with his parents from 1947 to 1959 while his father was assigned to various posts in Europe and the Middle East with the Central Intelligence Agency. He earned a Bachelor of Arts in Political Economy from Pennsylvania Military College in 1964. Upon graduation, he was commissioned a second lieutenant in the U.S. Army. Following infantry officer basic and airborne training, he was assigned to the 25th Infantry Division stationed in Hawaii. He was deployed overseas with the 1st Battalion (Mechanized), 5th Infantry, for combat duty in the Republic of South Vietnam,

where he served as a platoon leader, assistant battalion logistics officer, and as the battalion intelligence officer.

Upon his return to the United States, now Captain Sutton attended the Area Officers Intelligence Course at Ft. Holabird, Maryland, and then was assigned to human intelligence collection with the 513th Military Intelligence Group in the Federal Republic of Germany. He was assigned to a second tour of duty in South Vietnam in mid-1968 and served with the 525th Military Intelligence Group then working on a clandestine project with the Central Intelligence Agency. He received two Bronze Star Medals during this tour.

Upon returning from South Vietnam, Captain Sutton was assigned to the Defense Intelligence College, then to the Defense Intelligence Agency, where he created a new branch of analysis to study Soviet command and control systems. He was subsequently assigned to the CIA in a military capacity, before resigning his commission to accept a permanent position with the Agency. He served in various analytic assignments studying Soviet military forces and was an estimate manager working on the annual estimates of Soviet strategic forces before his assignment as chief of the Soviet and Warsaw Pact Ground Forces Branch, serving in that capacity during the Soviet invasion of Afghanistan in late 1979 and the Polish crises of 1981 and 1982.

Mr. Sutton was selected for attendance at the National War College in 1982 and received first prize from the chairman of the Joint Chiefs of Staff, Gen. John W. Vessey, Jr., for his essay on "*Strategic and Doctrinal Implications of Deep Attack Concepts for the Defense of Central Europe.*" Sutton was then assigned to the Office of the Assistant Secretary of Defense for International Security Policy, where he managed production of papers on the use of advanced technologies to improve NATO's conventional defenses, working closely with the secretary of defense and U.S. Congress. For his work in this position, leading to several changes in U.S. and NATO strategies, Sutton was awarded the Defense Superior Service Medal by then Secretary of Defense Casper W. Weinberger.

Mr. Sutton returned to the Central Intelligence Agency in 1985 and created a new staff to analyze collection program investments. In this capacity, he became a principal advisor to Director of Central Intelligence William J. Casey and was instrumental in guiding several major investment decisions in the late-1980s. During this time, he was selected for the Harvard University program for senior government executives. When Director of Central Intelligence William H. Webster established a panel in early-1989 to examine potential restructuring of the

National Reconnaissance Office, Sutton was assigned as the CIA member. This effort led to the creation of the NRO's office of Plans and Analysis, and Sutton was selected as its first deputy director. Mr. Sutton served in that capacity until becoming the director of the NRO office of Plans and Analysis on 1 October 1992, serving in that position until 5 June 1994.

Sutton returned to the Central Intelligence Agency in the summer of 1994 and, through 1995 until his retirement in September 1996, he served as the chief of the Programs and Policy Group. In this capacity he advised Directors of Central Intelligence R. James Woolsey and John M. Deutsch, and other senior intelligence leaders, on information policy and investments crossing all intelligence programs.

Colonel Edwin F. Sweeney, USAF

**Staff Director, National Reconnaissance Office,
21 August 1970 – 31 May 1971**



Edwin F. Sweeney was born in Shortsville, New York, on 24 June 1921. He entered the U.S. Army Air Corps as an aviation cadet on 15 January 1942, and received his wings and a commission as a second lieutenant on 10 October 1942.

After serving in the Southeast Training Command in B-26 Marauder and B-24 Liberator aircraft in 1943, he was assigned to the Army Air Force Proving Ground Command with duty at Muroc Field, California, and at the Cold Weather Testing Detachment at Ladd Field in Fairbanks, Alaska Territory. In September 1945 he was assigned to the chairman of the board of

military advisors of the U.S. Strategic Bombing Survey at the Pentagon in Washington, D.C., and served as a pilot of a B-17 aircraft that flew this group around the world as they assessed the impact and effectiveness of the American strategic bombing campaign against the Axis powers during the Second World War. Discharged from the service following this assignment, Sweeney entered Purdue University in Indiana, and graduated with a bachelor of science degree in 1949.

Returning immediately to the Air Force after the completion of his education, Sweeney completed the Atomic Energy and Airborne and Ground Radar Courses at Keesler Air Force Base in Biloxi, Mississippi. In 1951 he joined the Office of the Assistant for Atomic Energy with duty at Shemya, Aleutian Islands, in the Alaska Territory, as an operations officer. From 1952 through 1955, Sweeney served with the 1009th Special Weapons Squadron at Eniwetok Atoll in the Marshall Islands, and at McClellan Air Force Base in California, at Eielson Air Force Base in Alaska, and at Bikini Atoll, also in the Marshall Islands, as an air operations officer. After a further one-year tour in 1956 at Headquarters, 1009th Special Weapons Squadron, located within U.S. Air Force headquarters, Sweeney joined Team 407 of the 1009th Special Weapons Squadron, then stationed at Yokota Air Base, Japan, as director of operations of the 35th Fighter-Inceptor Wing (Sampling).

Continuing his service education, Sweeney graduated from the Air War College at Maxwell Field, Alabama, and from the Armed Forces Staff College at the Norfolk Naval Operations Base in Virginia, by 1959, and was then assigned to the Air Force Ballistic Missile Division with responsibility for planning the deployment of prototype intercontinental ballistic missiles into hardened missile silos. In 1962, while serving as the executive officer for the deputy for engineering, he was temporarily assigned to the Project Forecast Office at the RAND Corporation in Santa Monica, California, as the executive officer providing administration and technical support for two hundred scientists and engineers. In 1964 Sweeney transferred to the Office of the Deputy Director for Advanced Plans at Space Systems Division headquarters, where he served for three years before reporting to Air Force Systems Command headquarters at Andrews Air Force Base, Maryland, in 1967 as program director of Compass Link, a system successfully deployed to the Republic of South Vietnam that year. Sweeney reported to the National Reconnaissance Office in 1968 and first served as deputy director of technical services. On 21 August 1970 Colonel Sweeney was named NRO staff director and remained in this position until 31 May 1971. He retired from the U.S. Air Force in July 1971.

After his retirement from military service, Sweeney joined in partnership with several corporations and is presently the chief executive officer of the Cow Creek Land Company in Santa Fe, New Mexico. Among Colonel Sweeney's many military awards and decorations are the Legion of Merit, the Air Medal, the U.S. Army Commendation Medal with two oak leaf clusters, and the Air Force Commendation Medal with three oak leaf clusters.

Rear Admiral Rufus L. Taylor, USN

Director of Program C, National Reconnaissance Office,
19 June 1963 – 14 June 1966



Rufus Lackland Taylor was born in St. Louis, Missouri, on 6 January 1910. He entered the U.S. Naval Academy in 1929 and graduated with the class of 1933. Upon accepting his commission in the Navy in June 1934, Taylor was assigned to the *USS Arizona*, serving with that ship's aviation unit, Observation Squadron 2-B, before his transfer late in 1936 to duty aboard the destroyer *USS Preston*. From September 1938 until September 1941, Taylor was a student of the Japanese language at the U.S. Embassy in Tokyo, Japan, before transferring to Headquarters, Sixteenth Naval District, located at Cavite, Philippine Islands, for duty as a communications

officer. After the Imperial Japanese invasion of the Philippines in late December 1941, and the subsequent surrender of American and Filipino forces on the Bataan Peninsula and on Corregidor Island in April and May 1942, Taylor was among the very few Americans who escaped from the islands by motor torpedo boat and submarine to Australia. From April 1942 until February 1943 he served on the staff of the commander, Allied Naval Forces, Southwestern Pacific.

Returning to the United States, Taylor served from March 1943 until November 1944 in the Office of the Chief of Naval Operations in Washington, D.C. He was again ordered to the Pacific in December 1944, and for the remainder of the war performed various communications intelligence duties at Headquarters, Fourteenth Naval District, located at Pearl Harbor, Hawaii. Following the war, Taylor continued with his communications intelligence activities, serving in a series of appointments including director of the Office of Naval Intelligence.

From 19 June 1963 until 14 June 1966, Rear Admiral Taylor served as the director of the U.S. Navy's National Reconnaissance Office Program C. During his NRO tenure, Taylor was instrumental in supervising the introduction and operation of an important low altitude signals intelligence satellite system. Following service at the National Reconnaissance Office, Taylor was promoted to the rank of vice admiral and was appointed deputy director of the Central Intelligence Agency where he served until 1 February 1969. He had the distinction of being the only NRO program director to serve in this capacity within the CIA, and as deputy director of the Defense Intelligence Agency during this same time period.

Vice Admiral Taylor retired on 1 February 1969, ending a military career of nearly thirty-six years. He died on 14 September 1978. His awards and decorations, in addition to nine campaign and service medals, include the Distinguished Service Medal, the Central Intelligence Agency Distinguished Service Medal, the Bronze Star Medal with combat "V," the U.S. Army Distinguished Unit Badge with oak leaf cluster, and the U.S. Navy Unit Commendation Ribbon.

Mr. Peter B. Teets

**Director of the National Reconnaissance Office
13 December 2001 - Present**



The current and fourteenth director of the National Reconnaissance Office, Peter Burritt Teets, was born in Denver, Colorado, on 12 February 1942. Raised in the Denver area, he earned Bachelor and Master of Science degrees in Applied Mathematics in 1963 and 1965 at the University of Colorado at Boulder and Denver, respectively.

Mr. Teets joined the Martin Marietta Corporation in Denver in 1963 as an engineer in flight control analysis. From 1970 until 1975 he managed the integration of a new inertial guidance system in the Titan IIIC launch vehicle. Then, between 1975 and 1980, he served as the program manager of the Transtage Project, and as director of space systems at Martin Marietta. During this time, in 1978, Mr. Teets earned a Master of Science degree in Management from the

Massachusetts Institute of Technology. For two years, between 1980 and 1982, he was vice president of business development for Martin Marietta Denver Aerospace, and, from 1982 until 1985, served as the vice president and general manager of the Aerospace Strategic and Launch Systems Division of Martin Marietta in Denver.

In 1985 Mr. Teets was named president of Martin Marietta Denver Aerospace. While in this position, he was awarded an honorary doctor of science degree from the University of Colorado at Denver. For two years prior to the merger of Lockheed Corporation and Martin Marietta in 1995, Teets was president of the Martin Marietta Space Group and of the Martin Marietta Astronautics Group in Bethesda, Maryland. Following the merger of the two companies, and until 1997, Teets served as president and chief operating officer of the new corporation's information and services sector in Bethesda. Mr. Teets was named president and chief operating officer of the Lockheed Martin Corporation in July 1997. He remained in these positions until his retirement in 1999.

In the fall of 2001, Mr. Teets ended his retirement and was named under secretary of the Air Force and director of the National Reconnaissance Office. He began service as at the NRO on 13 December 2001.

Mr. Teets is a Sloan Fellow, and a fellow of both the American Institute of Aeronautics and Astronautics and the American Astronautical Society. In 1999 he was inducted into the National Academy of Engineering. Mr. Teets serves on the Council of Trustees of the Association of the United States Army (AUSA), and is a member of the board of directors of the National Action Council for Minorities in Engineering and the Ethics Resource Center.

Colonel Dan M. Vannatter, USA

**Director, Operational Support Office, National Reconnaissance Office,
2 September 1993 – 31 July 1995**



A native of Muncie, Indiana, Dan Mathias Vannatter was born on 15 September 1946. He received a Bachelor of Arts in Psychology from Wabash College in Crawfordsville, Indiana, in May 1968. Following graduation, Vannatter was drafted into the U.S. Army that December. An Engineer Officer Candidate's School graduate, Sergeant Vannatter was commissioned a second lieutenant at Fort Belvoir, Virginia, in October 1969. He served nearly two years as an intelligence officer in the Republic of South Vietnam, during the war in Southeast Asia, beginning in January 1971. He returned to the United States as a special security officer at the

Pentagon in Washington, D.C., in October 1973. Following completion of the Military Intelligence Advanced Course at Fort Huachuca, Arizona, in June 1974, and the Special Forces Qualification Course at Fort Bragg, North Carolina, then Captain Vannatter was assigned to the U.S. Army 10th Special Forces Group (Airborne). He next attended the Naval Postgraduate School in Monterey, California, where he earned a Master of Science in Operations Research/Systems Analysis in May 1979. Soon thereafter, he served as the operations research officer for combat developments at the U.S. Army Intelligence Center and School at Fort Huachuca, Arizona.

In October 1982 Major Vannatter returned to the U.S. Army Special Operations Command at Fort Bragg, North Carolina, where he served as the deputy chief of intelligence for the U.S. Army 1st Special Operations Command, as the intelligence officer of the 7th Special Forces Group (Airborne), and as the commander of the 7th Special Forces Group Military Intelligence Company. Following attendance at the Foreign Area Officer School, and Spanish-language instruction at the Defense Language Institute at Fort Bragg in 1986, he was assigned to Headquarters, U.S. Southern Command, located at Quarry Heights outside Panama City, Panama, as chief of the Intelligence Plans Division. In July 1988 Lieutenant Colonel Vannatter was selected to serve as the intelligence officer of the U.S. Army 7th Infantry Division (Light), and, while in this position, deployed to Panama with the initial entry forces of Operation Just Cause on 20 December 1989. He remained in Panama until the 7th Infantry Division redeployed to Fort Ord, California, in March 1990.

Following his selection for battalion-level command in May 1990, Lieutenant Colonel Vannatter took command of the 102nd Military Intelligence Battalion, U.S. Army 2nd Infantry Division, in the Republic of South Korea, in July 1990. He returned to the United States in June 1992 to attend the Air War College in Montgomery, Alabama, where he graduated in June 1993. That July, Colonel Vannatter was selected as the director of the NRO's Operational Support Office. He reported to Washington, D.C., and assumed direction of the OSO on 2 September 1993. He held this position until 31 July 1995.

Colonel Vannatter retired after twenty-seven years of military service on 1 February 1996. In retirement, Vannatter continued to support the Department of Defense and the National Reconnaissance Office as a civilian contractor.

Among Colonel Vannatter's awards and decorations are the Defense Distinguished Service Medal, the Legion of Merit, the Bronze Star, the Defense Meritorious Service Medal, the

Meritorious Service Medal with seven oak leaf clusters, the Joint Service Commendation Medal, the Army Commendation Medal with two oak leaf clusters, the Overseas Service Ribbon, the Vietnamese Cross of Gallantry with palm, the Vietnam Service Medal with four stars, the Master Parachutists Badge and the Special Forces Tab.

Brigadier General Donald R. Walker, USAF

**Staff Director, National Reconnaissance Office,
6 February 1989 – 30 November 1992**

**Director of Plans & Analysis, National Reconnaissance Office,
January 1990 – 30 December 1992**

**Director of SIGINT Systems, Acquisitions, and Operations Directorate,
National Reconnaissance Office,
4 December 1992 – 16 July 1995**



Donald R. Walker was born on 26 April 1944 in Buffalo, New York. He attended Frontier Central High School in Hamburg, New York, graduating in 1962, then entered the U.S.

Air Force Academy and graduated with a Bachelor of Science in Engineering Science in 1966. Upon graduation, he was commissioned as a second lieutenant. Walker's first active duty assignment was as a propulsion project engineer in the Titan III Systems Program Office of the Space and Missile Systems Organization at the Los Angeles Air Force Station in California. From September 1969 until February 1971 he continued his education at the University of Southern California through the Air Force Institute of Technology Program and earned a Master of Science in Mechanical Engineering, while at the same time completing Squadron Officer School.

Walker next was assigned as a project engineer in the Service Engineering Division at the Ogden Air Logistics Center at Hill Air Force Base in Utah, before transferring in June 1974 to the Sunnyvale Air Force Station in California, serving as deputy commander for satellite operations and mission director with the Air Force Satellite Control Facility. In 1980 he completed a Master of Arts degree in Business Administration at Auburn University and studies at the Air Command and Staff College, before assignment to the National Reconnaissance Office, Office of Space Systems with the Office of the Secretary of the Air Force (SAF/SS). Here he served as director of national space systems planning, and as deputy director for systems and technology. Five years later, in June 1985, he returned to the Los Angeles Air Force Station as director of operations with NRO Program A. At the same time, Walker completed studies at the Air War College and was designated a distinguished graduate in 1985.

In July 1986, Walker returned to Sunnyvale, California, to serve as the last commander of the Air Force Satellite Control Facility and as the first commander of the Consolidated Space Test Center at Onizuka Air Force Station. Here he was responsible for the worldwide satellite control network and mission control center that provided on-orbit support to National Reconnaissance Office and Department of Defense spacecraft. In November 1987 Walker became the program director of the Defense Satellite Communications System (DSCS), and the deputy commander for defense surveillance at the Los Angeles Air Force Base. Here he was responsible for the acquisition and operation of the DSCS, NATO III, Fleet Satellite Communications, and Air Force Satellite Communications Programs.

On 6 February 1989 Walker became the director of the Office of Space Systems within the Office of the Secretary of the Air Force in Washington, D.C., as the staff director of the National Reconnaissance Office. Promoted to the rank of brigadier general on 1 May 1990, Walker was then assigned as the director of the NRO office of Plans and Analysis, a position he

held until 30 December 1992. That same year, on 4 December, Brigadier General Walker became the director of the Special Projects Office, Office of the Secretary of the Air Force, at the Los Angeles Air Force Base in California, as well as the first director of the newly created National Reconnaissance Office Signals Intelligence (SIGINT) Systems Acquisition and Operations Directorate, remaining in the latter position until 16 July 1995. He retired from active duty on 1 October 1995.

Among Brigadier General Walker's military awards and decorations are the Legion of Merit, the Meritorious Service Medal with three oak leaf clusters, the Air Force Commendation Medal, the Air Force Outstanding Unit Award with oak leaf cluster, the Air Force Organizational Excellence Award with two oak leaf clusters, and the National Defense Service Medal. He is a member of the Tau Beta Pi National Engineering Honorary Fraternity and was chosen as an Honorary Chief Master Sergeant in 1987.

Colonel Daniel W. Wells III, USA

**Director, Operational Support Office, National Reconnaissance Office,
9 December 1996 – 18 August 2000**



Daniel William Wells III was born in Philadelphia, Pennsylvania, on 24 April 1949. He attended the University of Delaware in Newark, Delaware, where he was a member of the Reserve Officer Training Corps. Commissioned a second lieutenant upon graduation with a Bachelor of Arts in Physics in June 1971, his first U.S. Army assignment was in the Federal Republic of Germany as a signals intelligence officer, electronic maintenance officer, and company executive officer from June 1972 until October 1975. He next reported to the National Security Agency at Fort George G. Meade in Maryland, where he participated in the Junior

Officer Cryptologic Career Program between September 1975 and December 1978. Then, until June 1982, Captain Wells served as a company commander and tactical intelligence officer at the U.S. Army Intelligence Center and School at Fort Huachuca, Arizona. He was then assigned to the Army Staff in Washington, D.C., where he served as an operations research officer from July 1982 until June 1985. Following this assignment, then Major Wells served between July 1986 until August 1992 as a battalion operations officer, a battalion executive officer, and brigade operations officer at Schofield Barracks, Hawaii. In 1990, Lieutenant Colonel Wells was selected for battalion command and commanded the 732nd Military Intelligence Battalion, Schofield Barracks, Hawaii, from November 1990 to August 1992. This unit was awarded the NSA Travis Trophy as the top cryptologic field station in the world for 1992.

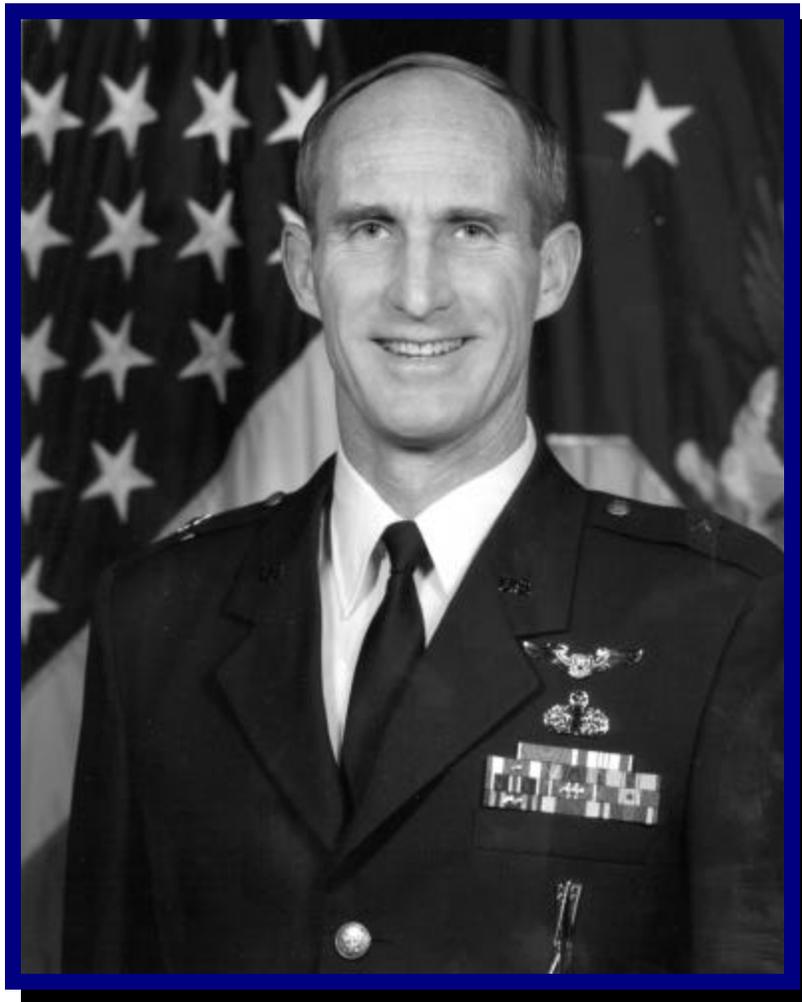
Following battalion command, Lieutenant Colonel Wells was again assigned to the Army Staff at the Pentagon where he served as the chief of the Intelligence Support Military Operations Branch, from August 1992 to July 1995. In this position, he also served as the program director of the Trojan Spirit Program in the Office of the Deputy Chief of Staff for Intelligence. Colonel Wells was assigned to the National Reconnaissance Office in August 1996, where his initial assignment was in the Imagery Intelligence (IMINT) Systems Acquisition and Operations Directorate. Here he led the directorate's study of the future ground architecture required for the Future Imagery Architecture (FIA) Program. On 9 December 1996, Colonel Wells was named director of the NRO's Operational Support Office, a position he held until 18 August 2000. Following his service at the National Reconnaissance Office, Colonel Wells retired from the U.S. Army in October 2000. He is now working in Reston, Virginia, as a defense contractor, providing support to the Intelligence Community.

Colonel Wells earned a Master of Science degree in Quantitative Analysis for Decision Making from The George Washington University in Washington, D.C., in December 1978. He also attended the Air War College in 1996, the U.S. Army Command and General Staff College at Fort Leavenworth, Kansas, in 1986, the Military Intelligence Advanced Course at the U.S. Army Intelligence Center and School at Fort Huachuca, Arizona, in 1979, and the Infantry Office Basic Course in 1971. Among Colonel Wells' awards and decorations are the Defense Superior Service Medal, the Legion of Merit, the Meritorious Service Medal, the Army Commendation Medal, the Joint Service Commendation Medal, the Army Achievement Medal, and the Army General Staff Badge.

Major General Craig P. Weston, USAF

**Director, Corporate Operations Office, National Reconnaissance Office,
8 July 2000 – 3 September 2001**

**Director, Advanced Systems and Technology Directorate,
National Reconnaissance Office,
4 September 2001 – 19 April 2002**



Craig Pickering Weston was born in Tokyo, Japan, on 27 February 1950, and was raised in Sacramento, California. He graduated from the U.S. Air Force Academy in June 1972 with a Bachelor of Science in Engineering Mechanics, and a commission as a second lieutenant. His first Air Force assignment was as a project engineer for air-launched munitions at the Armament

Development and Test Center at Eglin Air Force Base, Florida. During this time he also completed Squadron Officer School at Maxwell Air Force Base in Alabama.

In April 1977, then Captain Weston began a four-year assignment as a flight test and research engineer for high-energy lasers at the Air Force Weapons Laboratory at Kirtland Air Force Base in New Mexico. In July 1981 he resumed his education at the Air Force Institute of Technology at Wright-Patterson Air Force Base in Ohio, and completed a Master of Science in Aeronautical Engineering in 1982, followed by further studies at the Defense Systems Management College, and the Air War College. During the period 1983 to 1988, Major Weston completed assignments as the development manager for space systems in NRO Program A, Office of the Secretary of the Air Force for Special Projects at the Sunnyvale Air Force Station in California, and as mission director for space operations with the Office of the Secretary of the Air Force for Special Projects at Onizuka Air Force Base also in Sunnyvale, California.

Following graduation from the Air War College in 1989, Weston became the program element monitor for Milstar with the Office of the Assistant Secretary of the Air Force for Acquisition at the Pentagon in Washington, D.C. From June 1991 until February 1993, then Colonel Weston remained at the Pentagon and served first as acquisition planner for communications satellites with the Office of the Assistant Secretary of the Air Force for Acquisition, and then as the executive officer to the assistant secretary in the Office of the Assistant Secretary of the Air Force for Acquisition.

Transferring once again to California in 1993, Weston spent one year as the deputy program director of the Military Satellite Communications Joint Program Office, Space and Missile Systems Center, Los Angeles Air Force Base, and then an additional three years as the program director of the Space-Based Infrared Systems Program Office, Space and Missile Systems Center, also at the Los Angeles Air Force Base. Returning to Washington, D.C., in August 1997, Weston spent 16 months as the program executive officer for warning, surveillance and control programs, Office of the Assistant Secretary of the Air Force for Acquisition at the Pentagon, before taking the position of program executive officer for command and control programs. During this time, on 1 July 1998, Weston was promoted to the rank of brigadier general.

In July 2000 Brigadier General Weston resumed service at the National Reconnaissance Office as the director of the NRO Corporate Operations Office and as the organization's chief information officer. In this position, Brigadier General Weston lead a multi-agency team that

provided a broad spectrum of services to the nation's space reconnaissance program, ranging from space launch, to acquisition milestone reviews, to space war games. His organization performed studies and analysis to improve current operations and determined the utility of future space systems to meet the reconnaissance needs of the Intelligence Community and the Department of Defense. As NRO chief information officer, Weston defined and implemented policies, standards, processes, metrics, and decision forums to improve the efficiency and effectiveness of space reconnaissance information systems within the larger Intelligence Community and Department of Defense information architectures.

On 4 September 2001, Brigadier General Weston became director of the NRO's Advanced Systems and Technology Directorate (AS&T). Here he lead a multi-agency team of futurists, scientists, and engineers engaged in advanced research, applied technology, and technology demonstration programs to further state-of-the-art technology for the nation's space reconnaissance program. He orchestrated a broad-based program to explore new concepts, create breakthroughs in phenomenology, materials and information processing; develop next-generation space-qualified components and subsystems, and to flight and ground test systems to validate new concepts. The directorate collaborates extensively with industry, academia, and the national and service laboratories in partnerships, alliances, and fora on thrust areas and specific projects that contribute to meeting the space reconnaissance needs of the Intelligence Community and Department of Defense. Brigadier General Weston is also director of the Air Force-NRO Planning Integration Group, a task force dedicated to cooperative projects that provide NRO capabilities to significantly enhance Air Force acquisition and operations. Additionally, Weston is the senior officer for the Air Force element of the NRO. In this role, he oversees the training, education, and career management of Air Force officer, enlisted, and civilian personnel assigned to the organization. On 1 January 2002, Weston was promoted to the rank of major general, and on 30 January was named the vice commander of the Electronic Systems Center, Air Force Materiel Command, at Hanscom Air Force Base in Massachusetts. He began service in this new position in April 2002.

Major General Weston's awards and decorations include the Legion of Merit with oak leaf cluster, the Defense Meritorious Service Medal, the Meritorious Service Medal with oak leaf cluster, the Air Medal, and the Air Force Commendation Medal. He has also received the Lt. Gen. John W. O'Neill Award for outstanding system program director, and the Douhet-Mitchell International Airpower Trophy at the Air War College.

Colonel Stephen A. Wojcicki, USAF

**Director, Office of Space Launch, National Reconnaissance Office
15 July 1999 – Present**



Born in St. Louis, Missouri, on 6 April 1953, Stephen Alexander Wojcicki received a Bachelor of Science in Engineering Sciences from the U.S. Air Force Academy in June 1975. His first Air Force assignment was as chief of the Historical Data Section, Space Computation Center, Cheyenne Mountain, Colorado, where he served between March 1976 and June 1980. Wojcicki earned a Master of Science degree in Systems Management from the University of Southern California in May 1980, and that July was assigned as chief of spacecraft operations at the Sunnyvale, later known as Onizuka, Air Force Station in California. Following six months

attendance at the Defense Systems Management College Program Manager's Course in early 1984, Wojcicki served between July 1984 and January 1987 as the manager of Space Shuttle/Centaur Command and Data Systems at the National Aeronautics and Space Administration's Lewis Research Center in Cleveland, Ohio. He was then assigned as chief of the Launch Vehicle Operations Branch at the Cape Canaveral Air Force Station in Florida, between February 1987 and July 1989. Following attendance at the Armed Forces Staff College in Norfolk, Virginia, between July 1989 and January 1990, he served as the space operations staff officer at U.S. Space Command at Peterson Air Force Base in Colorado, between August 1989 and April 1992.

Going overseas between May 1992 and May 1993, Wojcicki commanded the 19th Space Surveillance Squadron at the Pirinlik Air Station in Turkey, before his assignment as the chief of the Space Control and Force Applications Branch at U.S. Air Force headquarters until June 1997. Following one year as a member of the Secretary of Defense Strategic Studies Group, between July 1997 and June 1998, Wojcicki was assigned to the National Reconnaissance Office, where he initially served as deputy director of imagery development programs, managing research and development efforts for the next generation of imaging satellites. On 15 July 1999 he was assigned as director of the Office of Space Launch at the National Reconnaissance Office, a position he currently holds.

Among Colonel Wojcicki's military awards and decorations are the Defense Meritorious Service Medal, the Meritorious Service Medal, the Air Force Achievement Medal, and the Air Force Commendation Medal.

Rear Admiral Grover M. Yowell, USN

**Director of Program C, National Reconnaissance Office,
1 July 1977 – 29 August 1981**



Grover McClelland Yowell was born in Paducah, Texas, on 30 October 1928. He entered the U.S. Navy through the Aviation Midshipman Program in May 1946, earning his wings as a naval aviator in October 1949. He joined Patrol Squadron 5 in Jacksonville, Florida, in 1950 as an electronics officer. There he was responsible for avionics maintenance of squadron aircraft, and at the same time trained for, and qualified as, a patrol plane commander in P-2V Neptune aircraft. In July 1953 he entered the Naval Postgraduate School in Monterey, California, and was awarded both a Bachelor of Science and a Master of Science in Electrical Engineering in 1956. He then joined Air Development Squadron 1 in Key West, Florida, where he managed, and was

a project pilot for, antisubmarine warfare equipment evaluation programs for radar, acoustic, magnetic, and infrared detection of submarines.

In July 1959 Yowell was assigned to the Naval Air Development Center in Warminster, Pennsylvania, where he directed the ANEW Program that proposed to install the first programmable digital computer in antisubmarine warfare aircraft. That first computer was actually borrowed from an Air Force space program, an early example of inter-service cooperation, and was installed and tested in Navy P-3C Orion aircraft at the Naval Air Development Center. The outgrowth of this program became an integrated avionics system structured around a central digital computer for the P-3C aircraft, and has continued to evolve over the years. In August 1962, Yowell joined COMFAIRHAWAII as staff avionics officer. Three years later, he entered Stanford University where he was awarded a Doctorate of Science in Engineering Economics Systems in October 1968. He then joined the Anti-Submarine Warfare Systems Project Office and while in that post assumed responsibility for the management, planning, and programming of all air anti-submarine warfare projects. In August 1972 he was assigned as plant representative in Burbank, California, and two years later, in June 1974, he returned to the Naval Air Development Center in Warminster, Pennsylvania, as its commander.

In June 1976 Yowell was ordered to the Naval Air Systems Command in Washington, D.C., where he was assigned as assistant commander for research and technology and thereby took on responsibility for all research and development projects in that command. Selected for flag rank on 27 June 1977, he was promoted to rear admiral. Following this promotion, Yowell was assigned concurrent responsibilities as manager of the Navy Space Project in the Naval Electronic Systems Command, Washington, D.C., and as director of Program C for the National Reconnaissance Office. This unique assignment made him responsible for all U.S. Navy space programs, both those supporting the Navy's emerging space systems requirements, principally in communications, navigation, and weather. He served in this capacity between 1 July 1977 and 29 August 1981. During his tenure on the overt U.S. Navy side, the first of the planned FLTSATCOM satellites for communications between ships, submarines, and aircraft was launched successfully, followed by initiation of the next generation system, the LEASAT. On the NRO covert side in Program C, under Rear Admiral Yowell's leadership, ongoing program operations were maintained in support of military units of all services, and the reconnaissance constellation was expanded through successful launches of additional satellites. Further, a major

redesign for an advanced system with improved capabilities in timeliness, identification, and accuracy was approved and funded. Yowell retired from active military service after his assignment with the National Reconnaissance Office ended on 29 August 1981.

Rear Admiral Yowell is the recipient of the Navy Service Medal, the Legion of Merit with gold star, the Meritorious Service Medal, and the Navy Unit Citation.

ABOUT THE AUTHOR

Clayton David Laurie is the deputy chief historian at the National Reconnaissance Office. Born in Cedar Falls, Iowa, on 23 October 1954, and raised in northeast Iowa, he received a Bachelor of Arts degree in History and Liberal Arts at the University of Northern Iowa in 1977. He began his career as a public school teacher at the secondary level in Council Bluffs, Iowa, through 1984, while also earning a Master of Arts degree in History at the University of Nebraska at Omaha in 1982. Moving to Washington, D.C., he completed a Doctorate of Philosophy in History at The American University in 1990. Dr. Laurie entered federal service in March 1986 as a staff historian with the Histories Division of the U.S. Army Center of Military History (CMH) at Fort Lesley J. McNair, District of Columbia. At CMH, he researched and wrote histories of the United States Army, focusing on World Wars I and II, and Army activities in special and psychological warfare operations, and its domestic role during the nineteenth and twentieth centuries. He received a Secretary of the Army Research and Study Fellowship in 1995, as well as several awards and commendations from scholarly societies and the Department of the Army recognizing his work. In May 2000, he received the Department of the Army Commander's Award for Civilian Service.

In addition to his work in public history, Dr. Laurie has taught undergraduate European and military history courses at The American University in Washington, D.C., and at the University of Maryland in Baltimore County in Baltimore since 1987. He joined the Central Intelligence Agency and the Office of the Historian at the National Reconnaissance Office in May 2000. During his career, he has published three books and over forty articles and monographs on various military and intelligence history topics. Most recently, he wrote *Congress and the National Reconnaissance Office*, a monograph published by the NRO Office of the Historian in June 2001. Laurie is a member of the Society for Military History and the Society for Historians of American Foreign Relations.