

Office of Corporate Communications



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# Historical Handbook of NGA Leaders

Office of the NGA Historian

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NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY



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# Introduction

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*Wisdom has it that you cannot tell the players without a program. You now have a program. We designed this Historical Handbook of National Geospatial-Intelligence Agency Leaders as a useful reference work for anyone who needs fundamental information on the leaders of the NGA. We have included those colleagues over the years who directed the National Imagery and Mapping Agency (NIMA) and the component agencies and services that came together to initiate NGA-NIMA history in 1996.*

*The NGA History Program Staff did not celebrate these individuals in this setting, although in reading any of these short biographies you will quickly realize that we have much to celebrate. Rather, this practical book is designed to permit anyone to reach back for leadership information to satisfy any personal or professional requirement from analysis, to heritage, to speechwriting, to retirement ceremonies, to report composition, and on into an endless array of possible tasks that need support in this way.*

*We also intend to use this book to inform the public, especially young people and students, about the nature of the people who brought NGA to its present state of expertise. This will encourage a closer look at our history by students both in grades seven through twelve and in college seeking information for a vast array of courses. We hope it will encourage the study of intelligence history, and NGA history in particular, within the larger context of our rich national heritage.*

*Mark this handbook as a favorite on your browser. If you found it on the SBU History Web Page, you will also find it on the NGANet version of that page, along with the classified Applied History Forum. In addition, the handbook will soon appear on our revised public site. I know it will become a useful friend, regularly consulted. I hope you find it a valuable tool.*

Dr. Gary E. Weir  
Chief Historian  
National Geospatial-Intelligence Agency

A vintage map of Africa is the background, showing geographical features like the Sahara Desert, the Nile River, and the Indian Ocean. A wooden gavel is positioned diagonally across the top left of the map. The title 'Leader Biographies' is centered on the map, flanked by two horizontal lines.

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***Leader  
Biographies***

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## **Brig. Gen. Donald O. Aldridge, U.S. Air Force**

Deputy Director  
Defense Mapping Agency  
June 1981 – September 1981



Brig. Gen. Donald O. Aldridge earned a BS in history from the University of Nebraska, studied international relations at Creighton University Graduate School in Omaha, and is a distinguished graduate of the Squadron Officer School and Air Command and Staff College, as well as the National War College.

Brigadier General Aldridge enlisted in the U.S. Air Force in 1951. While serving as a Russian linguist, he was appointed to Officer Candidate School and commissioned in March 1958. After completing training, he served successively with the 44th and 68th Bombardment wings at Chennault Air Force Base (AFB), Louisiana; the 17th Bombardment Wing at Wright-Patterson AFB, Ohio; at Kadena Air Base, Okinawa; and at Castle AFB, California. He was assigned to the 43rd Strategic Wing, Anderson AFB, Guam, and was wing assistant deputy commander for operations. During “Linebacker II” operations, he was airborne commander of a raid against Hanoi. Other service included the 303rd Consolidated Maintenance Wing, Provisional, the Joint Strategic Target Planning Staff, Offutt AFB, Nebraska; Headquarters, U.S. Air Force in Washington; and posts in the Office of the Deputy Chief of Staff, Plans and Operations.

After completing his assignment at Defense Mapping Agency in 1981, Brigadier General Aldridge was appointed deputy U.S. representative to the military committee, North Atlantic Treaty Organization, Brussels, Belgium. He served as representative of the Joint Chiefs of Staff to the Strategic Arms Reduction talks and as deputy chief negotiator for strategic systems. In October 1986 he moved to Vandenburg AFB, California, as commander of Strategic Air Command’s 1st Strategic Aerospace Division and subsequently assumed the position of vice commander in chief, Headquarters Strategic Air Command, Offutt Air Base. He retired from the U.S. Air Force on June 1, 1991.

Brigadier General Aldridge has more than five thousand hours flying time and thirty-five B-52 combat missions in Southeast Asia. His decorations include the Distinguished Service Medal, Defense Superior Service Medal with three oak leaf clusters, Legion of Merit, Bronze Star Medal, Meritorious Service Medal, Air Medal with oak leaf cluster, Joint Service Commendation Medal, Air Force Commendation Medal with oak leaf cluster, and Army Commendation Medal.

## **Mr. Charles H. Andregg**

Director of Management and Technology  
Defense Mapping Agency  
July 1974 – March 1979



Mr. Charles H. Andregg grew up in Kent, Ohio, and graduated from Kent State University in 1939. He also attended the University of Louisville and The George Washington University and is a 1967 graduate of the Industrial College of the Armed Forces.

From 1942 to 1962 he served in supervisory and management positions in the U.S. Army Map Service. For ten years beginning in 1962, he worked in the Mapping and Charting Directorate of the Defense Intelligence Agency (DIA), first as technical director and then as deputy assistant director of Mapping, Charting, and Geodesy (MC&G) at the DIA. From July 1972 to July 1974, Mr. Andregg served as the Defense Mapping Agency's (DMA's) deputy director for Programs, Production and Operations.

Mr. Andregg was a member of the American Society of Photogrammetry and Remote Sensing, the Society of American Military Engineers, the Association of American Geographers, and the Canadian Institute of Geomatics. He served as director and national president of the American Congress on Surveying and Mapping. He participated in the International Society of Photogrammetry, International Cartographic Association, and the International Federation of Surveyors. He contributed to the coordination of cartographic and geodetic activities within the North Atlantic Treaty Organization (NATO), Southeast Asia Treaty Organization (SEATO), and the Central Treaty Organization (CENTO). He helped foster cooperative MC&G programs between the U.S. Department of Defense and the agencies of other nations throughout the world. He served as deputy U.S. member of the Commission on Cartography of the Pan American Institute of Geography and History (PAIGH) from 1969 to 1973. At the time of his death, he was on the board of directors for the Accreditation Board for engineering and technology at the University of Florida and on the university's advisory committee for surveying and mapping.

Mr. Andregg retired from the federal government in 1974. He died July 6, 1994, in Florida. In 1995 he posthumously received the Lifetime Achievement Award from the Organization of American States Pan American Institute for Geography and History.

He received the Distinguished Civilian Service Medal three times during his tenure as the senior civilian at DMA.

## **Col. James B. Armor Jr., U.S. Air Force**

Director  
Defense Dissemination Program Office  
August 1994 – July 1996



Col. James B. Armor received a BS in electrical engineering at Lehigh University, completed the U.S. Air Force Reserve Officers Training Corps program, and was commissioned in 1973. He completed graduate work at the Air Force Institute of Technology in December 1977 and the Program Managers Course at the Defense Systems Management College in 1981. He was a senior research fellow at the National War College in 1989–90.

Colonel Armor served as a missile launch officer at McConnell Air Force Base (AFB), Kansas, shortly after his commission. He then became a laser signals intelligence analyst with the Foreign Technology Division at Wright-Patterson AFB, Ohio. After that assignment, he was competitively selected to become a manned space flight engineer for the National Reconnaissance Office (NRO) at Los Angeles Air Force Station, California, and he trained as a shuttle payload specialist. He was the first to study information warfare while a National War College fellow at the National Defense University. In 1990–92, Colonel Armor served as deputy chief, Space Communications Division, Office of the Assistant Secretary of the Air Force, and later as director, Space and Strategic Defense Initiative programs, Headquarters, U.S. Air Force, Washington, DC. He spent the balance of the decade at the Space and Missile Systems Center, Los Angeles AFB, California, first as Deputy Program Director, Advanced Systems Program Office. He was named director, Defense Dissemination Program Office (DDPO) in August 1994. His main contribution while at DDPO was development and procurement of the Defense Dissemination System IV. He left DDPO in July 1996.

After leaving DDPO, Colonel Armor's next assignment was as system program director, Navstar Global Positioning System Joint Program Office. In 1999 he became vice commander, Warner Robins Air Logistics Center, Robins AFB, Georgia. He was promoted to brigadier general in January 2000 and in June 2001 became director, Signals Intelligence Systems Acquisition and Operations Directorate, NRO, Washington, DC. Promoted in August 2004 to major general, Major General Armor served as Signals Intelligence (SIGINT) Director at NRO. He was director, National Security Space Office, Office of the Under Secretary of the Air Force, Washington, D.C. He retired from military service on January 1, 2008.

Major General Armor holds the Missileman Badge, the Master Space Badge, and the Senior Acquisition Badge. He has received the Legion of Merit, 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.

## **Mr. Lawrence F. Ayers Jr.**

Director of Management and Technology  
Defense Mapping Agency  
August 1982 – July 1987



Mr. Lawrence F. Ayers earned a BS in civil engineering at Virginia Polytechnic Institute in 1954 and received an MPA from the University of Indiana in 1966. He received a Ford Foundation Career Education Award in 1962 and was named a fellow of the National Institute of Public Affairs in 1966.

Mr. Ayers completed a tour of active duty in the Army in 1957 and entered the field of mapping, charting, and geodesy. After working as a surveyor for the Virginia State Highway Department, he held numerous positions in topographic, geodetic, and research and development (R&D) engineering posts with the U.S. Army Engineer Research Laboratory at Fort Belvoir, Virginia. In 1968–69 he was program manager, Advanced Systems Development Office, Defense Intelligence Agency, and then spent three years as chief, Topographic Sciences Branch, Environmental Sciences Division, Office of the Chief of Staff (R&D), Department of the Army. He joined the Defense Mapping Agency (DMA) in 1972 as director of the R&D program; he served as technical director of the DMA Aerospace Center in St. Louis from 1974 to 1979. Returning to Washington, DC, Mr. Ayers served as deputy director of Production and Operations from until 1982.

Mr. Ayers is the author of a dozen scientific and technical papers published in professional and trade associations' publications and has appeared before Congress as an expert in the field of geographic information. He is past president of the American Congress on Surveying and Mapping and has served as chairman of the Research Committee of the American Society of Photogrammetry. He headed the U.S. delegation to the United Nations Cartography Conference, represented the United States at various North Atlantic Treaty Organization meetings, and was the U.S. delegate responsible for developing cooperative agreements in mapping, charting, and geodesy with a number of foreign nations. He served on the National Academy of Sciences Mapping Sciences Committee; the Board of Advisors to the National Center for Geographic Information and Analysis (NCGIA); and the Highway Committee of the Transportation Research Board; the National Academy of Public Administration (NAPA) study to address the role of the federal government in the National Spatial Data Infrastructure (NSDI); he also served on two NAPA panels, one addressing geographic information for the twenty-first century and the other addressing the legal limits on access to and disclosure of disaster information. He also served on the board of directors of the Open GIS Consortium. He retired from the federal government in July 1987.

Mr. Ayers was awarded the rank of Distinguished Executive in the Senior Executive Service in December 1983; in 1986 he was awarded the rank of Meritorious Executive in the Senior Executive Service. He received an Honorary Doctorate of Science and Engineering from Ferris State University in 1995 and was named a Distinguished Alumnus of Virginia Tech in 1999. In 2003 he was inducted into the National Imagery and Mapping Agency Hall of Fame.



## **Ms. Nancy E. Bone**

Director  
National Photographic Interpretation Center  
October 1993 – September 1996



Ms. Nancy E. Bone received her BA in 1966 from St. Louis University, graduating magna cum laude with a concentration in English language and literature. In 1973 she earned a master's degree in library science.

After spending two years as a secondary school teacher, Ms. Bone joined the Central Intelligence Agency in July 1968 as an analyst of information at the National Photographic Interpretation Center (NPIC). In April 1972, she received promotion to intelligence officer. She served as a branch chief for two years and then as deputy branch chief of Administration at NPIC. Between 1976 and 1993 Ms. Bone served successively as branch chief of Image Analysis, as division chief in Graphic Arts, as executive officer, as director of Management and Planning in the Directorate of Science and Technology, as chief of the Priority Exploitation Group, and, between 1991 and 1993, as director of Imagery Analysis.

Ms. Bone retired in December 1999.

## **Maj. Gen. James M. Breedlove, U.S. Air Force**

Deputy Director  
Defense Mapping Agency  
August 1973 – October 1974



Maj. Gen. James M. Breedlove attended Emory Junior College in Valdosta, Georgia, and the University of Louisville, Kentucky, before entering the U.S. Military Academy. He graduated in June 1947 as a second lieutenant in the U.S. Army Air Corps. He completed the Armed Forces Staff College at Norfolk, Virginia, in 1963 and in January 1966 began attending the Imperial Defense College in London.

Major General Breedlove completed pilot training in October 1948 and was assigned successively to the 56th Fighter-Interceptor Group, Selfridge Air Force Base (AFB), Michigan; the 3625th Combat Crew Training Wing, Tyndall AFB, Florida; the 601st Aircraft Control and Warning Squadron at Kimpo, Korea; Langley AFB, Virginia; and the 404th Tactical Fighter Group, Langley AFB, Virginia. Between December 1955 and December 1957, Breedlove was assigned to the 50th Fighter-Bomber Wing at Hahn, Germany, and U.S. Air Forces in Europe. Returning to the United States, the major general served as assistant executive to the deputy chief of staff, operations, Headquarters U.S. Air Force, Washington, D.C.; served with the 3510th Flying Training Wing, Randolph AFB, Texas; served as special assistant to the deputy chief of staff, operations, Headquarters 3d Air Force at South Ruislip, England; and served as deputy commander for operations, 81st Tactical Fighter Wing at Bentwaters. In mid-1968 he was assigned as director of readiness inspection, Headquarters U.S. Air Forces in Europe, Lindsey Air Station, Wiesbaden, Germany, followed by a tour as vice commander and then as commander of the 388th Tactical Fighter Wing at Korat Royal Thai Air Force Base AFB. From August 1970 to April 1971, Major General Breedlove served as vice commander and then commander of the 3500th Pilot Training Wing at Reese AFB, Texas. Subsequently he became deputy chief of staff, operations, Air Training Command, with headquarters at Randolph AFB, Texas.

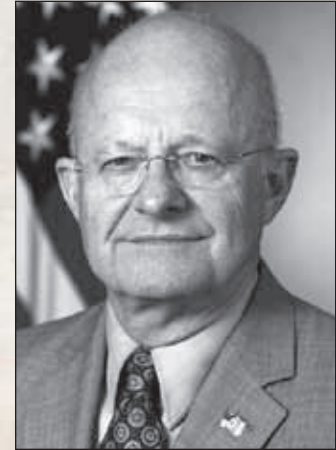
After completing his assignment at the Defense Mapping Agency, Major General Breedlove commanded the U.S. Air Forces Southern Command in the Canal Zone. In January 1976, Breedlove was appointed commander, U.S. Air Force Southern Air Division of the Tactical Air Command and deputy commander in chief, U.S. Southern Command. Major General Breedlove retired on May 1, 1977.

Major General Breedlove flew 162 combat missions during the Vietnam War. His military decorations and awards include the Legion of Merit with oak leaf cluster, the Distinguished Service Medal, Distinguished Flying Cross, Bronze Star Medal, Air Medal with nine oak leaf clusters, Air Force Commendation Medal with oak leaf cluster, Distinguished Unit Citation Emblem, Air Force Outstanding Unit Award Ribbon with oak leaf cluster, Republic of Korea Presidential Unit Citation Ribbon, the Royal Thai Supreme Command forward Master Badge, Venezuelan Medal of Merit, Peruvian Cross of Aero Merit, and the Colombian Order of Aero Merit.

## **Lt. Gen. James R. Clapper, U.S. Air Force (Ret.)**

Director  
National Geospatial-Intelligence Agency  
November 2003 – July 2006

Director  
National Imagery and Mapping Agency  
September 2001 – October 2003



Retired Lt. Gen. James R. Clapper Jr. earned a bachelor's degree in government and politics from the University of Maryland; a master's degree in political science from St. Mary's University, San Antonio, Texas; and an honorary doctorate in strategic intelligence from the Joint Military Intelligence College.

Lieutenant General Clapper's U.S. Air Force assignments included a variety of intelligence-related positions such as assistant chief of staff, Intelligence, Headquarters U.S. Air Force, during Operations Desert Shield and Desert Storm, and as director of Intelligence for three warfighting commands: United States Forces, Korea; Pacific Command; and Strategic Air Command. Lieutenant General Clapper's last military assignment was as director of the Defense Intelligence Agency. He retired as a lieutenant general from the U.S. Air Force in 1995 after a thirty-two-year career.

Lieutenant General Clapper was executive vice president of Vredenburg, Inc. (1995) and the executive director of Military Intelligence Programs for Booz Allen Hamilton (1997). In 1998, he moved to SRA International, Inc. as vice president and director of intelligence programs, leading programs for the command, control, communications, and intelligence business element.

Lieutenant General Clapper was the first civilian director of the National Imagery and Mapping Agency (NIMA). At his direction, the agency began to use the term "geospatial intelligence" and corresponding acronym "GEOINT" to identify one primary intelligence discipline for the agency. He was responsible for driving the agency's name change to the National Geospatial-Intelligence Agency (NGA). He remained director when NIMA became NGA in November 2003 and served at NGA until June 2006. Lieutenant General Clapper has served as consultant for the House Intelligence Committee, the former Defense Airborne Reconnaissance Office, and the Defense Policy and Science Boards and as president of the Security Affairs Support Association. He has also served on various government panels, boards, commissions, and advisory groups. After leaving NGA, Lieutenant General Clapper served as the chief operating officer for Detica DFI.

Lieutenant General Clapper was confirmed by the U.S. Senate as the under secretary of defense for Intelligence on April 11, 2007. He is the principal staff assistant and advisor to the Secretary and Deputy Secretary of Defense regarding intelligence, counterintelligence, and security matters. He also serves as the director of Defense Intelligence and reports directly to the Director of National Intelligence as his principal advisor regarding defense intelligence matters.

Lieutenant General Clapper's military awards include the National Intelligence Distinguished Service Medal with oak leaf cluster, Defense Distinguished Service Medal with oak leaf cluster, the Air Force Distinguished Service Medal and other U.S. military and foreign government awards and decorations. He served two combat tours in Southeast Asia conflict and flew 73 combat support missions in EC-47s over Laos and Cambodia. He was named one of the top one hundred information technology executives by Federal Computer Week in 2001 and has received the National Association for the Advancement of Colored People National Distinguished Service Award and the National Security Medal.

## **Rear Adm. Robert M. Collins, U.S. Navy**

Deputy Director  
Defense Mapping Agency  
September 1977– June 1979



Rear Adm. Robert M. Collins began his naval career in November 1942 in the Inactive Reserve Program. He was commissioned upon graduation from Columbia University Midshipman School in December 1944. He graduated from the University of Oklahoma and the Armed Forces Staff College.

Rear Admiral Collins served aboard USS *O'Neill* (DE 188), USS *Kyne* (DE 744), USS *PCE*-886, USS *PCEC*-873, and USS *Cowell* (DD 547), and he commanded USS *PCS*-1385, USS *PCEC*-886, USS *Pivot* (MSO 463), USS *Whitfield County* (LST 1169), USS *K.D. Bailey* (DDR 713), and USS *Fox* (DLG 33).

He also served with the Mine Warfare Evaluation detachment as Air Laid Mines project officer; head, Officer Education and Training Branch, Bureau of Naval Personnel; chief staff officer of Amphibious Squadron 4; operations officer of River Flotilla 1 in the Republic of Vietnam; chief of staff and aide to the commander, Cruiser Destroyer Flotilla 3; and chief of staff and aide to commander Amphibious Force, U.S. Pacific Fleet. He was also attached to Headquarters, U.S. Strike Command. Commander Amphibious Force, U.S. Pacific Fleet and Commander Cruiser Destroyer Force, U.S. Pacific Fleet combined to form Commander Naval Surface Force, U.S. Pacific Fleet. Rear Admiral Collins served as assistant chief of staff there until his assignment as Commander Service Group 3/Commander Task Force 73 in June 1975. On February 1, 1976, Commander Service Group 3 shifted homeports from Sasebo, Japan, to Subic Bay, Republic of the Philippines, and effective April 1976 it was redesignated Commander Naval Surface Group, Western Pacific; Rear Admiral Collins commanded until August 1977.

Rear Admiral Collins's decorations include two Silver Star Medals, the Legion of Merit with Combat "V," three Bronze Star Medals with Combat "V," two Presidential Unit Citations and two Navy Unit Commendations, the Joint Services Commendation Medal, the Combat Action Ribbon, and the Vietnam Cross of Gallantry with Palm.

## Vice Adm. Shannon D. Cramer Jr., U.S. Navy

Director  
Defense Mapping Agency  
September 1974 – August 1977



Vice Adm. Shannon D. Cramer graduated from the U.S. Naval Academy in 1943. Vice Admiral Cramer served aboard the USS *Laub* (DD613), the USS *Furse* (DDR882), the USS *Cochino* (SS345), the USS *Halfbeak* (SS352), the USS *Cobbler* (SS344), and the USS *Sirago* (SS485). He commanded the USS *Swordfish* (SSN579), the Gold Crew of the USS *Patrick Henry* (SSBN599), Submarine Division 102, Submarine Squadron 15.

Vice Admiral Cramer's other assignments include the Staff of Commander Destroyer Squadron 6; aide to the Executive Officer of the Submarine Base; head of the Reserve Training and Ordnance Departments; submarine advisor to the Chief of Naval Reactors Office, Atomic Energy Commission; head of the Material and Submarine Propulsion Sections, Office of the Chief of Naval Operations; deputy director of Operations in the National Military Command Systems, J-3, Joint Chiefs of Staff; and military assistant to the Assistant Secretary of Defense (Public Affairs). He became commander, Submarine Flotilla 6 in May 1970, and in August 1972, he reported as deputy director (strategic) of J-5, the Joint Staff, Office of the Joint Chiefs of Staff. From April to September 1974, he was deputy director for Plans, Defense Intelligence Agency.

Vice Admiral Cramer consolidated and streamlined production elements of the Defense Mapping Agency (DMA). He directed the efficiencies to the growing demands of the services and commands for geographic information. He retired in 1977. Following retirement, he served as the Department of Defense/Joint Chief of Staff representative to the United Nations Law of the Sea Conference from 1978 to 1981. Vice Admiral Cramer was recognized for his outstanding contribution as director of DMA and was inducted into the National Imagery and Mapping Agency Hall of Fame in 2003.

Vice Admiral Cramer's decorations and awards include the Legion of Merit with four gold stars; the American Defense Service Medal; the American Campaign Medal; the European-African-Middle Eastern Campaign Medal with two stars; the Asiatic Pacific Campaign Medal; the World War II Victory Medal; the Navy Occupation Service Medal, Europe Clasp; and the National Defense Service Medal with bronze star.

## **Rear Adm. Joseph J. Dantone Jr., U.S. Navy**

Acting Director  
National Imagery and Mapping Agency  
October 1996 – March 1998  
Director  
Defense Mapping Agency  
May 1996 – September 1996



Rear Adm. Joseph J. Dantone graduated from the U.S. Naval Academy in 1964 and was designated a naval aviator in September 1965. He earned an MS in aeronautical engineering and material management from the U.S. Naval Postgraduate School in Monterey, California.

In May 1966 he reported to Fighter Squadron 84, where he flew F-4 Phantoms and made an extended Mediterranean Sea deployment aboard the USS *Independence* (CV 62). Beginning in 1967, he was assigned to Fighter Squadron 161 and made two western Pacific combat deployments aboard the USS *Coral Sea* (CV 43). Based at Naval Air Station Miramar, California, he deployed to the western Pacific and Indian Ocean aboard the USS *Enterprise* (CVN 65) and flew fighter cover during the 1975 evacuation of Saigon, Republic of South Vietnam. Subsequent assignments included the Naval Air Systems Command; as executive officer and then commanding officer of Fighter Squadron 14 assigned to USS *John F. Kennedy* (CV 67); as fighter training officer for Naval Air Forces, U.S. Atlantic Fleet; and executive officer of the USS *Enterprise* (CVN 65). He commanded the replenishment oiler USS *Wichita* (AOR 1), the Precommissioning Unit, USS *Abraham Lincoln* (CVN 72), and the USS *Dwight D. Eisenhower* (CVN 69). He was assigned as director, Program Appraisal Division (OP 81) before assuming command of Carrier Group Three. After April 1994 he served as deputy director, Military Support, National Reconnaissance Office; deputy director, Operations, National Systems Support, Joint Staff; and deputy director, Defense Support Project Office, Office of the Assistant Secretary of the Air Force (Space).

Rear Admiral Dantone led the transition team that established the mission, function, organizational structure, and program plan for the National Imagery and Mapping Agency. During his tenure, he focused attention on transferring resources from eight different agencies into the new agency after winning the approval of Department of Defense, the intelligence community, and various oversight congressional committees.

Rear Admiral Dantone flew over 150 combat missions in Southeast Asia. His military decorations include the Defense Superior Service Medal, Legion of Merit, Meritorious Service Medal, the Air Medal, the Navy Commendation Medal with combat "V," and the Vietnam Service, Southwest Asia and Kuwait Liberation Medals. He is also a recipient of the National Intelligence Medal of Achievement.

## **Dr. Kenneth I. Daugherty**

Deputy Director  
Defense Mapping Agency  
March 1993 – March 1995



Dr. Kenneth I. Daugherty received a BS in mathematics, geography, and geology from Morehead State College, Kentucky, in 1957, an MS in geodesy from Ohio State University, and a Philosophie Licentiate and PhD in geodesy/geophysics from Uppsala University, Sweden, in 1974.

Dr. Daugherty began his government career with the Aeronautical Chart and Information Center (ACIC) of the U.S. Air Force in 1957. Ten years later, he joined the University of Hawaii, Hawaii Institute of Geophysics, as associate professor and assistant (later associate) director of the institute. For three years, Daugherty was a visiting scientist and student at the Geodetic Institute of Uppsala University in Sweden before returning to Hawaii. In 1974 he left Hawaii to begin working in the Defense Mapping Agency (DMA), where he held a series of positions, including technical director of the Hydrographic/Topographic Center, deputy director for Research and Engineering, director of the DMA Systems Center, and chief scientist.

Dr. Daugherty's other activities and roles include member, American Geophysical Union, and member, Security Affairs Support Association, AFCEA, and NDIA. Dr. Daugherty served as assistant secretary of the International Association of Geodesy; member, National Research Council (NRC) Review Panel for the National Aeronautics and Space Administration's (NASA's) Earth Observing System Data and Information System (EOSDIS) Plans; chairman, NRC Marine Board Panel on Automated Nautical Charting System (ANCS) II; member, NRC Board on Earth Sciences and Resources; and member, Defense Science Board Summer Study 2001 (Precision Targeting). He was the DMA representative to the Environmental Task Force and Imagery Declassification Steering Groups; member, National Imagery and Mapping Agency (NIMA) Industry Forum, and facilitator for NIMA Geospatial Forum 2000–2001. Dr. Daugherty retired from the federal government in March 1995.

Dr. Daugherty's awards include the U.S. Air Force Meritorious Civilian Service Award, DMA Distinguished Civilian Service Award (twice), Department of Defense Distinguished Civilian Service Award (twice), Presidential Meritorious Executive Rank Award (twice), the Ohio State University Heiskanen Award, Elected Fellow of International Association of Geodesy, and Honorary Kentucky Colonel.

## **Maj. Gen. Robert F. Durkin, U.S. Air Force**

Director  
Defense Mapping Agency  
October 1987–June 1990



Maj. Gen. Robert F. Durkin was born in Youngstown, Ohio, and earned a BS in military science from the U.S. Military Academy in 1958 and an MS in engineering management from Rensselaer Polytechnic Institute in 1966. He completed Armed Forces Staff College in 1971 and Air War College in 1978 and graduated from the Institute for Higher Defense Studies in 1983.

He was awarded his wings in September 1959 and served successively with the 4038th Strategic Wing, Dow Air Force Base (AFB), Maine; as an aircraft commander at Homestead AFB, Florida; as aircraft commander at Ching Chuan Kang Air Base, Taiwan; with Aeronautical Systems Division, Wright-Patterson AFB, Ohio; and at the Armament Development and Test Center, Eglin AFB, Florida. Beginning in July 1971, Major General Durkin was assigned as a staff development engineer, Office of the Deputy Chief of Staff, Research and Development, Headquarters U.S. Air Force; as chief of the Operations and Training Division, 28th Bombardment Wing; and then as commander of the 77th Bombardment Squadron at Ellsworth AFB, South Dakota. He served as a nuclear employment and policy planner and then as chief of the Nuclear Division, Organization of the Joint Chiefs of Staff, Washington, DC; deputy commander for operations, and then wing vice commander, 5th Bombardment Wing, Minot AFB, North Dakota; and commander of the 28th Bombardment Wing at Ellsworth AFB. Beginning in May 1983, Major General Durkin served in U.S. Air Force headquarters as deputy for strategic forces, Directorate of Operational Requirements, Office of the Deputy Chief of Staff, Research, Development, and Acquisition; as deputy director of operations; and as deputy director of plans. In March 1986, Major General Durkin was assigned as deputy director for foreign intelligence, Defense Intelligence Agency.

Major General Durkin restructured the Defense Mapping Agency's (DMA's) international and domestic training in the production and exploitation of geospatial information. Under his direction, Phase II (Mark 90) of the modernization production system was installed, giving DMA the ability to exploit all forms of intelligence and commercial satellite imagery. DMA's products in support of the Single Integrated Operational Plan (SIOP) contributed to the downfall of the Union of Soviet Socialist Republics.

Major General Durkin was a command pilot with more than 4,600 flying hours, including ninety-seven combat missions in Southeast Asia. His military decorations and awards include the Distinguished Service Medal, Legion of Merit, Defense Meritorious Service Medal, Meritorious Service Medal with oak leaf cluster, Air Medal with oak leaf cluster, Air Force Commendation Medal with oak leaf cluster, Combat Readiness Medal, Republic of Vietnam Gallantry Cross with Palm, and Republic of Vietnam Campaign Medal. Major General Durkin retired on July 1, 1990 and died on November 14, 2004.



## **Mr. Thomas C. Finnie**

Director of Management and Technology  
Defense Mapping Agency  
July 1972 – July 1974



Mr. Thomas C. Finnie graduated in civil engineering from the University of Kentucky and received his MBA from The George Washington University. Additionally, he attended the Industrial College of the Armed Forces and various other courses and seminars.

He served as an army officer in World War II, commanding the 66th Engineer Topographic Company during several southwest Pacific campaigns.

Mr. Finnie's distinguished career with the U.S. government started in July 1937 with the Department of Agriculture. He then practiced engineering and surveying and served on the faculty at the University of Kentucky. Prior to assuming his position with the Defense Mapping Agency (DMA), Mr. Finnie was affiliated with the Aeronautical Chart and Information Center in Washington, DC, and St. Louis, Missouri for a number of years. In February 1962, he became technical director of that organization, a position he held until joining DMA. He was one of the initial eight Department of Defense planners who assisted the director, Lt. Gen. Howard W. Penney, in organizing DMA in 1972.

Mr. Finnie retired from the federal government in 1974. In 2001 he was inducted into the National Imagery and Mapping Agency (NIMA) Hall of Fame.

Mr. Finnie was a member of the American Society of Photogrammetry, the American Congress on Surveying and Mapping, and the National Society of Professional Engineers and is a professional engineer and licensed surveyor in the State of Kentucky. His many awards for distinguished service include a Letter of Commendation from the Secretary of the Air Force, Outstanding Performance Ratings, Sustained Superior Performance award, and other commendations.

## **Col. Donald L. Fisher, U.S. Air Force**

Director  
Defense Dissemination Program Office  
June 1989 – September 1993



Col. Donald L. Fisher graduated from the University of Oregon in June 1968 with a bachelor's degree in biology and as a distinguished graduate of the Reserve Officers Training Corps Program. He earned a master's degree in system management from American University in 1975. He also attended the Defense Systems Management College Program Managers Course and completed Squadron Officers School, Air Command and Staff College, and the Industrial College of the Armed Forces National Security Management course.

After commissioning in June 1968, Colonel Fisher first served as a squadron intelligence officer at Yokota Air Force Base (AFB), Japan. His next duty took him to Task Force Alpha at Nakhon Phanom, Royal Thai Air Force Base in June 1971. After a year there as a targeting intelligence officer, he was assigned to the Defense Intelligence Agency in July 1972 as a Far East area specialist. In July 1976, Colonel Fisher was assigned as chief, Resource Management Division, for the Defense Dissemination Program Office, Los Angeles AFB, California. In May 1980, he was reassigned as a project manager for Office of the Secretary of the Air Force, also in Los Angeles.

Colonel Fisher was promoted to colonel on October 1, 1980. In May 1984 he returned to Washington, DC, as a project manager for the Intelligence Community Staff. In July 1988, Colonel Fisher rejoined the Defense Dissemination Program Office as deputy program manager. He became program manager in May 1989.

Colonel Fisher served as director, Defense Dissemination Program Office, Space and Missile Systems Center, Air Force Materiel Command, Los Angeles AFB, California from May 1989 to his retirement from active duty in September 1993. Colonel Fisher was responsible for managing the acquisition and operational support of Defense Dissemination System (DDS) III. Colonel Fisher also developed the concepts, technology, and hardware for the Core Module, Low Volume Receive Location (LRL) and Modular Dissemination System, which were precursors to DDS IV.

Colonel Fisher's military decorations include the Legion of Merit, the Defense Meritorious Service Medal, the Meritorious Service Medal with oak leaf cluster, the Joint Service Commendation Medal, and the Air Force Commendation Medal. Colonel Fisher wore the Master Space Badge.

## **Col. Oliver W. Fix, U.S. Air Force**

Director  
Defense Dissemination Program Office  
November 1974 – May 1978



Col. Oliver W. Fix completed a BS in electrical engineering at the University of Washington at Seattle in 1952, after having enlisted in the U.S. Navy in 1945 as a high school graduate. While at the university, he joined the advanced Air Force Reserve Officers Training Corps program, graduated as both a Distinguished Military Student and a Distinguished Military Graduate, and received a regular commission in the U.S. Air Force. In 1955, he completed a graduate program in electrical engineering at the Air Force Institute of Technology. In 1964 he earned a master's degree in systems management from the Air Force Institute of Technology.

Colonel Fix's initial assignment took him to the Rome Air Development Center, New York. After graduate study he was assigned as a project officer to the Missile Countermeasures Division at Holloman Air Development Center. He held a patent for a unique mechanical infrared modulator developed as a countermeasure device. Colonel Fix then transferred to Camp Cook (later renamed Vandenberg Air Force Base), assigned to the Ballistic Missile Division Field office. He participated in the construction and activation of the Vandenberg Tracking Station and in over 160 launches of missile and space systems. He was coauthor of the Systems Test concept. He subsequently served in the Special Projects Office of the Secretary of the Air Force, assuming responsibility for the integrated development and implementation of the first highly digitized command, control, and telemetry space system.

In 1970, Colonel Fix assumed command of the 6594th Instrumentation Squadron at the Kaena Point Satellite Tracking Station, Oahu, Hawaii, a sister station of the one he had built at Vandenberg. In 1972 he was promoted to colonel and assigned as deputy director of the Satellite Data System program office, Space and Missile Systems Organization. In 1974, the commander, Air Force Systems Command, assigned him to perform a systems study of the Defense Dissemination System (DDS). He concluded the study in October 1974 and became the first director of the new Defense Dissemination Program Office (DDPO) in November 1974. Colonel Fix selected the initial DDPO cadre. He completed all technology development for DDS I and awarded the initial DDS I contracts with industry.

Colonel Fix received one of the first Master Missile Badges awarded by the U.S. Air Force. He also received the Air Force Commendation Medal with five oak leaf clusters, the Air Force Meritorious Service Medal, and the Legion of Merit Medal.

Colonel Fix retired from the U.S. Air Force in 1978. He died August 26, 1997.

## **Col. Thomas W. Flattery, U.S. Air Force**

Director  
Defense Dissemination Program Office  
March 1980 – January 1984



Col. Thomas W. Flattery graduated from Stanford University in 1958 with a BS in mathematics and was commissioned as a U.S. Air Force second lieutenant through the Reserve Officers Training Corps program. His first assignment was to the University of California at Los Angeles, where he studied meteorology under the sponsorship of the Air Force Institute of Technology (AFIT). In 1962 he entered the University of Chicago as part of the AFIT graduate studies program, receiving a master's degree in 1965 and a PhD in 1967.

In 1959 Colonel Flattery served at the European Weather Central, High Wycombe, England, where he produced meteorological analyses and forecasts for American forces based in Europe and the Middle East. In 1965 Colonel Flattery became a staff officer in the Directorate of Aerospace Science at Headquarters, Air Weather Service, Military Airlift Command. In 1968, he transferred to Washington, DC, to serve as liaison officer to the National Meteorological Center, National Weather Service. He attended the Armed Forces Staff College in Norfolk, Virginia, and then returned to his liaison position with the National Meteorological Center, where he completed development of a new technique for the global analysis of meteorological observations of temperatures and winds.

In 1973, Colonel Flattery moved to Air Force Global Weather Central, Offutt Air Force Base, Nebraska. For the next six years he served as assistant chief and then chief, Studies and Analysis Branch; chief, Special Support Division; and chief, Operations Division. After serving as deputy director, Defense Dissemination Program Office from July 1979, he became director in March 1980 and served until January 1984, when he retired from the U.S. Air Force. Colonel Flattery established the logistics support structure for Defense Dissemination System (DDS) I, continued development of DDS II, and established the requirements and funding lines for DDS III. He initiated development of the electron beam recorder, which was eventually incorporated into the DDS III Hard Copy Reconstruction Unit (HRU).

Colonel Flattery is the recipient the Air Force Meritorious Service Medal, the Air Force Commendation Medal with one oak leaf cluster, and the Meisinger Award of the American Meteorological Society.

## **Mr. Penman R. Gilliam**

Deputy Director  
Defense Mapping Agency  
August 1991–April 1993  
Director of Management and Technology  
Defense Mapping Agency  
August 1987–August 1991



Mr. Penman R. Gilliam graduated from Berea College, Kentucky, in 1958. He continued his education with postgraduate study at Washington University, St. Louis, Missouri, and Southern Illinois University.

He began his federal and Defense Mapping Agency (DMA) career as a cartographer with U.S. Air Force Aeronautical Chart and Information Center in St. Louis, Missouri, in 1958. He worked as chief of the Geopositional Data Department at the DMA Aerospace Center and as primary staff officer in the development of point positioning databases, Terrain Contour Matching (TERCOM) matrix, and digital radar landmass data for weapon systems trainers. He was program manager for all of the Southeast Asia mapping, charting, and geodesy (MC&G) activities and served as deputy director, Programs, Production, and Operations at the DMA Hydrographic/Topographic Center in Brookmont, Maryland. As director of the DMA Systems Center from 1982 to 1987, he was responsible for development and procurement of a state-of-the-art digital cartographic production system designed for multiproduction center operation. Mr. Gilliam retired from the federal government in 1991.

His awards and decorations included the Distinguished Executive Rank Award, DoD Distinguished Civilian Service Award, Senior Executive Service Rank Award, DMA Distinguished Civilian Service Award, and numerous outstanding performance awards.

## **Brig. Gen. David M. Goodrich, U.S. Air Force**

Deputy Director  
Defense Mapping Agency  
September 1984 – September 1985



Brig. Gen. David M. Goodrich was born in San Antonio, Texas, and received a BS in engineering science in 1959 from the U.S. Air Force Academy. He received an MA in international relations from the University of California, Los Angeles, in 1967 and completed Squadron Officer School in 1967, Air Command and Staff College in 1970, and the National War College in 1971.

He was commissioned in the U.S. Air Force and received his pilot wings in June 1960. His assignments included forward air controller in the Republic of Vietnam; aide-de-camp to the chief, U.S. Air Force Section, Military Assistance and Advisory Group, Republic of Vietnam; and fighter pilot and adviser with the Vietnamese 716th Tactical Fighter Squadron. Brigadier General Goodrich served with the 555th (“Triple Nickel”) Tactical Fighter Squadron and at MacDill Air Force Base (AFB), Florida, and Udorn Royal Thai Air Force Base, Thailand. After three years as assistant professor of political science at the Air Force Academy, Brigadier General Goodrich served in Office of the Deputy Director for Force Development, Directorate of Plans, Headquarters U.S. Air Force. He was assigned to the Regional Negotiations Branch, Office of the Deputy Director for International Negotiations (J-5), Organization of the Joint Chiefs of Staff and was a member of the Department of Defense Mutual Balanced Force Reductions Task Force and Joint Chiefs of Staff representative to the National Security Council staff for arms control matters. Subsequently, Brigadier General Goodrich served at Davis-Monthan AFB, Arizona, with the 355th Tactical Fighter Wing; as special assistant to the Supreme Allied Commander Europe and chief of staff, Supreme Headquarters Allied Powers Europe, Casteau, Belgium; and as vice commander and then commander of the 86th Tactical Fighter Wing, Ramstein Air Base, Germany. He commanded the 50th Tactical Fighter Wing at Hahn Air Base, Germany, before serving as chief, Director’s Staff Group, Defense Intelligence Agency. In June 1982 he was assigned as U.S. Air Force assistant to the chairman of the Joint Chiefs of Staff before becoming deputy director for operations, National Military Command Center, Washington, DC.

After completing his tour at the Defense Mapping Agency in September 1985, he assumed command of 24th Air Division, Tactical Air Command, Griffiss AFB, New York. After an assignment at Headquarters, U.S. Air Force, he served as commandant of the Industrial College of the Armed Forces from 1989 to 1991.

Brigadier General Goodrich was a command pilot with more than three thousand flying hours, including 175 combat missions. His military decorations and awards include the Defense Superior Service Medal, Legion of Merit with three oak leaf clusters, Distinguished Flying Cross, Meritorious Service Medal with oak leaf cluster, Air Medal with five oak leaf clusters, Joint Service Commendation Medal, Air Force Commendation Medal, Air Force Outstanding Unit Award Ribbon with “V” device and two oak leaf clusters, Combat Readiness Medal, National Defense Service Medal, Armed Forces Expeditionary Medal, Vietnam Service Medal with three service stars, Republic of Vietnam Gallantry Cross with Palm, and Republic of Vietnam Campaign Medal. He retired on July 1, 1991 and died on March 2, 2003.

## **Col. James L. Grogan III, U.S. Air Force**

Director  
Defense Dissemination Program Office  
September 1993 – October 1994



Col. James L. Grogan graduated from the University of Virginia in 1966 with a Bachelor of Arts in astronomy. Having completed the Reserve Officers Training Corps program, he received a commission as a lieutenant in the U.S. Air Force. He received a regular U.S. Air Force commission in 1971. Colonel Grogan received a master's degree in systems management from the University of Southern California and completed the Program Management Course and the Executive Course at the Defense Systems Management College.

Colonel Grogan's first assignment was at Vandenberg Air Force Base (AFB), California, as a missile launch officer at the 6595 Ballistic Missile Group's Advanced Ballistic Reentry Systems (ABRES-A). In February 1967 he was transferred to the Western Test Range as a range control officer. In September 1969, Colonel Grogan was selected for reassignment to the National Aeronautics and Space Administration (NASA) Johnson Space Center in Houston, Texas, in support of NASA programs. He was assigned to the Satellite Control Facility at Sunnyvale Air Force Station, California, in February 1972, where he served successively as a satellite command generator, field test force director, and, beginning in 1977, overall operations manager.

In February 1979, Colonel Grogan was assigned as commander of Thule Tracking Station, Greenland, the northernmost satellite-tracking site in the Satellite Control Facility. He returned to the United States in 1980 and was assigned to the Secretary of the Air Force Special Projects Office in Los Angeles, California. In early 1982, Colonel Grogan was assigned to the office of Deputy Commander for Operations at Space Division, Los Angeles AFB as chief, Satellite Control Network Activation Office. In late 1983 he was promoted to the position of director of Satellite Command and Control programs with responsibility for the development and acquisition of the Automated Remote Satellite Tracking System and the Transportable Mobile Ground System. In August 1986, Colonel Grogan transferred to the Office of the Assistant Secretary of the Air Force for Acquisition in Washington, DC. For four years, beginning in September 1989, Colonel Grogan was assigned as commander, Air Force Consolidated Space Test Center (CSTC), Onizuka AFB, California.

In September 1993, Colonel Grogan was assigned as director, Defense Dissemination Program Office. He refined the engineering and architectural concepts that led to the Defense Dissemination System (DDS) IV, specifically the Modular Dissemination System, Remote Tape Processor and System Test Tool (STT). He deployed prototype systems in several operational environments, demonstrating that near-real time, near-original quality national imagery could be made available to even lower tactical levels. Colonel Grogan retired from active duty in October 1994.

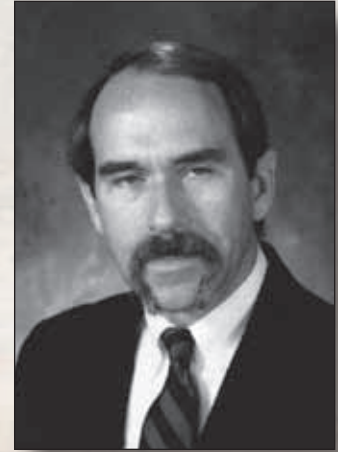
Colonel Grogan was awarded the Senior Missileman Badge and the Master Space Badge, the Legion of Merit with one oak leaf cluster, the Meritorious Service Medal with four oak leaf clusters, the Air Force Commendation Medal with one oak leaf cluster, and the National Defense Service Medal with Bronze Star.

## **Mr. Leo Hazlewood**

Deputy Director  
National Imagery and Mapping Agency  
July 1997–January 2000

Deputy Director for Operations  
National Imagery and Mapping Agency  
October 1996–July 1997

Director  
National Photographic Interpretation Center  
February 1991–September 1993



Mr. Leo Hazlewood earned a BA in government from Georgetown University in 1965, an MA in political science from the University of Illinois at Urbana in 1966, and a PhD in political science from the University of Pennsylvania in 1969.

Mr. Hazlewood taught political science and government at the University of Pennsylvania and at Florida State University between 1969 and 1974. From 1975 to 1977 he worked for CACI, Inc., in Arlington, Virginia. In 1977 he joined the Central Intelligence Agency (CIA) as a senior economist.

Between March 1991 and September 1993, Hazlewood served as director of the National Photographic Interpretation Center (NPIC). He then served as executive director of the CIA, functioning as the agency's chief operating officer responsible for the direction and oversight of information collection and analysis worldwide. In 1995 he became deputy director for Administration, managing the CIA's largest business sector, charged with all facets of corporate support—finance, procurement, material management, facilities, security, human resources, training, communications, and information technology.

In early December 1995 he was selected to become deputy director of the implementation team for the establishment of the National Imagery and Mapping Agency (NIMA).

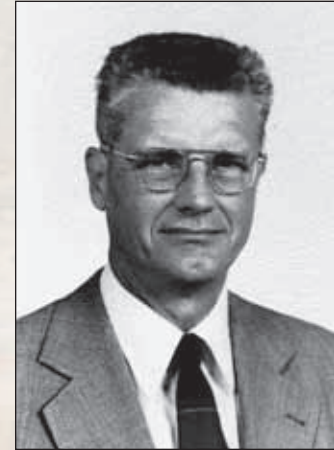
In January 2000 Mr. Hazlewood retired from the federal government. In 2001 he was inducted into the NIMA Hall of Fame.

In March 2000, Mr. Hazlewood joined Science Applications International Corporation (SAIC) as a corporate vice president and director for intelligence programs in the space, intelligence, and information sector. Since February 2004, he has been the senior vice president and general manager of the Mission Integration Business Unit in SAIC's Intelligence, Security, and Technology Group.



## **Brig. Gen. Rutledge P. Hazzard, U.S. Army**

Director  
National Photographic Interpretation Center  
June 1978 – February 1984



Brig. Gen. Rutledge P. Hazzard graduated from the U.S. Military Academy in 1946. He attended the Officers Advanced Course at Artillery and Guided Missile School in 1953–54; in 1956 he received an MS in mechanical engineering from the University of Southern California. He completed the Army Command and General Staff College in 1960 and the Industrial College of the Armed Forces in 1965. He received an MBA from The George Washington University in 1965 and in 1968 completed an Advanced Management Program at the University of Pittsburgh.

Following basic branch training, Brigadier General Hazzard served with the 16th Constabulary Squadron (Separate) in Berlin, Germany, as part of the occupation and, in 1948–49, in support of the Berlin Airlift. Beginning in July 1950 he served at the U.S. Military Academy as an instructor in the Department of Military Topography and Graphics. From 1956 to 1959 he participated in ballistic missile development at Redstone Arsenal, Alabama. At the Army Ballistic Missile Agency, he worked on the development of the Redstone and Jupiter ballistic missiles and in the Jupiter C program. Subsequently, as executive officer for the Research and Development Division of the Army Ordnance Missile Command, he participated in the planning and analysis of what became the Saturn I manned space flight program. He served in the Scientific and Technical Division of the Office of the Assistant Chief of Staff of Intelligence in the Department of the Army, Washington, DC. Brigadier General Hazzard served in Korea from 1963 to 1964 as commanding officer of the 7th Battalion, 5th Artillery (Hawk). Returning to Washington in 1965, he served as an Army member of the Strategic Nuclear Branch of the Chairman's Special Studies Group of the Joint Chiefs of Staff in the Pentagon until 1968, when he became executive officer of I Field Force Artillery, Vietnam. From December 1968 to May 1969, he commanded the 52d Artillery Group with headquarters at Pleiku, Vietnam. From July 1969 to 1971, he returned to Redstone Arsenal, Alabama, as project manager of the Pershing and Lance weapon systems. He then served at Headquarters, Safeguard Systems Command, until his retirement from active duty in 1973.

After leaving the U.S. Army, Brigadier General Hazzard joined the Central Intelligence Agency (CIA) as director of Science and Technology. After six years as director of the National Photographic Interpretation Center (NPIC), Brigadier General Hazzard returned to the CIA's National Intelligence Office. He retired from public service in 1985.

During his military service, Brigadier General Hazzard received the Legion of Merit with two oak leaf clusters, Bronze Star Medal, Air Medal with oak leaf clusters, Army Commendation Medal, the Distinguished Service Medal, and other awards. After his military service he earned a Distinguished Service Medal from the CIA, a National Intelligence Service Medal, and the CIA Distinguished Intelligence Medal.

## **Mr. John L. Helgerson**

Deputy Director  
National Imagery and Mapping Agency  
February 2000 – August 2001



Mr. John L. Helgerson received a BA in political science from St. Olaf College in Northfield, Minnesota, and both an MA and a PhD in political science from Duke University.

Mr. Helgerson's early professional activities were as a research affiliate at the University of Zambia in Lusaka and as an assistant professor of political science at the University of Cincinnati, with a specialization in international relations. His academic publications dealt with legislative behavior and African politics.

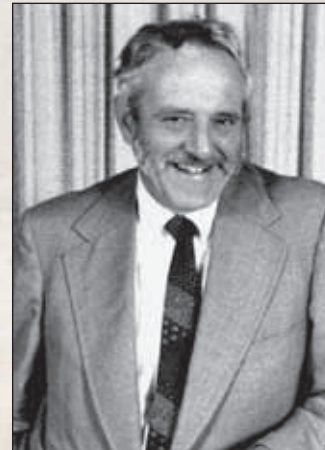
After joining the Central Intelligence Agency (CIA) in 1971, Mr. Helgerson worked primarily in the agency's analytical components, focusing on the Middle East, Africa, and Latin America. He served as assistant national intelligence officer for the Near East and South Asia, deputy director of Near Eastern and South Asian Analysis, and director of African and Latin American Analysis. Mr. Helgerson also served as associate deputy director of Intelligence, director of Congressional Affairs, and, from 1989 to 1993, as director for Intelligence.

Helgerson served as CIA Deputy Inspector General, starting in 1998, before moving to the National Imagery and Mapping Agency in 2000.

Beginning in mid-August 2001, Mr. Helgerson assumed the position as chairman of the National Intelligence Council. He presently serves as inspector general, CIA.

## **Mr. John J. Hicks**

Director  
National Photographic Interpretation Center  
June 1973 – February 1978



Mr. John J. Hicks graduated in 1943 from Carleton College, Northfield, Minnesota, with a BA in international relations. In 1947, he earned an MA in international relations from the Johns Hopkins School of Advanced International Studies in Washington, DC.

Mr. Hicks served as a combat officer in the U.S. Marine Corps from October 1943 to March 1946. After his graduate study, he joined the Department of the Army's G-2 staff, where he served from September 1947 to April 1952. That month Mr. Hicks joined the Central Intelligence Agency (CIA) as an intelligence officer in the Office of Current Intelligence, where he served until 1967. He then served in the Office of Strategic Research for two years. Between November 1969 and August 1973, Mr. Hicks held the position of Executive Director of the National Photographic Interpretation Center (NPIC).

After his term as director of NPIC, Mr. Hicks returned to the CIA as an intelligence officer in the National Foreign Assessment Center. He became deputy director of that center in January 1979.

Mr. Hicks was awarded the Certificate of Merit for his work during the Cuban missile crisis, the CIA Intelligence Medal of Merit, the National Intelligence Distinguished Service Medal, and the CIA Distinguished Service Medal.

Mr. Hicks retired from public service in January 1980. He died on March 29, 1997.

## **Mr. Robert M. Huffstutler**

Director  
National Photographic Interpretation Center  
February 1984 – January 1988



Mr. Robert M. Huffstutler received a BA in economics and an MA in international economics from the University of California at Berkeley. He spent his academic years at the Institute for Defense Analysis, University of Maryland and at the Royal College of Defense Studies, London, England.

After completing his graduate degree in 1958, he joined the Central Intelligence Agency (CIA) as an international economist. Within a few months he was reassigned to work as a military force analyst in the office that was later designated the Office of Strategic Research (OSR) in the Directorate of Intelligence. In 1967 he was reassigned to the Strategic Defense Branch of OSR. From 1976 to 1978 he served as deputy director of the Office of Weapons Intelligence, and in late 1978 he became director of Strategic Research. In 1982, when the Directorate of Intelligence was reorganized, he became the director of Soviet Analysis.

During his tenure as director of NPIC, Mr. Huffstutler transformed imagery analysis with a large technical modernization program. He established the National Exploitation Laboratory to enhance imagery exploitation, launched a product quality improvement program, and implemented a new personnel system.

In early 1998 Mr. Huffstutler returned to the CIA as deputy director for Administration; four years later he was named executive director. He retired from the CIA in 1994.

Mr. Huffstutler was twice awarded the National Intelligence Distinguished Service Medal and holds two of CIA's Distinguished Intelligence Medals. In April 2003 he was inducted into the National Imagery and Mapping Agency (NIMA) Hall of Fame, at which time he was cited for encouraging NPIC analysts to "push the threshold of imagery's contributions to tough intelligence issues."

## **Ms. Joanne O. Isham**

Deputy Director  
National Geospatial-Intelligence Agency  
November 2003 – April 2006  
Deputy Director  
National Imagery and Mapping Agency  
September 2001 – October 2003



Ms. Joanne O. Isham is a graduate of the University of Notre Dame. She was a member of the Senior Intelligence Service and a career officer at the Central Intelligence Agency (CIA), which she joined in 1977.

At the Central Intelligence Agency (CIA), Ms. Isham held several senior management positions, as well as positions in intelligence community organizations. She served as director of Congressional Affairs for the Director for Central Intelligence (DCI), managing relations with Congress for the CIA and overseeing the congressional and legislative interests of the DCI. She also served as deputy director of the Resource Management Office on the Community Management Staff (CMS) and as CMS's director of Program Analysis. In these positions, she oversaw budget and resource issues spanning the entire intelligence community. Ms. Isham also spent a number of years on assignment to the National Reconnaissance Office, where she served as director of Legislative Affairs and as program monitor for national programs.

Ms. Isham as CIA's associate deputy director for Science and Technology and then served as the deputy director for Science and Technology at the CIA. In this position, she was the principal executive overseeing the CIA's scientific and technical program, with particular responsibility for clandestine technical activities and agency-wide research and development. After serving in this position at CIA, she was appointed as deputy director of the National Imagery and Mapping Agency (NIMA) beginning in September 2001. She remained in that position when NIMA became the National Geospatial-Intelligence Agency in November 2003.

Ms. Isham retired from the CIA in 2006 as a member of the Senior Intelligence Service. On June 27, 2006, BAE Systems named Ms. Isham as vice president of strategic development for its national security solutions business. In July 2007 she became the chief operating officer for High Performance Technologies, Inc. a performance-based architecture service and advanced solutions provider for the federal information technology marketplace.

Ms. Isham was awarded the National Intelligence Medal of Achievement and CIA's Distinguished Intelligence Medal. She also received the Director's Award in recognition of extraordinary service.

## **Maj. Gen. Hilding L. Jacobson Jr., U.S. Air Force**

Deputy Director  
Defense Mapping Agency  
October 1974 – August 1976



Maj. Gen. Hilding L. Jacobson Jr. received a BA from University of Nebraska and his commission through the Reserve Officers Training Corps in 1941. He received an MA in international relations from The George Washington University, and he graduated from the Naval War College in 1964. During 1970 he attended the Advanced Management Program at Harvard University.

Major General Jacobson entered active military service in June 1941 and graduated pilot training in February 1943. His assignments included the 501st Bombardment Squadron in New Guinea and the Air Transport Command until relieved from active duty in November 1945. He returned to active duty in March 1951 with the 92d Bombardment Wing at Fairchild Air Force Base (AFB), Washington, and served at Schilling AFB, Kansas, with the 40th Bombardment Wing and commanded both the 44th Bombardment Squadron and the 40th Armament and Electronics Maintenance Squadron. He also served with the Eighth Air Force at Westover AFB, Massachusetts, the 306th Bombardment Wing at McCoy AFB, Florida, and the Strategic Air Command headquarters at Offutt AFB, Nebraska. Beginning in April 1967, he was chief of the Advanced Echelon, Headquarters Strategic Air Command in Vietnam and then commander of the 416th Bombardment Wing (SAC) at Griffiss AFB, New York. At Headquarters U.S. Air Force, he was assigned to the Directorate of Operational Requirements and Development Plans in the Office of the Chief of Staff for Research and Development and served as deputy director for Strategic Forces. In February 1971 he became chief of the Development Plans and Analysis Group and in July was assigned to the Organization of the Joint Chiefs of Staff as chief, Strategic Operations Division in the Directorate of Operations (J3). He then returned to SAC Headquarters as director of Command Control in the Office of the Deputy Chief of Staff for Operations before transferring to Thailand as assistant chief of staff, J2 (Intelligence), United States Support Activities Group with headquarters at Nakhon Phanom Royal Thai Air Force Base.

In August 1976 Major General Jacobson left DMA to become commander of the 3d Air Division, Strategic Air Command, Andersen AFB, Guam, with responsibility for all SAC operations in the Western Pacific and Southeast Asia. He retired May 1, 1978.

Major General Jacobson flew fifty-seven combat missions in the Pacific area during World War II and thirty-two combat missions in Vietnam. His military decorations and awards include the Legion of Merit with three oak leaf clusters, Distinguished Service Medal, Distinguished Flying Cross with oak leaf cluster, Air Medal with four oak leaf clusters, Air Force Commendation Medal with oak leaf cluster, and the Distinguished Unit Citation Emblem.

## **Maj. Gen. William K. James, U.S. Air Force**

Director  
Defense Mapping Agency  
June 1990 – June 1993



Maj. Gen. William K. James earned a BS in geology from Southern Methodist University in 1958 and completed Squadron Officer School in 1964, Armed Forces Staff College in 1973, and Air War College in 1978.

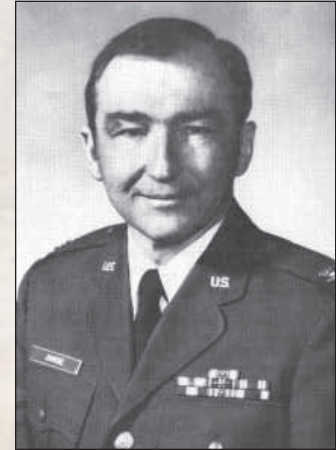
Commissioned into the U.S. Air Force through the Reserve Officers Training Corps program, Major General James received his pilot wings in July 1959. He spent six years as an instructor pilot, officer training instructor, and flight examiner at Greenville Air Force Base (AFB) and Moody AFB, Georgia, before being assigned to the 48th Tactical Fighter Wing, Royal Air Force, England, and then to the 3rd Tactical Fighter Wing, Bien Hoa Air Base, Vietnam. In December 1969 he was assigned to the 474th Tactical Fighter Wing at Nellis AFB, Nevada, as flight commander, squadron weapons officer, squadron chief of training and scheduling, and standardization-evaluation flight examiner. After serving at Headquarters Allied Forces Central Europe, Brunssum, Netherlands, in the Plans Division, Nuclear Operations Branch, Major General James became commander of the 55th Tactical Fighter Squadron, 20th Tactical Fighter Wing, at Royal Air Force Station Upper Heyford, England. In May 1978 he was assigned as chief of the Plans, Operations, and Readiness Division, Air Directorate, National Guard Bureau, Washington, DC. He served as vice commander and then wing commander of the 27th Tactical Fighter Wing at Cannon AFB, New Mexico; commander of the 552nd Airborne Warning and Control Wing, Tinker AFB, Oklahoma; commander of the 552nd Airborne Warning and Control Division; and commander of the newly activated 28th Air Division. In September 1986 he reported to Royal Air Force Station Mildenhall, England, as commander of 3rd Air Force and later served as deputy chief of staff for operations, Headquarters Tactical Air Command, Langley AFB, Virginia. He served as deputy commander in chief for U.S. Southern Command, Panama.

Major General James redirected the Defense Mapping Agency from producing products to meet the requirements of the cold war to a concept of a Global Geospatial Information System (GGIS) directly accessible to combat commanders of the Rapid Deployment Forces. This was a major paradigm shift in warfare with the delivery of geographic information to fast-moving military forces. He retired July 1, 1993.

Major General James is a command pilot with almost 6,500 flying hours and 180 combat missions in Vietnam. His awards and decorations include the Defense Distinguished Service Medal, Legion of Merit, Distinguished Flying Cross, Meritorious Service Medal, Air Medal with eight oak leaf clusters, Air Force Commendation Medal, Presidential Unit Citation, Air Force Outstanding Unit Award with two oak leaf clusters, Combat Readiness Medal, National Defense Service Medal, Vietnam Service Medal with four service stars, Air Force Longevity Service Award Ribbon with five oak leaf clusters, Small Arms Expert Marksmanship Ribbon, Republic of Vietnam Gallantry Cross with Palm, Republic of Vietnam Campaign Medal, and Armed Forces Expeditionary Medal.

## **Col. Jerome T. Janicke, U.S. Air Force**

Director  
Defense Dissemination Program Office  
January 1984 – May 1985



Col. Jerome T. Janicke graduated from the U.S. Military Academy in 1962 with a Bachelor of Science degree. In 1971 he received a master's degree in systems management from the University of Southern California, and in 1981 he completed the Industrial College of the Armed Forces at Fort McNair.

Janicke received a commission in the U.S. Air Force upon graduation from West Point, trained for Titan II missile crew assignment, and reported to the 390th Strategic Missile Wing, Strategic Air Command at Davis-Monthan Air Force Base (AFB), Arizona. He served as both a deputy missile combat crew commander and missile combat crew commander until July 1967, recording over 7,500 missile crew duty hours.

After training with industry in the missile range technology program at Patrick AFB, Florida, Janicke transferred to the Headquarters Space and Missile Test Center at Vandenberg AFB, where he served until June 1973 as a project engineer for a broad ocean scoring system supporting Minuteman II and Minuteman III testing.

The following year Janicke became chief of Program Control for the Advanced Radiation Technology Office, Air Force Weapons Laboratory, Kirtland AFB, New Mexico. From 1978 to 1980, he served as a member of the Headquarters Air Force Systems Command Program Management Assistance Group. After completing the Industrial College of the Armed Forces, Colonel Janicke returned to the Advanced Radiation Technology Office at the Air Force Weapons Laboratory as chief of the Laser Development Division. From January 1984 to May 1985, Colonel Janicke served as director, Defense Dissemination Program Office (DDPO), Los Angeles Air Force Station, California. During his tenure as DDPO director, Colonel Janicke fielded Defense Dissemination System (DDS II) and awarded the development contract for DDS III.

In May 1985 Colonel Janicke assumed the position of director of Engineering and Program Support, Headquarters Air Force Contract Management Division. He retired from active duty in June 1986.

Colonel Janicke's military decorations and awards include the Legion of Merit, the Air Force Meritorious Service Medal with four oak leaf clusters, the Air Force Commendation Medal, and the Air Force Outstanding Unit Award Ribbon with three oak leaf clusters.



## **Lt. Gen. James C. King, U.S. Army**

Director  
National Imagery and Mapping Agency  
March 1998 – September 2001



Lt. Gen. James C. King received a BS in political science from Utah State University and entered the U.S. Army as a distinguished military graduate through the Reserve Officer Training Corps program. He holds an MS in public administration from the University of Missouri at Kansas City. He completed the Signal Officer Basic Course, the Military Intelligence Officer Advanced Course, the Army Command and General Staff College, and the Army War College.

Lieutenant General King's military assignments include tours in the continental United States, Japan, and Europe and a combat tour in Vietnam.

Between 1990 and 1992, Lieutenant General King served as commander, 66th Military Intelligence Brigade, U.S. Army Europe. In the latter half of 1992, he was executive officer to the deputy chief of staff for Intelligence, Headquarters, Department of the Army, Washington, DC. In January 1993 he became associate deputy director for Operations (Military Support), National Security Agency, Fort Meade, Maryland, a post that he held to August 1994. He then served on the Joint Staff as director of Intelligence, J-2, U.S. Central Command, MacDill Air Force Base, Florida, until February 1996. In February 1996 he became director for Intelligence, J-2, Joint Staff at the Pentagon, where he served for two years. Lieutenant General King retired in 2001.

Lieutenant General King's awards and decorations include the Defense Distinguished Service Medal, Defense Superior Service Medal with oak leaf cluster, Legion of Merit with three oak leaf clusters, Bronze Star Medal, Meritorious Service Medal with two oak leaf clusters, Joint Service Commendation Medal with oak leaf cluster, Army Commendation Medal, Joint Staff Identification Badge, Army Staff Identification Badge, and foreign awards.

## **Dr. Annette J. Krygiel**

Deputy Director for Systems and Technology  
National Imagery and Mapping Agency  
October 1996 – November 1996

Director  
Central Imagery Office  
July 1994 – October 1996



Dr. Annette J. Krygiel earned a BS in mathematics from St. Louis University and both an MS and a PhD in computer science from Washington University, St. Louis.

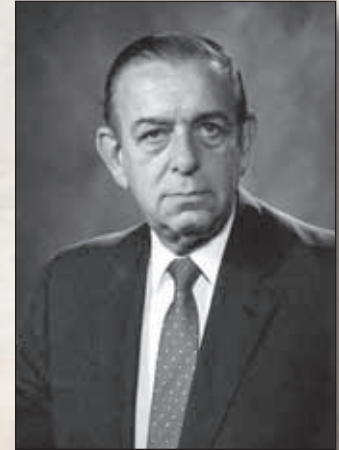
Dr. Krygiel started work at the Aeronautical Chart and Information Center (ACIC) in 1963, and she remained with the organization through the establishment of the Defense Mapping Agency (DMA) in 1972. Her areas of endeavor include software development, software engineering, and management of research and development initiatives in computer science and telecommunications. In 1982 Dr. Krygiel transferred to the DMA Special Program Office for Exploitation Modernization (SPOEM) as part of the start-up staff for development of the Digital Production System. She served as chief of Communications and Technical Integration before being selected to start the Office of Telecommunications Services (later renamed the DMA Telecommunications Services Center). Dr. Krygiel was the deputy director, Modernization Development Group at DMA Systems Center, where she managed the development and deployment of the Digital Production System scheduled for implementation at all three agency production centers. From November 1992 to April 1993, Dr. Krygiel was director of DMA Systems Center; she then served as chief scientist.

In July 1994, she assumed the position of director, Central Imagery Office (CIO), where she oversaw development of the United States Imagery Service (USIS). When CIO was incorporated into the National Imagery and Mapping Agency (NIMA) in 1996, she was assigned to one of three deputy director positions. In November 1996 she accepted a special assignment research and writing position at the Institute for National Strategic Studies at the National Defense University in Washington, DC.

Dr. Krygiel is the author of *Behind the Wizard's Curtain: An Integration Environment for a System of Systems*, published by the National Defense University in 1999. She received a Presidential Rank Award in 1991 and the Distinguished Civilian Service Award by the Secretary of Defense. Dr. Krygiel retired from the federal government in July 1999. In 2001 she was inducted into the NIMA Hall of Fame.

## **Col. William F. Lackman Jr., U.S. Army (Ret.)**

Director  
Central Imagery Office  
June 1992 – June 1994



Retired Col. William F. Lackman Jr. graduated from the U.S. Military Academy in 1951. He undertook graduate study at Georgetown University and The George Washington University in international relations, Soviet affairs, and business administration. He attended the Command and General Staff College in 1965.

During his military service, Colonel Lackman served in combat during the Korean War. He taught Russian history at the U.S. Military Academy and international relations at the U.S. Air Force Academy (1959–61). He served on the headquarters staff of the U.S. Army Europe between 1961 and 1964 and in the Office of the Deputy Chief of Staff Army for Operations between 1965 and 1967. Colonel Lackman had combat command tours during the Vietnam War. He had a series of policy-related assignments in the offices of the Secretary of Defense and the Joint Chiefs of Staff in the early 1970s. Colonel Lackman retired from active military service in 1973.

From 1976 until his retirement from public service, Colonel Lackman held a variety of positions connected with the national intelligence community. He was director of the program and budget staff of the intelligence community staff, where he served as chief spokesman for the national intelligence community budget. Between 1986 and 1992, he was deputy director of the intelligence community staff, serving on a variety of intelligence review boards and councils. In June 1992, he assumed the position of director, Central Imagery Office. He retired from civilian public service in 1994.

Among his military decorations and distinctions, Colonel Lackman received a Silver Star, three Legions of Merit, four Bronze Stars, two Purple Hearts, the Army and Air Force commendation medals, and two awards of the Combat Infantryman's Badge. Colonel Lackman died on February 10, 1995.

## **Ms. Letitia A. Long**

Director  
National Geospatial-Intelligence Agency  
August 2010 – Present



Ms. Letitia A. Long was appointed Director of the National Geospatial-Intelligence Agency on August 9, 2010.

Prior to her appointment, Ms. Long served as the Deputy Director of the Defense Intelligence Agency from May 2006 until July 2010. Previously, she was the Deputy Under Secretary of Defense for Intelligence (Policy, Requirements, and Resources) from June 2003 until May 2006. She also served in the positions of Deputy Director of Naval Intelligence from July 2000 to June 2003 and the Director of Central Intelligence's Executive Director for Intelligence Community Affairs, responsible for community-wide policy formulation, resource planning, and program assessment and evaluation between January 1998 and June 2000.

Ms. Long entered civilian federal service with the U.S. Navy in 1978 as a project engineer in training with the David Taylor Research Center. Upon completion of her degree in 1982, she continued with David Taylor Research Center for six years working on various submarine acoustic sensor programs. In 1988, Ms. Long joined the staff of the Director of Naval Intelligence where she managed Intelligence Research and Development programs.

Ms. Long was selected into the Senior Intelligence Executive Service in July 1994 and was dual-hatted as the Director, Requirements, Plans, Policy, and Programs for the Navy N2 staff as well as the Director of Resource Management for the Office of Naval Intelligence. From 1994 to 1996, Ms. Long was on rotational assignment from ONI to the Defense Intelligence Agency as Director of Military Intelligence Staff Director. In 1996, Ms. Long joined DIA as the Deputy Director for Information Systems and Services, directing DIA's worldwide information technology and communications programs. Ms. Long was also DIA's first Chief Information Officer.

Ms. Long earned a bachelor of science degree in electrical engineering from Virginia Tech and a master of science degree in mechanical engineering from the Catholic University of America. She is the recipient of the Department of Defense Medal for Distinguished Civilian Service, the Presidential Rank Award of Distinguished Executive, the Navy Distinguished Civilian Service Award, the Presidential Rank Award of Meritorious Executive (two awards), the National Intelligence Distinguished Service Medal (two awards), and the Defense Intelligence Agency Director's Award (two awards).

## Mr. Arthur C. Lundahl

Director  
National Photographic Interpretation Center  
May 1953 – July 1973



Mr. Arthur C. Lundahl earned a BS in 1939 and an MS in geology in 1942 at the University of Chicago.

Mr. Lundahl began a professional research career in Ontario, Canada, using aerial photography to produce geological maps. He joined the U.S. Navy and served as a photointerpreter at Adak, Alaska, where he examined photos taken over the Aleutian Islands, Japan, and the Kuriles. In 1946 the navy asked him to write the charter for the Naval Photographic Interpretation Center (NAVVIC); he then served for seven years as chief of the Photogrammetric Division and as assistant chief engineer. In 1953 the Central Intelligence Agency (CIA) recruited Mr. Lundahl to head and develop its Photographic Intelligence Division (PID), under the Office of Research and Reports. In 1958 the PID merged with the Statistical Branch of the Office of Current Reference to form the Photographic Interpretation Center (PIC). In January 1961, President Eisenhower created the National Photographic Interpretation Center (NPIC) with Mr. Lundahl as director. Under Mr. Lundahl's leadership, NPIC's role—to support of the CIA's Deputy Director of Intelligence—expanded to transform the center into a national-level, multidepartmental component of the intelligence community, with over one thousand employees drawn from CIA and the Department of Defense.

NPIC demonstrated that image intelligence was a prime strategic and tactical resource worldwide. Mr. Lundahl fostered development of business practices, tradecraft, and technology to manage the ever-growing volumes of satellite and aircraft imagery. His leadership was instrumental in the development and evolution of the U-2, SR-71, and satellite reconnaissance programs.

Director of NPIC for two decades and “father” of modern imagery analysis and imagery intelligence, Mr. Lundahl received a personal letter and a silver memento of the Cuban Missile Crisis from President John F. Kennedy. He received the National Security Medal, the National Civil Service League Award, the Defense Intelligence Agency's Director's Exceptional Civilian Service Award, and the CIA Distinguished Intelligence Medal. Her Majesty Queen Elizabeth II named Mr. Lundahl a Knight of the British Empire. In 1985 Lundahl received the U.S. Pioneer in Space Medal. Mr. Lundahl died in 1992. In 2001 he was posthumously inducted into the National Imagery and Mapping Agency Hall of Fame.

## **Lt. Gen. Abner B. Martin, U.S. Air Force**

Director  
Defense Mapping Agency  
September 1977–June 1979



Lt. Gen. Abner B. Martin attended Clemson College for eighteen months and then transferred to North Carolina State College, where he also served in the Army Enlisted Reserve Corps. He received an appointment to the U.S. Military Academy and graduated in 1949 with a BS in military engineering. He earned an MS in weapons systems engineering from the Massachusetts Institute of Technology in 1954 and an MA in international affairs from The George Washington University in 1965. He graduated from the Army War College in 1965 and the Advanced Management Program of Harvard Business School in 1968.

Lieutenant General Martin completed flight training in November 1950 and was assigned successively to the Air Training Command at Perrin Air Force Base (AFB), Texas; to the Air Force Armament Center, Eglin AFB, Florida; and to the Air Force Ballistic Systems Division, Air Force Systems Command at Inglewood, Los Angeles, and Norton AFB, California. In early 1967 Lieutenant General Martin spent approximately five months as Air Force Systems Command liaison officer in the Republic of Vietnam. He then served as director of Technical Operations, Office of the Deputy for Limited Warfare, in the Aeronautical Systems Division of Air Force Systems Command, Wright-Patterson AFB, Ohio, and later was appointed commander, Air Force Armament Laboratory, at Eglin AFB. He was appointed deputy for Reentry Systems for the Space and Missile Systems Organization (SAMSO) at Norton AFB and one year later became deputy for Minuteman, SAMSO. He returned to the Aeronautical Systems Division, Air Force Systems Command, at Wright-Patterson AFB, in January 1974 for duty as the B-1 System Program Director.

As director of Defense Mapping Agency (DMA), Lieutenant General Martin responded to the growing demands for digital geographic data required by new aircraft simulators and the strategic and tactical variants of the cruise missiles. During his tenure, DMA production processes moved rapidly to the initial efforts to provide world coverage of digital data for weapon deployment. He retired on July 1, 1979.

Lieutenant General Martin's military decorations and awards include the Distinguished Service Medal with oak leaf cluster, Legion of Merit, Bronze Star Medal, Air Force Commendation Medal with oak leaf cluster, Air Force Outstanding Unit Award, Air Force Organizational Excellence Award with oak leaf cluster, American Campaign Medal, World War II Victory Medal, National Defense Service Medal with one service star, Vietnam Service Medal with one service star, Air Force Longevity Service Award Ribbon with six oak leaf clusters, and the Small Arms Expert Marksmanship. He was a command pilot who also wore the Master Missileman Badge.

## Rear Adm. Eric A. McVadon, U.S. Navy

Deputy Director  
Defense Mapping Agency  
September 1985 – September 1986



Rear Adm. Eric A. McVadon graduated from Tulane University. In 1963–64 he attended the Naval Postgraduate School and completed the Engineering Science Program with honors. He completed the Naval War College Command and Staff Course in 1969; concurrently he earned an MA in international affairs from The George Washington University. He was a distinguished 1977 graduate of the National War College.

He was the Naval Reserve Officers Training Corps midshipman captain and battalion commander and received his commission in 1958. Following service on USS *English* (DD-696), he completed flight training and was designated a naval aviator. From 1960 to 1968, Rear Admiral McVadon was with Patrol Squadron 22, completed two Seventh Fleet deployments to the Far East, served with Air Deployment Squadron 1, and completed two Sixth Fleet deployments to the Mediterranean Sea on USS *Shangri-La* (CVA-38). Rear Admiral McVadon joined Patrol Squadron 46 in 1970, when he flew P-3B aircraft and served as administrative officer, with deployments to Southeast Asia, Adak, and Guam. In his first Washington assignment, he was in the Strategic Plans and Policy Division (OP-60) and the Office of the Director of Antisubmarine Warfare (OP-95). He was with Patrol Squadron 40 during a Seventh Fleet deployment to the Western Pacific and Indian Oceans and served then as commanding officer of VP-40, including a deployment to the Aleutian Islands. After serving on the staff of Commander Patrol Wings Pacific, he served three years in the Office of the Assistant Secretary of Defense for International Security Affairs. Beginning in 1980 he was the U.S. Navy member of the Chairman's Staff Group in the Office of the Chairman of the Joint Chiefs of Staff, then commanding officer, Naval Station Keflavik, commander of Naval Forces Iceland, and U.S. chairman of the Iceland-U.S. Defense Council. He was then deputy director, Politico-Military Policy and Current Plans Division in the Office of the Chief of Naval Operations. As a flag officer he served as deputy director, Strategy, Plans and Policy Division (OP-60B).

After leaving the Defense Mapping Agency, Rear Admiral McVadon served as commander, Iceland Defense Force from 1986 to 1989 and then as U.S. Defense and Naval attaché in Beijing until 1992, when he retired.

Rear Admiral McVadon's military decorations and awards include the Defense Distinguished Service Medal, the Defense Superior Service Medal (first oak leaf cluster), Legion of Merit, and Navy Commendation Medal.

## Vice Adm. Robert B. Murrett, U.S. Navy

Director  
National Geospatial-Intelligence Agency  
July 2006 – August 2010



Vice Adm. Robert B. Murrett received his bachelor's degree in history from the University of Buffalo and master's degrees in government and strategic intelligence from Georgetown University and the Defense Intelligence College, respectively.

Following his commissioning, Vice Admiral Murrett was assigned as an afloat intelligence officer, including Mediterranean, north Atlantic, and western Pacific deployments aboard USS *Kitty Hawk* (CV 63), USS *America* (CV 66), and USS *Independence* (CV 62).

Following assignment to Defense Intelligence College in 1980, Vice Admiral Murrett was detailed to the Chief of Naval Operations Intelligence Plot (OP-009U) as a watch stander and briefing officer for navy civilian and military leaders. From 1983 to 1985, he served as assistant intelligence officer for Commander, Second Fleet. He participated in deployments to the North Atlantic, the European theater, and Caribbean aboard USS *Mount Whitney* (LCC 20) and USS *Nassau* (LHA 4). Between 1986 and 1989, Vice Admiral Murrett was assigned as Assistant Naval Attaché to the U.S. Embassy in Oslo, Norway.

In 1989, Vice Admiral Murrett reported to Commander in Chief, U.S. Pacific Fleet, where he was assigned as operational intelligence officer. From 1992 to 1995, he served as Assistant Chief of Staff, Intelligence for Commander, Carrier Group Eight, and deployed to the European and Central Command theaters aboard USS *Theodore Roosevelt* (CVN 71). Vice Admiral Murrett also was assigned as J2 CJTF 120 aboard USS *Wasp* (LHD 1) for operations in the Caribbean.

Between 1995 and 1997, Vice Admiral Murrett was Assistant Chief of Staff, Intelligence for Commander, Second Fleet, and served concurrently as N2 for NATO's Striking Fleet Atlantic and as J2 for U.S. Atlantic Command's CJTF 120. From June 1997 until September 1998, he was assigned to the Chief of Naval Operations Staff as executive assistant to the director of Naval Intelligence. Vice Admiral Murrett was then assigned as director, Intelligence Directorate, Office of Naval Intelligence in September 1998. Vice Admiral Murrett assumed the duties of Commander, Atlantic Intelligence Command (AIC) August 12, 1999. He was responsible for the transition of AIC to Joint Forces Intelligence Command in October 1999. Vice Admiral Murrett served as the director for Intelligence, U.S. Joint Forces Command, from August 10, 2000 through January 25, 2002. From January 31, 2002 through March 2005, Vice Admiral Murrett was assigned as the vice director for Intelligence, J2, on the Joint Staff.

Vice Admiral Murrett served as the director of Naval Intelligence from April 1, 2005, until July 6, 2006. He was appointed director of the National Geospatial-Intelligence Agency on July 7, 2006.



## **Maj. Gen. William L. Nicholson III, U.S. Air Force**

Director  
Defense Mapping Agency  
July 1979 – June 1981



Maj. Gen. William L. Nicholson III graduated from high school in May 1944, entered the U.S. Army Air Corps, and returned to civilian life in November 1945 to resume his studies. He graduated in June 1950 from St. Louis University with a BS in aeronautical engineering and meteorology.

He graduated from the Air Command and Staff College in 1960 and from the National War College in 1970, concurrently earning a MS in international relations from The George Washington University.

He completed Reserve Officers Training Corps requirements, was commissioned in the U.S. Air Force, and returned to active duty in September 1950. He received his pilot wings in October 1951. On a combat mission over North Korea in October 1952, he was shot down, evaded capture, and returned to the 58th Fighter-Bomber Wing to complete his combat tour of duty. He trained pilots at McCoy Air Force Base (AFB), Florida, was Director of Materiel for the 3520th Tactical Fighter Group at McConnell AFB, Kansas, and served with Headquarters Air Training Command at Randolph AFB, Texas. After serving as air operations advisor to the 1st Fighter Squadron of the Vietnamese Air Force, he served in the Directorate of Plans, Headquarters Pacific Air Forces, at Hickam AFB, Hawaii, and in the Directorate of Plans, Deputy Chief of Staff, Plans and Operations, Headquarters U.S. Air Force. In June 1966 he was assigned to the Organization of the Joint Chiefs of Staff (OJCS). Beginning March 1971 he was assigned to Grissom AFB, Indiana, as the vice commander, 305th Air Refueling Wing. He then assumed the position of commander, 301st Air Refueling Wing, and transferred with the wing and its KC-135 aircraft to Thailand. He rejoined the 301st Air Refueling Wing as commander and moved with elements of the wing to the Philippines to organize the 4102d Air Refueling Squadron. He participated in “Linebacker 11” air operation over North Vietnam. After April 1973 he commanded the 97th Bombardment Wing, Blytheville AFB, Arkansas, then transferred to the OJCS, J-5 Directorate, as assistant deputy director for Force Development and Strategic Plans, followed by a tour as deputy director for Operations (Strategic and General Operations), OJCS. In September 1975 he assumed duty as commandant of the Air Command and Staff College. After three years he assumed duty as vice commander, Fifteenth Air Force.

As director of the Defense Mapping Agency, Major General Nicholson expanded the digital geographic data production for the new weapon Strategic Air Command/Joint Strategic Target Planning Staff (SAC/JSTPS) requirements to respond to the Joint Strategic Operational Plan (JSOP) for defense of the nation during the cold war. He retired on July 1, 1981.

Major General Nicholson flew two hundred combat missions in Vietnam. His military decorations and awards include the Legion of Merit with oak leaf cluster, Distinguished Flying Cross, Air Medal with oak leaf cluster, Air Force Commendation Medal with two oak leaf clusters, Army Commendation Medal, Presidential Unit Citation, and the Republic of Korea Presidential Unit Citation.

## **Maj. Gen. Philip W. Nuber, U.S. Air Force**

Director  
Defense Mapping Agency  
December 1994 – May 1996



Maj. Gen. Philip W. Nuber earned a BS in electrical engineering from Montana State University in 1962. He completed Air Command and Staff College in 1975 and the Industrial College of the Armed Forces in 1976. He completed the Management Program for Executives at the University of Pittsburgh in 1987 and the National and International Security Management Course at Harvard University in 1991.

Major General Nuber began active military service in March 1962 and earned his pilot wings in June 1963. His assignments included the 4527th Combat Crew Training Squadron, Tactical Air Command, Luke Air Force Base (AFB), Arizona; 10th Tactical Fighter Squadron, Headquarters, U.S. Air Forces in Europe, Hahn Air Base, Germany; 510th Tactical Fighter Squadron, Pacific Air Forces, Cu Chi and Bien Hoa, South Vietnam; instructor pilot, 425th Tactical Fighter Training Squadron, Williams AFB, Arizona; 71st Tactical Air Support Group and 702nd Tactical Air Support Squadron, Fort Hood, Texas; 357th Tactical Fighter Squadron, 333rd Tactical Fighter Training Squadron, and 333rd Tactical Fighter Training Squadron, all at Davis-Monthan AFB, Arizona; 510th Tactical Fighter Training Squadron, Korat Royal Thai Air Force Base, Thailand; 358th Tactical Fighter Training Squadron, 355th Tactical Fighter Wing and 354th Tactical Fighter Squadron, Davis-Monthan AFB, Arizona; chief, Officer Command Assignments Division, Headquarters Tactical Air Command, Langley AFB, Virginia; commander, 425th Tactical Fighter Squadron, Williams AFB, Arizona; assistant deputy commander for operations, 405th Tactical Training Wing, Luke AFB, Arizona; assistant deputy commander, then commander, 833rd Combat Support Group, Holloman AFB, New Mexico; vice commander, then commander, 343rd Tactical Fighter Wing, Alaskan Air Command (AAC), Eielson AFB, Alaska; deputy commander, Air Force Combat Operations Staff, deputy director, operations, directorate for plans and operations, Headquarters, U.S. Air Force; deputy director, Office of Military Support, Headquarters U.S. Army; temporary duty, deputy commander, Joint Task Force Middle East, United States Central Command, Middle East; assistant deputy under secretary of the Air Force (international affairs); and chief, Joint U.S. Military Mission for Aid to Turkey, Ankara, Turkey.

Major General Nuber brought the Defense Mapping Agency to the attention of the world stage when he personally, on site, provided the Global Geospatial Information System (GGIS) to President Clinton's Dayton Peace Accord in the settlement of the Bosnia, Croatia, Serbia, and Kosovo boundaries. The national leaders actually saw three-dimensional satellite imagery and mapping data of their nations and quickly solved issues of land boundaries.

Major General Nuber has more than 4,200 flying hours and is a veteran of three hundred combat missions. His military awards and decorations include the Defense Distinguished Service Medal, Distinguished Service Medal, Legion of Merit, Distinguished Flying Cross with bronze oak leaf cluster, Bronze Star Medal, Meritorious Service Medal with three bronze oak leaf clusters, Air Medal with three silver oak leaf clusters and bronze oak leaf cluster, Air Force Commendation Medal with two bronze oak leaf clusters, and Army Commendation Medal.

Major General Nuber retired June 1, 1996 and died May 21, 2003.

## **Rear Adm. William J.M. O'Connor, U.S. Navy**

Deputy Director  
Defense Mapping Agency  
July 1988 – August 1989



Rear Adm. William J.M. O'Connor graduated from the University of Pennsylvania, Wharton School. He was commissioned as an ensign in September 1955 and designated as a naval aviator in 1957. He is a graduate of the Command and Staff School and the Industrial College of the Armed Forces. He also earned an MBA and an MA in international affairs from The George Washington University.

Sea duty assignments included tours in Attack Squadrons 44, 192, and 105, aboard the USS *Forrestal* (CV-59), Attack Squadron 153, and the aircraft carrier USS *Independence* (CV-62). These assignments involved deployments to both the Mediterranean Sea and western Pacific Ocean. His shore assignments have included duty as navy production test pilot and special project officer at Douglas Aircraft Company. He served as head of the Program Objectives Memorandum Development Branch in the Office of the Chief of Naval Operations; deputy assistant chief of Naval Personnel for Financial Management; and executive assistant to the Assistant Secretary of the Navy (Financial Management). He commanded the U.S. Naval Station, Roosevelt Roads, Puerto Rico, and was subsequently assigned as deputy director, General Planning and Programming Division, Office of the Chief of Naval Operations. He became deputy chief for Resources and Management, Naval Material Command in December 1982. In June 1985 he assumed the position as commander U.S. Naval Forces Caribbean, subsequently redesignated as commander U.S. Naval Activities, Caribbean in July 1987.

During the Vietnam War, Rear Admiral O'Connor flew more than 160 combat missions. His decorations include the Legion of Merit (three), the Bronze Star, Meritorious Service Medal, Air Medal (fourteen), Navy Commendation Medal (three), the Purple Heart, the Vietnamese Cross of Gallantry, and Venezuelan Naval Order of Merit.

## **Maj. Gen. Raymund E. O'Mara, U.S. Air Force**

Director  
Defense Mapping Agency  
June 1993 – December 1994



Maj. Gen. Raymund E. O'Mara earned a BS from the New Jersey Institute of Technology in 1963 and an MS from the State University of New York in 1974. He completed the Royal Air Force Staff College, Bracknell, England, in 1976; the Air War College in 1979; and the Executive Development Program, University of Michigan, in 1986.

Major General O'Mara began his active duty service in 1963. After flight training, he served four years with the 346th and 348th Bomb Squadrons at Westover Air Force Base (AFB) in Massachusetts. Follow-on assignments included aide-de-camp to the commander, 376th Strategic Wing, Strategic Air Command, Kadena Air Base, Japan and aircraft commander and instructor pilot with the 528th and 529th Bomb Squadrons, 4007th Combat Crew Training Squadron, Strategic Air Command, Plattsburgh AFB, New York. He served on the Royal Air Force operations staff on an exchange program at High Wycombe, England, and then commanded the 528th Bomb Squadron and served with the 380th Bomb Wing, Strategic Air Command in Plattsburgh. In the early 1980s he served in the Office of the Deputy Chief of Staff for Plans and Operations, Headquarters U.S. Air Force, and then returned as commander of the 380th Bombardment Wing. After another staff position at the Office of the Deputy Chief of Staff for Plans and Operations at Headquarters, U.S. Air Force, he commanded the 40th Air Division, Wurtsmith AFB, Michigan, and the 57th Air Division, headquartered at Minot AFB, North Dakota. His next assignment came as deputy chief of staff for strategic plans, Headquarters Strategic Air Command, and deputy director for force employment plans, Joint Strategic Target Planning Staff (JSTP) at Offutt AFB, Nebraska. He then served as deputy commander in chief and chief of staff, U.S. Atlantic Command, Norfolk, Virginia.

As director of the Defense Mapping Agency (DMA), Major General O'Mara moved forward with the implementation of the Global Geospatial Information System (GGIS). He initiated the reinventing of DMA to bring the organization structure in line with the concept of direct linkage to the warfighters. He retired on December 1, 1994.

Major General O'Mara accumulated 3,673 flying hours and flew more than 170 combat missions in Southeast Asia. His awards and decorations include the Defense Distinguished Service Medal with oak leaf cluster, Legion of Merit with oak leaf cluster, Distinguished Flying Cross, Meritorious Service Medal with two oak leaf clusters, Air Medal with silver oak leaf cluster and two bronze oak leaf clusters, Air Force Commendation Medal with oak leaf cluster, Air Force Outstanding Unit Award with "V" device and two bronze oak leaf clusters, Combat Readiness Medal, National Defense Service Medal with bronze service star, Vietnam Service Medal with silver service star and bronze service star, Republic of Vietnam Gallantry Cross with Palm, and Republic of Vietnam Campaign Medal.

## **Rear Adm. Oakley E. Osborn, U.S. Navy**

Deputy Director  
Defense Mapping Agency  
November 1986 – February 1988



Rear Adm. Oakley E. Osborn earned a BS from Colorado State University. He entered the U.S. Navy through the Aviation Officer Candidate (AOC) program and was designated a naval aviator in March 1957. He received an MS in management from the Naval Postgraduate School in Monterey, California, in 1967 and completed Army Command and General Staff College.

His assignments include tours aboard Patrol Squadron 17, Patrol Squadron 31, and Patrol Squadron 31 Detachment Alfa. After serving as aide and flag lieutenant to Commander ASW Group 5 aboard USS *Bennington*, he reported to Commander Patrol Force Seventh Fleet as air operations officer. Following a tour with Patrol Squadron 19, in February 1973, he assumed command of Patrol Squadron 40, which received the Battle Efficiency "E," the Chief of Naval Operations Safety Award, and the Golden Anchor for retention excellence. He next served in the Air ASW Training Branch, Office of the Chief of Naval Operations, followed by duty as executive assistant to the director, ASW and Ocean Surveillance Programs, Office of the Chief of Naval Operations. After commanding Patrol Wing 5 in Brunswick, Maine, he reported to the Naval Military Personnel Command in October 1980, where he served as director, Restricted Line and Staff Corps Officer Distribution and Special Placement Division and later as deputy assistant commander for Distribution. He served as assistant commander for Distribution and then reported as director, Total Force Planning/Training Division, Office of the Chief of Naval Operations. His next duty was as deputy director for Operations, National Military Command Center, Joint Chiefs of Staff. He served then as commander, Patrol Wings, U.S. Pacific Fleet at Moffett Field, California, until reporting to the Defense Mapping Agency.

## **Lt. Gen. Howard W. Penney, U.S. Army**

Director  
Defense Mapping Agency  
March 1972 – August 1974



Lt. Gen. Howard W. Penney attended the University of Detroit and graduated with a BS from the U.S. Military Academy in 1940. He earned an MS in civil engineering at Texas A&M University in June 1949 and completed the Command and General Staff College in June 1952 and the National War College in June 1959.

Lieutenant General Penney had assignments with the 5th Engineer Combat Regiment at Fort Belvoir, Virginia, with the Engineer School at Fort Belvoir, with the Headquarters, Second Army in Memphis, Tennessee, and with the Eighth Army in New Guinea, Philippines, and Japan. After graduate school, he served as resident engineer and subsequently as executive officer of the Albuquerque District, U.S. Army Corps of Engineers, until September 1950, when he reactivated and commanded the 20th Engineer Combat Battalion at Fort Bragg, North Carolina. Thereafter he served with the Supreme Headquarters Allied Powers Europe as executive officer of the Infrastructure Branch, Logistics Division before being assigned as assistant chief of Civil Works for Flood Control in the Office of the Chief of Engineers. He served as district engineer of the Engineer District, Tulsa, Oklahoma, and then with the Military Assistance Advisory Group, Vietnam, until April 1963, when he was reassigned to the Office of the Chief of Engineers as deputy director of Civil Works for Comprehensive Planning. Lieutenant General Penney served as deputy chief of Legislative Liaison and then chief of Legislative Liaison, Department of the Army. In December 1968, he assumed duty as commanding general, United States Army Europe (USAREUR) and Seventh Army Troops, Headquarters Commandant, USAREUR and Seventh Army, and as Heidelberg Military Community leader. He served as engineer, USAREUR and Seventh Army, just prior to his assignment with the Defense Mapping Agency (DMA).

In response to President Nixon's directive of July 1971, Lieutenant General Penney consolidated the military mapping, charting and geodesy activities and created DMA. Under his leadership, the new agency focused these assets into a decentralized structure with a very lean staff to respond to the high demands for geographic information by military users. In 2001 Lieutenant General Penney was inducted into the National Imagery and Mapping Agency Hall of Fame.

General Penney's military decorations and awards include the Distinguished Service Medal with oak leaf cluster, the Legion of Merit with oak leaf cluster, Bronze Star Medal with oak leaf Cluster, Army Commendation Ribbon with oak leaf cluster, Asiatic-Pacific Campaign Medal, American Campaign Medal, American Defense Service Medal, World War II Victory Medal, Army Occupation Medal (Japan), Philippine Liberation Ribbon, National Defense Service Medal, Armed Forces Expeditionary Medal, Republic of Vietnam Service Medal, Vietnamese Service Medal, General Staff Identification Badge, and Supreme Headquarters Allied Powers Europe Badge.

## **Brig. Gen. Joseph Pratt, U.S. Army**

Deputy Director  
Defense Mapping Agency  
October 1990 – September 1991



Brig. Gen. Joseph Pratt received a BS in chemical engineering from Clarkson University, a BS in civil engineering from the University of Missouri-Rolla, and a MS in systems engineering from Michigan State University. He is also a graduate of the Armed Forces Staff College and the Industrial College of the Armed Forces.

Brigadier General Pratt entered on active duty in July 1960 under the Reserve Officers Training Corps program. His military assignments include service as an engineer troop commander and staff officer with the 1st Cavalry Division in Korea; the 70th Engineer Battalion at Fort Campbell, Kentucky; the 169th Engineer Battalion, Fort Stewart, Georgia; and the 293rd Engineer Battalion in Germany. The general also served with the 168th Engineer Battalion and the 79th Engineer Group in the Republic of Vietnam and a second tour as plans officer, deputy chief of staff for Operations, U.S. Army, Republic of Vietnam (USARV). He commanded the 39th Engineer Battalion, Fort Devens, Massachusetts and the 1st Training Support Brigade and 4th Training Brigade, Fort Leonard Wood, Missouri. Following brigade command, he served as chief of staff/garrison commander, U.S. Army Training Center Engineer and Fort Leonard Wood. He served as deputy senior advisor to the Ohio National Guard and was commander and division engineer, U.S. Army Corps of Engineers, North Central Division, Chicago, Illinois. His first assignment at the Defense Mapping Agency in 1987 was deputy director for Plans and Requirements.

Brigadier General Pratt's military decorations include the Legion of Merit with three oak leaf clusters, Bronze Star with one oak leaf cluster, Meritorious Service Medal with one oak leaf cluster, and the Army Commendation Medal with one oak leaf cluster.

## **Brig. Gen. Allen K. Rachel, U.S. Air Force**

Deputy Director  
Defense Mapping Agency  
October 1981 – October 1982



Brig. Gen. Allen K. Rachel received a BS from the University of Nebraska, Omaha, in 1959 and an MBA from The Ohio State University in 1966 through the Minuteman education program. He received a PhD in management from The Ohio State University in 1972. Brigadier General Rachel completed the Squadron Officer School, Army Command and General Staff College, and Industrial College of the Armed Forces.

After two years of undergraduate work, Brigadier General Rachel entered the U.S. Air Force in July 1953 as an aviation cadet. He was commissioned a second lieutenant in September 1954 and received his navigator wings in November 1954. From that time until April 1963, he served as an academic, technical, flying and military instructor in the Air Training Command. After Minuteman combat crew training at Chanute Air Force Base (AFB), Illinois, and Vandenberg AFB, California, he was assigned to the 44th Strategic Missile Wing, Ellsworth AFB, South Dakota, as a missile combat crew commander and instructor. In April 1966 he became chief, Missile Procedures Training Branch. He served one year as a forward air controller at Nakhon Phanom Royal Thai Air Force Base, Thailand, and then was assigned for three years to the Air Force Inspection and Safety Center, Norton AFB, California. In June 1975 Brigadier General Rachel was assigned as assistant deputy commander for maintenance, 90th Strategic Missile Wing, F.E. Warren AFB, Wyoming. He was deputy commander for maintenance and assumed duties as vice commander of the wing from May 1977 to March 1978, when he became commander of the 341st Strategic Missile Wing, Malmstrom AFB, Montana. In June 1979 he was assigned to Headquarters Strategic Air Command, Offutt AFB, Nebraska, as assistant deputy chief of staff for operations plans. Ten months later, he was named assistant deputy chief of staff for intelligence.

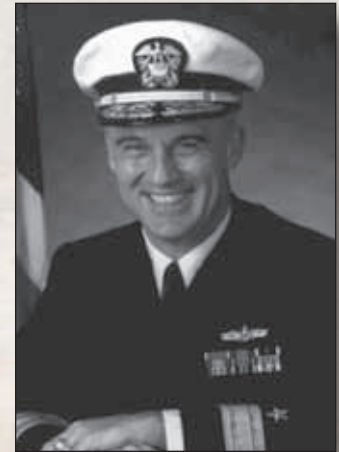
After serving at the Defense Mapping Agency, Brigadier General Rachel was named deputy director for the National Strategic Target List, Joint Strategic Target Planning Staff, Offutt AFB, Nebraska. He retired on December 1, 1983.

Brigadier General Rachel is a master missileman and a master navigator with more than 4,300 flying hours, including 720 hours on 156 combat missions in Thailand. His military decorations and awards include the Legion of Merit, Distinguished Flying Cross, Bronze Star Medal, Meritorious Service Medal, Air Medal with seven oak leaf clusters, Air Force Commendation Medal with oak leaf cluster, and Republic of Vietnam Campaign Medal.



## **Rear Adm. Daniel C. Richardson, U.S. Navy**

Deputy Director  
Defense Mapping Agency  
August 1989 – September 1990



Rear Adm. Daniel C. Richardson graduated from the U.S. Naval Academy in 1959. He earned an MS in mechanical engineering from the U.S. Naval Postgraduate School in 1969. He graduated from the Industrial College of the Armed Forces in 1975. He earned an MBA from The George Washington University in 1976. He graduated from the Naval War College in 1983.

Rear Admiral Richardson's first assignment was at the U.S. Naval Academy as instructor in the Mechanical Engineering Department. After flight training and designation as a naval aviator, he served in attack squadrons (VA 42 and 135), including the air group of the USS *Constellation* (CV 64), on various submarines of the Pacific fleet, including tours as executive officer, USS *Blueback* (SS 581); executive officer, USS *Reeves* (CG 24) and commanding officer, USS *Ouellet* (FF 1077); commanding officer, USS *Sterett* (CG 31); and chief of staff of Carrier Group 7. Other assignments have included duty on the staff of Commander Submarine Force U.S. Pacific Fleet; assistant for surface ASW sensor programs in the Office of the Chief of Naval Operations; executive assistant in the Office of the Secretary of the Navy; assistant chief of staff for Operations in the Office of the Commander in Chief U.S. Pacific Fleet; director of the Manpower and Training Requirements Division (OP-39) and director of Surface Warfare Division (OP-32); and director of the Force Level Plans Division (OP-70) in the Office of the Chief of Naval Operations.

Rear Admiral Richardson's decorations and awards include the Legion of Merit with four Gold Stars in lieu of subsequent awards, Meritorious Unit Commendation, Navy Ribbon E, National Defense Service Medal with one Bronze Star, Armed Forces Expeditionary Medal with three Bronze Stars, Sea Service Development Ribbon with two Bronze Stars, Navy and Marine Corps Overseas Service Ribbon, and the Republic of Vietnam Campaign Medal. He retired in July 1996.

## **Mr. William T. Riordan**

Director of Management and Technology  
Defense Mapping Agency  
March 1979 – November 1979



Mr. William T. Riordan attended Bradley University in Peoria, Illinois, before joining the Navy Air Corps. He attended the University of Missouri in St. Louis and graduated from The George Washington University, Washington, DC. He also attended the Industrial College of the Armed Forces.

In 1950 Mr. Riordan joined the Air Force's Aeronautical Chart and Information Center (ACIC), in St. Louis, Missouri, where he served for twenty years as chief of various divisions and as deputy director of the Directorate of Operations. Prior to his assignment to Defense Mapping Agency (DMA) headquarters in 1974, Riordan was technical director of the DMA Aerospace Center in St. Louis, Missouri, the successor to ACIC. He then served as deputy director for Programs, Production, and Operations and was responsible for the programming and execution of cartographic, geodetic, photogrammetric, and hydrographic programs pertaining to national defense and having international significance.

Mr. Riordan retired in November 1979. He received the DMA Distinguished Service and Defense Distinguished Service award and was president, St. Louis Chapter of American Congress of Surveying and Mapping.

## **Maj. Gen. Robert A. Rosenberg, U.S. Air Force**

Director  
Defense Mapping Agency  
July 1985 – September 1987



Maj. Gen. Robert A. Rosenberg received a BS in general engineering from the U.S. Naval Academy in 1957. He was commissioned in the U.S. Air Force, earned an MS in aerospace engineering at the Air Force Institute of Technology, Wright-Patterson Air Force Base (AFB), Ohio, in 1964, and graduated from the Industrial College of the Armed Forces in 1972.

Major General Rosenberg was assigned in April 1958 to Forbes AFB, Kansas, as a flight line maintenance officer with the Strategic Air Command's 90th Strategic Reconnaissance Wing. His next assignments were at Vandenberg AFB, California, with the Air Force Ballistic Missile Division, and with the Office of Special Projects, Office of the Secretary of the Air Force, in a variety of positions. In 1972 he joined the Air Staff and served as division chief under the assistant for research, development, and acquisition programming, Office of the Deputy Chief of Staff, Research and Development, before joining the Office of Space Systems, Office of the Secretary of the Air Force, where he served successively as deputy director for programs, principal deputy, and acting director. After an assignment to the National Security Council, the White House, in March 1980, he returned to Headquarters U.S. Air Force as assistant chief of staff for studies and analyses. His next assignments were as assistant vice commander of the U.S. Air Force Space Command and vice commander in chief for the North American Aerospace Defense Command, with consolidated headquarters at Peterson AFB, Colorado.

Major General Rosenberg provided new leadership in establishing a cohesive interface to the national intelligence program and positioned the Defense Mapping Agency (DMA) as a critical contributor to the success of the warfare capability of the nation. He guided the Phase II developments of the DMA modernization program to ensure proper adjustments to the changing Department of Defense geographic requirements, as well as making critical reviews of the programs progress and design. He retired on October 1, 1987.

Major General Rosenberg's military decorations and awards include the Defense Distinguished Service Medal, Legion of Merit with four oak leaf clusters, Air Force Commendation Medal with four oak leaf clusters, and Air Force Outstanding Unit Award Ribbon. He wore the master space and master missile badges.

## **Mr. Lloyd B. Rowland**

Deputy Director  
National Geospatial-Intelligence Agency  
October 1, 1996 – present



Mr. Lloyd B. Rowland has degrees from Memphis State University and the University of Southern California. His professional education includes Squadron Officer School, Armed Forces Staff College, the Air War College, the Intelligence Community Senior Leaders Program, the Intelligence Fellows Program, and the Harvard Senior Managers in Government Program.

Mr. Rowland spent twenty-four years in the U.S. Air Force. During this time he commanded a squadron in Operation Desert Storm and had various postings throughout the United States, Europe, the Middle East, and Asia. His career focused on combat search and rescue and reconnaissance force employment and imagery management.

At the National Geospatial-Intelligence Agency (NGA), Mr. Rowland served in numerous leadership positions such as business executive, deputy director of the Office of Business Transformation, director of Global Operations, associate deputy director of Operations, director of Geospatial Information, deputy director of the Central Imagery Tasking Office, and associate director of Assessments. Mr. Rowland was appointed to the Defense Intelligence Senior Executive Service (DISES) in 1996.

Mr. Rowland was appointed deputy director of NGA effective October 1, 2006. As deputy director, he assists the director in formulating policy and managing agency activities in order to accomplish NGA's mission.

Mr. Rowland is a member of the President's Advisory Council at Wesley Theological Seminary in Washington, DC., is a board member of the Intelligence and National Security Alliance, and is an advisor to the United States Geospatial-Intelligence Foundation Board of Directors.

His awards include the Distinguished Flying Cross for combat operations, the Presidential Meritorious Rank Award, the Legion of Merit, the Defense Superior Service Medal, and the Air Medal.

## **Mr. Frank J. Ruocco**

Director  
National Photographic Interpretation Center  
February 1988 – February 1991



Mr. Frank J. Ruocco graduated from St. Peter's College in 1962 and spent three years as a commissioned officer in the U.S. Navy. He attended the Naval War College in 1974–1975.

In 1965, he joined the Central Intelligence Agency (CIA). For twenty-three years he served in the Directorate of Intelligence as analyst, supervisor and manager in the Office of Strategic Research (1965–1980); Deputy Director, Office of Imagery Analysis (1980–1982), Chief, Collection, Requirements, and Evaluation Staff (1962–1985); and Director, Office of Information Resources (1986–1988).

After serving as director of the National Photographic Interpretation Center (NPIC) for three years, Mr. Ruocco joined the CIA Directorate of Administration as director of the Office of Security. In 1992 he was selected to be deputy director of Administration. He retired from the agency in 1995.

## **Col. Gerald J. Samos, U.S. Air Force**

Director  
Defense Dissemination Program Office  
May 1978 – March 1980



Col. Gerald J. Samos graduated from the United States Military Academy in June 1955 and was commissioned in the U.S. Air Force. He received a Master of Science in electrical engineering from the University of Illinois in 1961. In 1966 and 1967, he attended the Air Command and Staff College and simultaneously completed a Master of Science in business administration from The George Washington University.

After receiving his wings in 1955, Colonel Samos served as a jet instructor pilot in Greenville, Mississippi. From 1961 to 1965, he was programming manager of a Flight Test Simulation facility at the Air Force Flight Test Center. In 1965 he moved to the Facility Planning Office at Headquarters, Air Force Systems Command. After Air Command and Staff College, Colonel Samos went to F4C upgrade school at Davis Monthan Air Force Base, Arizona. From there he joined the 558th Tactical Fighter Squadron of the 12th Tactical Fighter Wing in Cam Rhan Bay, South Vietnam. During his tour in Vietnam, Colonel Samos flew 105 combat missions. He also saw five months of temporary duty with F-4 jets in Taegu, Korea.

In March 1969, Colonel Samos began a tour in the Pentagon in the Plans and Analysis Office of the Directorate of Operational Requirements, Headquarters, U.S. Air Force. He next assumed an assignment as a staff assistant in the F-15 Program Office at Headquarters, Air Force Systems Command. In 1974, Colonel Samos became chief of engineering of the LORAN (Long-Range Aid to Navigation) Program at the Electronic Systems Division. In 1977 he joined the Defense Dissemination Program as Deputy Program Director. In 1978 Colonel Samos was named director of the Defense Dissemination Program Office (DDPO), where he served until March 1980. While assigned to the DDPO, Colonel Samos completed initial fielding of Defense Dissemination System (DDS) I to the four initial Commander in Chief (CINC) sites. He also developed the Deployable Receive Segment Engineering Model (DRSEM).

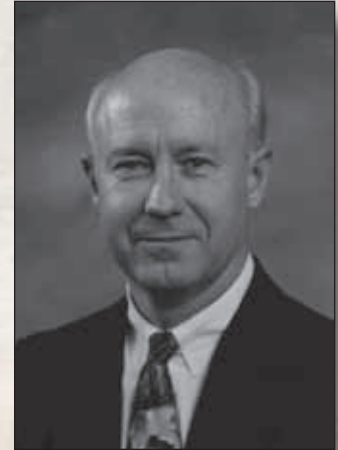
After leaving DDPO, Colonel Samos served as program manager of the Defense Meteorological Satellite Program until his retirement from active duty in June 1981.

Colonel Samos earned the Legion of Merit, the Distinguished Flying Cross, the Defense Meritorious Service Medal, the Bronze Star, the Meritorious Service Medal, the Air Medal with three clusters, and the commendation medal with one cluster.

## **Mr. W. Douglas Smith**

Deputy Director for Corporate Affairs  
National Imagery and Mapping Agency  
October 1996 – July 1997

Deputy Director  
Defense Mapping Agency  
March 1995 – September 1996



Mr. W. Douglas Smith earned a BS in math and chemistry from Murray State University in 1965 and an MA in mathematics from University of Illinois in 1969. He did graduate work in computer science at Virginia Polytechnic Institute and State University.

Mr. Smith began his career at the National Military Command System Support Center (NMCSSC). While there, he enhanced and applied nuclear weapons effects models and developed the standard nuclear effects model for the Worldwide Military Command and Control System (WWMCCS). By 1973 he was chief of the Simulations Branch, providing computer modeling and analytical support to the Office of the Joint Chiefs of Staff (OJCS), Office of the Secretary of Defense (OSD) and the Defense Nuclear Agency. From 1975 to 1981, Mr. Smith held progressively responsible positions in the Command and Control Technical Center (CCTC). He supported OJCS in the areas of database administration, operations research, automated data processing (ADP) configuration management, and command center operations requirements. In 1981, Mr. Smith became the CCTC chief financial officer. In 1983 he accepted the position of budget officer at the Defense Communications Agency (DCA). Smith joined the Defense Mapping Agency (DMA) as deputy comptroller in 1986 and served as comptroller prior to being named deputy director.

Mr. Smith received numerous awards, including the DCA Meritorious Civilian Service Award, DCA Director's Award for Exceptional Civilian Service, DMA Meritorious Civilian Service Award, DMA Distinguished Civilian Service Award, and Department of Defense Distinguished Civilian Service Award.

## **Col. Jay W. Terry, U.S. Air Force**

Director  
Defense Dissemination Program Office  
May 1985 – June 1989



Col. Jay W. Terry graduated from Texas A&M in May 1963 with a BA in mathematics and a commission in the U.S. Air Force Reserve. Between 1963 and 1966 he served as an instructor in data processing at Sheppard Air Force Base, Texas.

In February 1966, Colonel Terry transferred to the Manned Space Flight Center at the National Aeronautics and Space Administration (NASA). During this assignment he received a regular commission. In March 1968, Terry reported to Headquarters, Air Force Satellite Control Facility (AFSCF) Los Angeles Air Force Station, El Segundo, California, where he managed the development of the operating system for the flight support computers. Assigned to the Secretary of the Air Force Special Projects (SAFSP) Los Angeles Air Force Station, California, in March 1972, he later served as division chief for the operational mission planning software of four SAFSP satellite programs. In August 1977, Colonel Terry was assigned to the Secretary of the Air Force, Space Systems in the Pentagon.

In September 1979, Colonel Terry returned to Secretary of the Air Force Special Projects in El Segundo, and in 1983 he was made director of SAFSP-10, an office responsible for mission planning software and for a Secretary of the Air Force-directed mission of Tactical Exploitation of National Capabilities (TENCAP). In 1985 Colonel Terry was reassigned as the director of the Defense Dissemination Program Office (DDPO), Los Angeles Air Force Base, California, where he served until June 1989, when he retired. As director of the DDPO, Colonel Terry provided operational and maintenance support to Defense Dissemination System (DDS) II while completing development of DDS III and the Hard Copy Reconstruction Unit (HRU), including the associated Processless Electronic Recording Media (PERM).

Colonel Terry's awards include the Master Missileman's badge, the Air Force Commendation Medal with one oak leaf cluster, the Air Force Meritorious Service Medal with two oak leaf clusters, and the Legion of Merit with one oak leaf cluster.



## **Maj. Gen. James H. Watkins, U.S. Air Force**

Deputy Director  
Defense Mapping Agency  
July 1972 – August 1973



Maj. Gen. James H. Watkins studied engineering at Tarleton State College, Stephenville, Texas, from 1937 to 1940, entered the U.S. Military Academy, and graduated with his pilot's wings in June 1943. He received an MS in electrical engineering from California Institute of Technology in 1950, attended the Canadian National Defense College in 1964–65, and undertook additional graduate studies at the University of Texas, the University of California at Los Angeles, the University of Maryland, The George Washington University, and Georgetown University.

During World War II, Major General Watkins served as flight commander and squadron executive officer with the 483d Bombardment Group in North Africa and Italy. In June 1945 he became an instructor at the U.S. Military Academy. Beginning June 1950 he served at Headquarters U.S. Air Force in the Office of the Assistant for Atomic Energy, Headquarters U.S. Air Forces in Europe, and then in Headquarters U.S. Air Force as chief, General Officer Branch, Deputy Chief of Staff for Personnel. In August 1961 he became commander of the 3510th Flying Training Group and subsequently deputy commander of the 3510th Flying Training wing. After service in Headquarters U.S. Air Force as chief of the Flying Training Division, Deputy Chief of Staff for Personnel, he became secretary of the Air Staff. Major General Watkins assumed command of the 3510th Flying Training Wing at Randolph Air Force Base in August 1968. Eleven months later he became deputy chief of staff for operations, Air Training Command, and in February 1971 he began service in Vietnam as chief, Air Force Advisory Group, U.S. Military Assistance Command, Vietnam.

During World War II, Major General Watkins flew fifty combat missions in the European Theater of Operations. In the Vietnam War he flew more than two hundred combat missions, mostly with the Vietnamese Air Force. His military decorations and awards include the Legion of Merit with two oak leaf clusters, Distinguished Flying Cross with two oak leaf clusters, Air Medal with eight oak leaf clusters, Air Force Commendation Medal, Army Commendation Medal, Distinguished Unit Citation Emblem, and several combat decorations awarded by the government of the Republic of Vietnam.

Major General Watkins retired on August 1, 1973 and died on June 25, 1997.

## **Brig. Gen. William B. Webb, U.S. Air Force**

Deputy Director  
Defense Mapping Agency  
October 1982 – September 1984



Brig. Gen. William B. Webb graduated from the U.S. Military Academy in 1957. He earned an MA in international affairs from The George Washington University in 1972 and graduated from Squadron Officer School and Air Command and Staff College in 1967, from the National War College in 1972, and from the National Interdepartmental Seminar and the Department of State Chinese Language and China Area Studies Program.

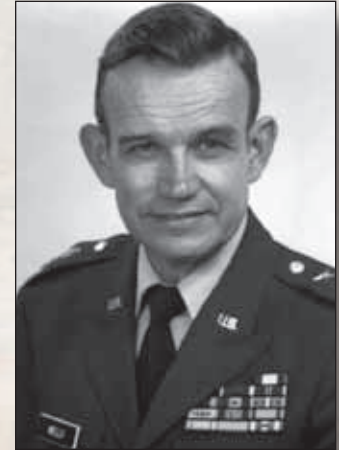
Brigadier General Webb was commissioned a second lieutenant in the U.S. Air Force and received his wings in October 1958. Assigned to the Strategic Air Command, his next seven years of duty involved KC-135 tanker operations at Walker Air Force Base (AFB), New Mexico; Castle AFB, California; and Kincheloe AFB, Michigan, with numerous air operations in Europe and Asia. In 1965 he served as operations officer for a combined deployment of tankers and fighters from New Mexico to Southeast Asia. Following assignments included the Defense Intelligence Agency, Washington, DC, as an action officer; duty as the assistant air attaché to Ethiopia; and a tour in the Republic of Vietnam as plans adviser to the Vietnamese air force's 5th Air Division. From July 1972 until August 1974, the general was assigned to the Organization of the Joint Chiefs of Staff, J-5, as a plans and action officer responsible for short-range military strategy considerations, and he was the prime action officer for the Joint Strategic Capabilities Plan and other strategy papers. After intensive training, he was named United States Air Liaison Officer to Hong Kong, where he served for more than three years. He became the United States Air Attaché to the People's Republic of China in August 1979, and in August 1980 he assumed the additional responsibility as Defense Attaché.

After his assignment with the Defense Mapping Agency, he spent two years with Supreme Headquarters Allied Powers Europe (SHAPE).

Brigadier General Webb is a command pilot with more than three thousand flying hours. In Vietnam he flew 130 combat hours with the Vietnamese air force in psychological warfare and gunship operations. His military decorations and awards include the Defense Superior Service Medal, Bronze Star Medal, Meritorious Service Medal, Air Medal with oak leaf cluster, Joint Service Commendation Medal, Republic of Vietnam Armed Forces Honor Medal, Republic of Vietnam Gallantry Cross with Palm, and Republic of Vietnam Air Service Medal 1st Class. He retired on July 1, 1986.

## **Maj. Gen. Richard M. Wells, U.S. Army**

Director  
Defense Mapping Agency  
August 1981 – June 1983



Maj. Gen. Richard M. Wells graduated from the U.S. Military Academy in 1951 and received an MS from Iowa State University in 1956. In 1964 he completed the Naval War College, simultaneously earning an MA in international affairs from The George Washington University. He graduated from the National War College in 1969.

After one year in Korea, Major General Wells taught engineering at the U.S. Naval Academy for three years, served in the Office of the Chief of Engineers, and commanded the 84th Engineer Battalion (Construction) in the Republic of Vietnam. Beginning in September 1970, he served in Washington, DC, as chief of the Strategic Mobility and Readiness Team in the Planning and Programming Analysis Directorate of the Office of the Assistant Vice Chief of Staff, U.S. Army. He moved to Chicago in August 1971, where he served for two years as district engineer in the U.S. Army Corps of Engineers' Chicago District. He then became chief of the Engineer Branch of the Office of Personnel Directorate for the U.S. Army. He commanded the 4th Advanced Individual Training Brigade in Fort Leonard Wood, Missouri, prior to his appointment as division engineer of the U.S. Army Engineer Division, Middle East, in Saudi Arabia, a position he held until July 1978. From 1978 to 1981, he served as division engineer of the U.S. Army Engineer Division, North Pacific, in Portland, Oregon.

As director of the Defense Mapping Agency (DMA), Major General Wells provided critical leadership during the dynamic transition of the national intelligence and mapping program from a film-based program to a flexible, digital-based satellite imaging system. The transition required the agency to embark on a \$2.6 billion modernization program. Major General Wells presented the technical and funding plan through Office of Secretary of Defense (OSD) to Congress and successfully achieved the plan's approval and funding.

In July 1983, after his tour as director of DMA, Major General Wells became deputy chief of engineers, Office of the Chief of Engineers, in Washington, DC. He retired in 1984.

Major General Wells's military decorations include the Legion of Merit with oak leaf cluster, a bronze star medal in Korea, and two Air Medals in Vietnam.

## **Rear Adm. Edward A. Wilkinson Jr., U.S. Navy**

Director  
Defense Mapping Agency  
July 1983 – July 1985  
Deputy Director  
Defense Mapping Agency  
July 1979 – May 1981



Rear Adm. Edward A. Wilkinson graduated from the U.S. Naval Academy in 1955 and earned his wings as a naval aviator the following year. He received an MS in engineering from The George Washington University in 1963 and graduated from the Armed Forces Staff College in 1969 and the National War College in 1973.

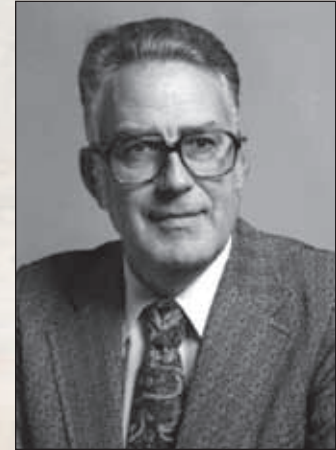
Rear Admiral Wilkinson's first duty was a three-year tour in hurricane reconnaissance aircraft. He then served as Project Mercury recovery officer with Patrol Squadron 5 and as an aide to the commander of Fleet Air in Hawaii. After a tour at the Potomac River Command in Washington, DC, he served as an instructor in thermodynamics at the U.S. Naval Academy. After duty with Patrol Squadron 30 and Patrol Squadron 24, he became commanding officer of Patrol Squadron 8 in March 1971 and then special projects officer for Commander Fleet Air Wing Atlantic. Following a tour as commanding officer Patrol Squadron 30, he spent two years as P-3 program coordinator in the office of the Deputy Chief of Naval Operations for Air Warfare. For the next two years, he commanded Patrol Wing 5 and then served as deputy and then acting director of the Anti-Submarine Warfare Systems Project at the Naval Material Command until 1980. From 1981 to 1983, he served as commander of Atlantic Fleet patrol aircraft.

As director of the Defense Mapping Agency (DMA), Rear Admiral Wilkinson took the leadership in the follow-through implementation of a modernization program and placed Phase I (Mark 85) into production on time and in budget. Mark 85 capability allowed DMA to continue to produce the critical geographic products to U.S. military forces utilizing the new digital national reconnaissance imagery. In 1985 DMA received the Department of Defense Joint Meritorious Unit Award 82-84 for exceptional service to the defense of the nation.

Rear Admiral Wilkinson's military decorations and awards include Defense Distinguished Service Medal, Defense Superior Service Medal, Legion of Merit with one gold star in lieu of second award, Navy Commendation Medal with one gold star in lieu of second award, and three awards of the Meritorious Unit Commendation: Patrol Squadron 24, Patrol Squadron 30 and Patrol Squadron 8.

## **Mr. Owen W. Williams**

Director of Management and Technology  
Defense Mapping Agency  
November 1979 – July 1982



Mr. Owen W. Williams graduated from Kalamazoo College, Kalamazoo, Michigan, in 1948 and attended The George Washington University in Washington, DC from 1948 to 1951. He was a member of the Federal Executive Institute 1970 class.

Prior to the creation of the Defense Mapping Agency (DMA), Mr. Williams was chief and assistant chief, Geodetic Sciences Branch, Chart Research Division of the Aeronautical Chart and Information Center (ACIC) and served in many cartographic, geodetic, and engineering functions at the Army Map Service in Washington, DC. As director of the Terrestrial Sciences Laboratory, Air Force Cambridge Research Laboratories in Bedford, Massachusetts, he fostered innovations in the fields of satellite geodesy and gravimetric instrumentation. He also advanced the initial applications of laser technology to the field of geodesy. Mr. Williams was assistant deputy director, Plans, Requirements and Technology in DMA beginning in September 1972 and named deputy director for Systems and Techniques when that directorate was formed in February 1976.

Mr. Williams served as a visiting lecturer in earth sciences in Europe and Scandinavia and as a guest lecturer in “cosmic geodesy” at the request of the Soviet Academy of Sciences. Over forty of his scientific and technical papers in the fields of geodesy, gravity, and geophysics were published in national and international technical publications and journals between 1957 and 1979. Mr. Williams was a member of professional societies, including American Geophysical Union (AGU) and the American Congress on Surveying and Mapping (ACSM). He served as president of the Geodesy Section of the AGU between 1976 and 1978. Mr. Williams retired in 1982.

Mr. Williams received awards from Earth Sciences Technologies Association, the Air Force Meritorious Civilian Service Award, ACSM New England Surveyors Award, and the Ohio State University “Kaarina & Weikko A. Heiskanen Award.” He is a fellow of the American Association for the Advancement of Science. In 1996 he received the Lifetime Achievement Award from the Organization of American States Pan American Institute for Geography and History (PAIGH).

## **Maj. Gen. James A. Young, U.S. Air Force**

Deputy Director  
Defense Mapping Agency  
August 1976 – August 1977



Maj. Gen. James A. Young graduated from Newton High School, Newton, Massachusetts, in 1944, enlisted in the U.S. Army, and in 1945 was selected for Officer Candidate School. He was commissioned in January 1946. In July 1950 Major General Young transferred to the U.S. Air Force. In June 1969 he graduated from the Air War College.

Major General Young served in Korea with the 7th Infantry Division, returned to the United States, completed parachute training, and was assigned to the 82d Airborne Division at Fort Bragg, North Carolina, where he qualified as a senior parachutist. After pilot training, he again went to Korea and served with the 18th Fighter Group. On March 21, 1952, while flying a P-51 on a maintenance test flight in Korea, he encountered uncontrollable flight conditions and crashed while attempting a landing. After forty months of hospitalization and fifty-eight major operations, in June 1955 Major General Young returned to active duty, and in January 1956 to flying status as an F-100 pilot with the 354th Tactical Fighter Squadron, Myrtle Beach Air Force Base (AFB), South Carolina. He was transferred to Chaumont, France, in October 1957 and was assigned to the 48th Tactical Fighter Wing, which later moved to Lakenheath, England. Returning to the United States, he served in the Directorate of Operational Plans at Tactical Air Command Headquarters, Langley AFB, Virginia. In 1965 he served with the 833d Air Division at Seymour Johnson AFB, North Carolina, and with the 333d Tactical Fighter Squadron at Seymour Johnson AFB, North Carolina. In December 1965, the squadron was transferred to Takhli Royal Thai Air Force Base, Thailand, and a few months later he assumed command of the squadron. At McConnell AFB, Kansas, he served as commander of the 562d Tactical Fighter Squadron and then assistant director, operations, 23d Tactical Fighter Wing. He then was assigned to Pacific Air Forces Headquarters, Hickam AFB, Hawaii, as director of operations plans. In March 1971 Major General Young returned to Southeast Asia as commander of the 8th Tactical Fighter Wing, Ubon Royal Thai Air Force Base, Thailand. In April 1972 he was assigned to Pacific Air Forces headquarters as assistant deputy chief of staff for plans. A few months later he joined the Pacific Command headquarters in Hawaii as deputy assistant chief of staff for operations. In March 1974 Major General Young assumed command of the 25th North American Air Defense Command/Continental Air Defense Command Region, with headquarters at McChord AFB, Washington. He had additional duty as commander of the Aerospace Defense Command's North American Aerospace Defense Command (NORAD) component, the 25th Air Division.

After leaving Defense Mapping Agency, Major General Young served as chief of staff, Combined Military Planning Staff, Central Treaty Organization, with headquarters at Ankara, Turkey, until he retired September 1, 1979.

Major General Young flew thirty-four combat missions over Korea and 205 combat missions in Southeast Asia. His military decorations and awards include the Silver Star with oak leaf cluster, Legion of Merit, Distinguished Flying Cross with oak leaf cluster, Meritorious Service Medal, Air Medal with fifteen oak leaf clusters, Air Force Commendation Medal with oak leaf cluster, and Presidential Unit Citation. Major General Young died on January 14, 2005.

**NATIONAL IMAGERY AND MAPPING AGENCY  
AND  
NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY**

***Directors***

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**National Imagery and Mapping Agency**

Acting Director

Rear Adm. Joseph J. Dantone Jr., U.S. Navy Oct. 1996 – Mar. 1998

Lt. Gen. James C. King, U.S. Army Mar. 1998 – Sept. 2001

Lt. Gen. James R. Clapper Jr., U.S. Air Force (Ret.) Sept. 2001 – Nov. 2003

**National Geospatial-Intelligence Agency**

Lt. Gen. James R. Clapper Jr., U.S. Air Force (Ret.) Nov. 2003 – July 2006

Vice Adm. Robert B. Murrett, U.S. Navy July 2006 – Aug. 2010

Ms. Letitia A. Long Aug. 2010 – present

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The National Imagery and Mapping Agency was renamed the National Geospatial-Intelligence Agency on Nov. 24, 2003, as part of the Fiscal Year 2004 Defense Authorization Act.

**NATIONAL IMAGERY AND MAPPING AGENCY  
AND  
NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY**

*Deputy Directors*

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**National Imagery and Mapping Agency**

*October 1996 – July 1997*

Deputy Director for Systems and Technology

Dr. Annette J. Krygiel

Oct. 1996 – Nov. 1996

Deputy Director for Corporate Affairs

Mr. W. Douglas Smith

Oct. 1996 – July 1997

Deputy Director for Operations

Mr. Leo Hazlewood

Oct. 1996 – July 1997

**National Imagery and Mapping Agency**

*July 1997 – November 2003*

Mr. Leo Hazlewood

July 1997 – Jan. 2000

Mr. John L. Helgerson

Feb. 2000 – Aug. 2001

Ms. Joanne O. Isham

Sept. 2001 – Oct. 2003

**National Geospatial-Intelligence Agency**

*November 2003 – present*

Ms. Joanne O. Isham

Nov. 2003 – April 2006

Mr. Lloyd B. Rowland

Oct. 1, 2006 – present

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The National Imagery and Mapping Agency was renamed the National Geospatial-Intelligence Agency on Nov. 24, 2003, as part of the Fiscal Year 2004 Defense Authorization Act.

In July 1997, the leadership structure for deputy directors of the National Imagery and Mapping Agency changed.



# DEFENSE MAPPING AGENCY

## *Directors*

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Lt. Gen. Howard W. Penney, U.S. Army	July 1972 – Aug. 1974
Vice Adm. Shannon D. Cramer Jr. U.S. Navy	Sept. 1974 – Aug. 1977
Lt. Gen. Abner B. Martin, U.S. Air Force	Sept. 1977 – June 1979
Maj. Gen. William L. Nicholson, U.S. Air Force	July 1979 – June 1981
Maj. Gen. Richard M. Wells, U.S. Army	July 1981 – June 1983
Rear Adm. Edward A. Wilkinson Jr., U.S. Navy	July 1983 – July 1985
Maj. Gen. Robert A. Rosenberg, U.S. Air Force	July 1985 – Sept. 1987
Maj. Gen. Robert F. Durkin, U.S. Air Force	Oct. 1987 – June 1990
Maj. Gen. William K. James, U.S. Air Force	June 1990 – June 1993
Maj. Gen. Raymond E. O'Mara, U.S. Air Force	June 1993 – Dec. 1994
Maj. Gen. Philip W. Nuber, U.S. Air Force	Dec. 1994 – May 1996
Rear Adm. Joseph J. Dantone Jr., U.S. Navy	May 1996 – Sept. 1996

## DEFENSE MAPPING AGENCY

### *Deputy Directors*

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Maj. Gen. James H. Watkins, U.S. Air Force	July 1972 – Aug. 1973
Maj. Gen. James M. Breedlove, U.S. Air Force	Aug. 1973 – Oct. 1974
Maj. Gen. Hilding I. Jacobson Jr., U.S. Air Force	Oct. 1974 – Aug. 1976
Maj. Gen. James A. Young, U.S. Air Force	Aug. 1976 – Aug. 1977
Rear Adm. Robert H. Collins, U.S. Navy	Sept. 1977 – June 1979
Rear Adm. Edward A. Wilkinson Jr., U.S. Navy	July 1979 – May 1981
Brig. Gen. Donald A. Aldridge, U.S. Air Force	June 1981 – Sept. 1981
Brig. Gen. Allen K. Rachel, U.S. Air Force	Oct. 1981 – Oct. 1982
Brig. Gen. William B. Webb, U.S. Air Force	Oct. 1982 – Sept. 1984
Brig. Gen. David M. Goodrich, U.S. Air Force	Sept. 1984 – Sept. 1985
Rear Adm. Eric A. McVadon, U.S. Navy	Sept. 1985 – Sept. 1986
Rear Adm. Oakley D. Osborn, U.S. Navy	Nov. 1986 – Feb. 1988
There was no deputy during this period.	
Rear Adm. William J.M. O'Connor, U.S. Navy	July 1988 – Aug. 1989
Rear Adm. Daniel C. Richardson, U.S. Navy	Aug. 1989 – Sept. 1990
Brig. Gen. Joseph Pratt, U.S. Army	Oct. 1990 – Sept. 1991
Mr. Penman R. Gilliam*	Dec. 1991 – Mar. 1993
Dr. Kenneth I. Daugherty	Apr. 1993 – Feb. 1995
Mr. W. Douglas Smith	Mar. 1995 – Sept. 1996

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\*The position of DMA deputy director was civilianized in December 1991.

## DEFENSE MAPPING AGENCY

### *Directors, Management and Technology*

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Mr. Thomas C. Finnie	Mar. 1972 – June 1974
Mr. Charles H. Andregg	July 1974 – Mar. 1979
Mr. William T. Riordan	Mar. 1979 – Nov. 1979
Mr. Owen W. Williams	Nov. 1979 – July 1982
Mr. Lawrence F. Ayers Jr.	Aug. 1982 – July 1987
Mr. Penman R. Gilliam	July 1987 – Dec. 1991*

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\*In December 1991 the position of deputy director was civilianized, and Mr. Gilliam was appointed to that position.

# NATIONAL PHOTOGRAPHIC INTERPRETATION CENTER

## *Directors*

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Mr. Arthur C. Lundahl	May 1953 – July 1973
Mr. John J. Hicks	July 1973 – May 1978
Brig. Gen. Rutledge P. Hazzard, U.S. Army (Ret.)	June 1978 – Feb. 1984
Mr. Robert M. Huffstutler	Feb. 1984 – Jan. 1988
Mr. Frank J. Ruocco	Feb. 1988 – Feb. 1991
Mr. Leo Hazlewood	Feb. 1991 – Sept. 1993
Ms. Nancy E. Bone	Oct. 1993 – Sept. 1996

# CENTRAL IMAGERY OFFICE

## *Directors*

---

Col. William F. Lackman Jr., U.S. Army (Ret.)

June 1992 – July 1994

Dr. Annette J. Krygiel

July 1994 – Sept. 1996

# DEFENSE DISSEMINATION PROGRAM OFFICE

## *Directors*

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Col. Oliver W. Fix, U.S. Air Force	Nov. 1974 – May 1978
Col. Gerald J. Samos, U.S. Air Force	May 1978 – Mar. 1980
Col. Thomas W. Flattery, U.S. Air Force	Mar. 1980 – Jan. 1984
Col. Jerome T. Janicke, U.S. Air Force	Jan. 1984 – July 1985
Col. Jay W. Terry, U.S. Air Force	July 1985 – June 1989
Col. Donald L. Fisher, U.S. Air Force	June 1989 – Oct. 1993
Col. James L. Grogan III, U.S. Air Force	Oct. 1993 – Aug. 1994
Col. James B. Armor Jr., U.S. Air Force	Sept. 1994 – July 1996

# Acronyms

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AAC	Alaskan Air Command	DDPO	Defense Dissemination Program Office
ABRES-A	Advanced Ballistic Reentry Systems	DDS	Defense Dissemination System
ACIC	Aeronautical Chart and Information Center	DIA	Defense Intelligence Agency
ACSM	American Congress on Surveying and Mapping	DMA	Defense Mapping Agency
ADP	automated data processing	DMAHTC	Defense Mapping Agency Hydrographic/Topographic Center
AFB	air force base (acronym used only for U.S. bases)	DOD	Department of Defense
AFCEA	Armed Forces Communications and Electronics Association	DPS	Digital Production System
AFIT	Air Force Institute of Technology	DRSEM	Deployable Receive Segment Engineering Model
AFS	Air Force Station	EOSDIS	Earth Observing System Data and Information System (of the National Aeronautics and Space Administration)
AFSCF	Air Force Satellite Control Facility	FF	a U.S. Navy frigate
AGU	American Geophysical Union	GGIS	Global Geospatial Information System
AIC	Atlantic Intelligence Command	GIS	geographic information system
ANCS	Automated Nautical Charting System (of the National Oceanographic and Atmospheric Administration)	HRU	Hard Copy Reconstruction Unit [of the DDS]
AOC	Aviation Officer Candidate	JSOP	Joint Strategic Operational Plan
ASW	anti-submarine warfare	JSTP	Joint Strategic Target Planning Staff
BA	bachelor of arts	LHA	a U.S. Navy amphibious assault ship
BS	bachelor of science	LORAN	Long-Range Aid to Navigation
CCTC	Command and Control Technical Center	LRL	Low Volume Receive Location
CENTO	Central Treaty Organization	MBA	master of business administration
CG	a U.S. Navy guided missile cruiser	MC&G	mapping, charting, and geodesy
CIA	Central Intelligence Agency	MPA	master of public administration
CINC	Commander in Chief	MS	master of science
CJTF	Commander Joint Task Force	NAACP	National Association for the Advancement of Colored People
CMS	Community Management Staff	NAPA	National Academy of Public Administration
CNO	Chief of Naval Operations	NASA	National Aeronautics and Space Administration
CSTC	Consolidated Space Test Center	NATO	North Atlantic Treaty Organization
CV	a U.S. Navy aircraft carrier		
DCA	Defense Communications Agency		
DCI	Director of Central Intelligence		

NAVPIC	Naval Photographic Interpretation Center	SEATO	Southeast Asia Treaty Organization
NCGIA	National Center for Geographic Information and Analysis	SHAPE	Supreme Headquarters Allied Powers Europe
NDIA	National Defense Industrial Association	SIGINT	signals intelligence
NGA	National Geospatial-Intelligence Agency	SIOP	Single Integrated Operational Plan
NIMA	National Imagery and Mapping Agency	SPOEM	Special Program Office for Exploitation Modernization
NMCSSC	National Military Command System Support Center	SS	a U.S. Navy submarine
NORAD	North American Aerospace Defense Command	STT	System Test Tool
NPIC	National Photographic Interpretation Center	TENCAP	Tactical Exploitation of National Capabilities
NRC	National Research Council	TERCOM	Terrain Contour Matching
NRO	National Reconnaissance Office	USA	U.S. Army
NROTC	Naval Reserve Officers Training Corps	USAREUR	United States Army Europe
NSDI	National Spatial Data Infrastructure	USARV	U.S. Army, Republic of Vietnam
OJCS	Office of the Joint Chiefs of Staff	USIS	United States Imagery Service
OJCS	Organization of the Joint Chiefs of Staff	USN	U.S. Navy
OP	a U.S. Naval operations unit	USS	United States ship
OSD	Office of Secretary of Defense	VA	a U.S. Navy attack squadron
OSR	Office of Strategic Research	WWMCCS	Worldwide Military Command and Control System
PAIGH	Pan American Institute for Geography and History		
PERM	Processless Electronic Recording Media		
PIC	Photographic Interpretation Center (of the CIA)		
PID	Photographic Intelligence Division (of the CIA)		
R&D	research and development		
ROTC	Reserve Officers Training Corps		
SAC/JSTPS	Air Command/Joint Strategic Target Planning Staff		
SAFSP	Secretary of the Air Force Special Projects		
SAMSO	Space and Missile Systems Organization		



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