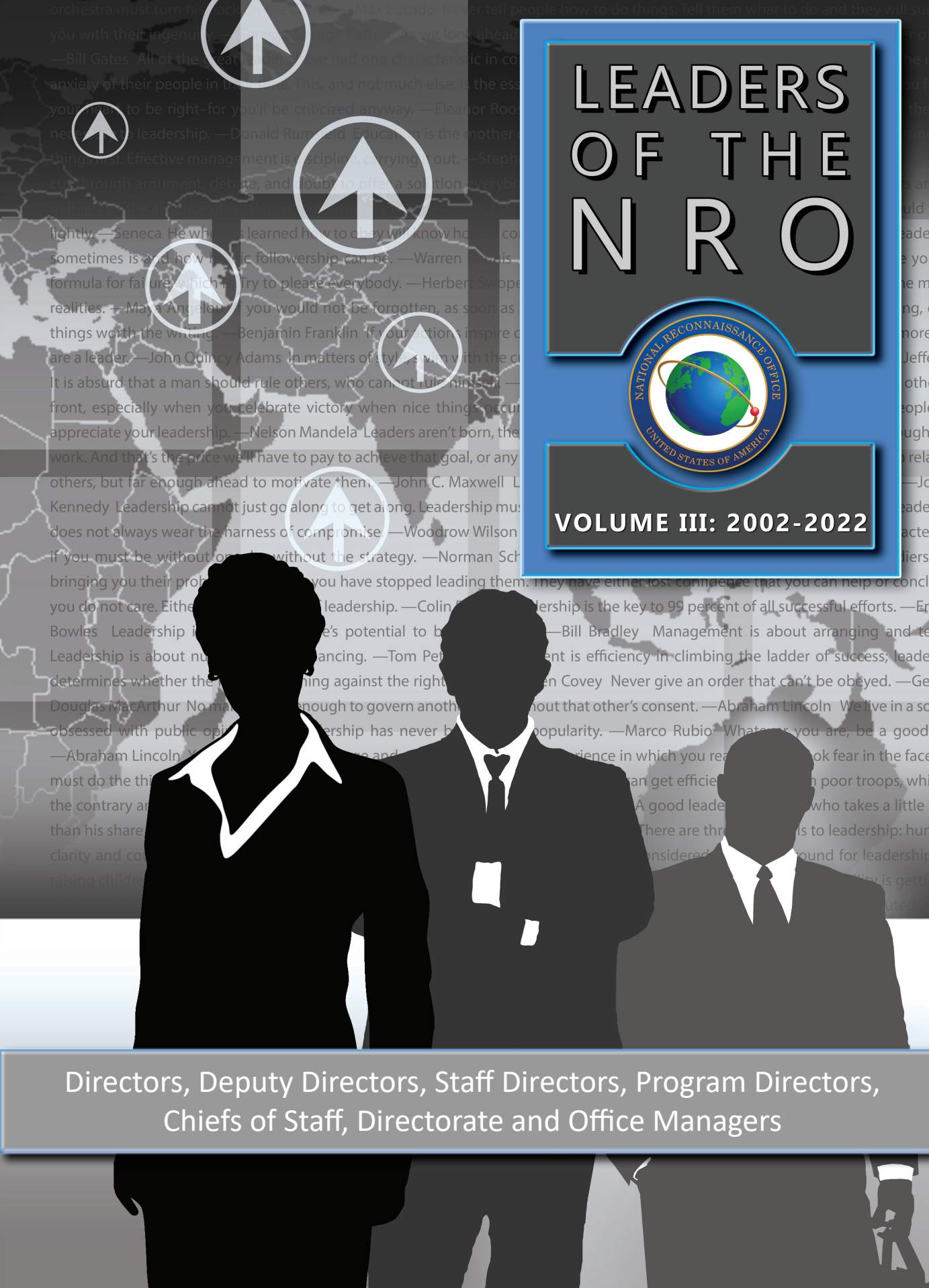
LEADERS OF THE NRO

VOLUME III: 2002-2022



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

LEADERS OF THE NATIONAL RECONNAISSANCE OFFICE:

DIRECTORS, DEPUTY DIRECTORS, STAFF DIRECTORS, PROGRAM DIRECTORS, CHIEFS OF STAFF, DIRECTORATE AND OFFICE MANAGERS

Volume III: 2002 - 2022

First Edition

Courtney V. K. Homer

CENTER FOR THE STUDY OF
NATIONAL RECONNAISSANCE

OCTOBER 2024

CENTER FOR THE STUDY OF NATIONAL RECONNAISSANCE

The Center for the Study of National Reconnaissance (CSNR) is an independent National Reconnaissance Office (NRO) research body reporting to the Director/Business Plans and Operations Directorate, NRO. The CSNR's primary objective is to advance national reconnaissance and make available to NRO leadership the analytic framework and historical context to make effective policy and programmatic decisions. The CSNR accomplishes its mission by promoting the study, dialogue, and understanding of the discipline, practice, and history of national reconnaissance. The CSNR studies the past, analyzes the present, and searches for lessons for the future.

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FOREWORD

In his foreword to the second editions of the Leaders of the National Reconnaissance Office, the Emeritus Director of the Center for the Study of National Reconnaissance (CSNR), Dr. Robert A. McDonald explained the origin and purpose of the series. He wrote,

> *In May 2002, the National Reconnaissance Office (NRO) History Office published Leaders of the National Reconnaissance Office, 1961-2001. This important work quickly became a vital reference tool for learning about the NRO's formation and organization as well as for providing background information on its leadership. Updating and republishing Leaders of the National Reconnaissance Office became the responsibility of the Center for the Study of National Reconnaissance (CSNR) after the history program joined the CSNR in 2005. This updated reference work is now in three parts with Volume I covering leaders from 1961 to 1992, Volume II covering leaders from 1993 to 2001, and a planned third volume that will cover leaders from 2002 to the time of publication. The volumes provide updated information from the first edition. The first volume ends in 1992 because in that year the NRO underwent its most significant reorganization to date—abolishing the "alphabetic" Programs A, B, and C (NRO cancelled Program D in 1974) in favor of functional directorates (IMINT, COMM, and SIGINT). In that same year, NRO leadership proposed collocating all component offices into a single headquarters building in Chantilly, Virginia. The second volume ends in 2001 with the September 11th terrorist attacks. The last volume will include NRO leaders since the war on terrorism began.*
>
> *Like its predecessor volume, this updated multi-volume publication will be helpful for people seeking information on NRO Directors and Deputy Directors and principal NRO Directorate and Office heads and program managers before and during their NRO tenures. We look to these reworked volumes as the authoritative source of information on tours of service, awards, and accomplishments of the people who created and sustained the National Reconnaissance Program since its 1961 creation. Produced in unclassified form, we will make these volumes of the newer Leaders of the National Reconnaissance Office available to the public. In this way, we expect that their utility will extend far beyond the NRO and the intelligence and defense communities.*

Dr. McDonald also shared the foreword to the first edition, from then-Director of the National Reconnaissance Office Peter B. Teets who described the importance of strong leadership to the success of the organization:

> *Today, throughout the world, the National Reconnaissance Office is recognized as the undisputed leader in space-based satellite reconnaissance. [I]t is gratifying to publicly acknowledge those individuals whose dedication, talents, and leadership shaped this organization into one of the nation's greatest national security and intelligence assets.*
>
> *Since its inception, the National Reconnaissance Office has attracted the top minds of the U.S. Intelligence Community, the Department of Defense, private industry, and the academic-scientific community. Its mission brought together leaders of a*

> *quality rarely found elsewhere during the latter half of the twentieth century, as the following pages ably demonstrate. United by common goals and motivated by a single-minded sense of patriotism and professionalism, NRO's leaders represent an unusual array of national origins and races, and social, educational, and occupational backgrounds. Together they forged a new multi-agency intelligence [and defense] team that produced remarkable results. The achievements of the National Reconnaissance Office in large measure are a tribute to the vision and dedication of these men and women; they made what many deemed impossible just fifty years ago into routine operations today.*

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

This, the third volume of the series includes the leaders of the NRO who served from 2001 through 2022, just after the NRO celebrated its 60th anniversary. As the NRO enters its seventh decade, it continues to rely on strong leadership to achieve its mission of providing exquisite intelligence to the US intelligence and defense communities. The same remains for this publication as Dr. McDonald noted for the earlier volumes, "Mr. Teets words still ring true in commending the leadership of the NRO and recommending that all who work in the discipline of national reconnaissance learn from the leaders who went before them. This publication is one resource for doing so."

James D. Outzen, Ph.D.
Director, CSNR
National Reconnaissance Office

PREFACE

The first edition of Leaders of the National Reconnaissance Office, authored by Dr. Clayton Laurie and published in May 2002, captured biographies of the NRO's leaders from its inception in 1961 until its major reorganization in 1992. The second volume, updated by Michael Suk of the Center for the Study of National Reconnaissance and published in July 2019, captures biographies of leaders from the 1992 reorganization to 2001, when the structure of the Intelligence Community was forever impacted by the terrorist attacks of September 11th of that year. This third volume includes biographies of leaders at the NRO for the twenty years that followed those attacks, from 2002 to 2022.

Following the structure of volume two, the biographical information presented here came from information found in official NRO biographies, official military biographies, as well as from NRO and other government records. When possible, each person included in this volume was given the opportunity to review his or her own biography. As with volume two, the biographies conclude with the individual's NRO service.

This volume is made possible only through the help and input of many. A number of contacts across the directorates tracked down missing pieces of information and outdated biographies. Mr. Michael Suk, CSNR's Chief of Historical Documentation and Research, provided thorough editing support. Mr. Charles Glover, CSNR's information and data presentation analyst, arranged the information together in a coherent and presentable monograph.

Courtney V. K. Homer
Oral Historian
Center for the Study of National Reconnaissance
National Reconnaissance Office

INTRODUCTION

The tragic events of 11 September 2001 changed the NRO forever, just as it changed the rest of the Intelligence Community and the rest of America. The NRO, as well as the rest of the IC, soon realized that its internal organization that had been built during the Cold War to face communism was suddenly faced with new threats with different makeups and capabilities. The next decade saw a great deal of change in NRO's roles and responsibilities, and the agency had to adapt to these new realities. The 2000s saw many NRO organizations realigning to meet these new challenges, and several new NRO directorates formed to take on new missions.

BUSINESS PLANS AND OPERATIONS (BPO)

On 15 October 1995, the Office of Resource Oversight and Management (ROM) was established to serve as a focal point for all NRO financial, budgetary, programmatic, and legislative matters, as well as strengthening internal resource management functions. In 2003, ROM became the Business Plans and Operations Directorate. Both ROM's and BPO's organizational structure changed after their establishment. For instance, the Office of Contracts and the Office of Strategic Planning joined the directorate. Later, many of the NRO's support functions, including BPO, combined into a short-lived Directorate of Administration in the mid-2000s. By the time BPO became an independent directorate again in 2006, the directorate expanded to include the Office of Policy, which included the Center for the Study of National Reconnaissance. BPO also saw the Office of Public Affairs join Legislative Affairs within a single BPO office. In the early 2010s, BPO evolved further with the Office of Contracts and the Office of Policy realigning to directly report to the DNRO.

Today, BPO advances the NRO mission through premier resource management and strategic communication solutions that ensure accountability and transparency in the development, acquisition, and operation of an agile and resilient NRO Enterprise. BPO creates, implements, and manages sound financial policies, provides cost-estimating support, develops budget submissions, performs accounting responsibilities, supplies integrated financial systems, conducts financial performance and internal control management, supports travel services, and provides total personnel management support to enterprise-wide financial management staff. The BPO oversees NRO strategic communications, conducts public affairs, provides Congressional liaisons and effective communications counsel, and provides historical insight and analytical framework to NRO Leaders.

GROUND ENTERPRISE DIRECTORATE (GED)

On 31 March 2008, DNRO Scott Large formally established the Ground Enterprise Directorate as a way to more quickly respond to pressing and evolving intelligence needs. According to DNRO Large, GED is "responsible for delivering an integrated ground architecture that is more automated, scalable, and responsive to pressing intelligence problems, and based on multi-intelligence, ground system-of-systems modern architecture." Redesigning NRO satellites to meet rapidly changing needs can take months or years, but GED can respond on the ground on a day-to-day basis. Tasked with creating a common services layer across the entire NRO Ground Enterprise, GED minimizes stovepiping and maximizes data resources and access. While the NRO's overhead assets are the "eyes" and "ears" of the Nation, NRO Ground is the "brains."

MISSION INTEGRATION DIRECTORATE (MID)

Effective 1 July 2006, DNRO Donald Kerr combined the responsibilities of the Deputy Director for Military Support (DDMS) and those of the Deputy Director for National Support (DDNS) into the role of Deputy Director for Mission Support to improve commonality and efficiency of customer support. On 1 October 2009, while Pete Rustan served, the role of Deputy Director for Mission Support was renamed to Director of the Mission Support Directorate. Then in February 2013, DNRO Betty Sapp formally reorganized MSD into the Mission Integration Directorate.

MID is dedicated to providing intelligence products and services to end-users across the Intelligence Community, Department of Defense, Civil, and Law Enforcement communities. Since its inception, MID's purpose has been to rapidly meet the needs of NRO partners worldwide by developing and delivering solutions for timely and actionable intelligence, and applying new technologies to increase end-user effectiveness.

MISSION OPERATIONS DIRECTORATE (MOD)

Another part of DNRO Kerr's 2006 reorganization was conveyed in his "Strategic Framework," where he outlined the need for an integrated overhead architecture able to support the intelligence needs of a growing user population facing increasingly complex and diverse intelligence problems by consolidating similar operations missions spread out across multiple directorates. The proposed "Integrated Operations Directorate" encompassed operations, processes, and procedures of several entities, most notably systems operations offices in the Imagery Intelligence Systems Acquisition Directorate (IMINT) — which was renamed the Geospatial Intelligence System Acquisition Directorate (GEOINT) on 17 April 2017 — and the Signals Intelligence Systems Acquisition Directorate (SIGINT). A month after standup, the IOD became the Systems Operations Directorate (SOD), or sometimes more simply "SO" for systems operations. On 1 October 2009, DNRO Bruce Carlson established the Mission Operations Directorate and assigned SO to MOD.

SURVIVABILITY ASSURANCE OFFICE (SAO)

On 21 October 2011, the NRO Corporate Council, under direction of DNRO Bruce Carlson, approved the creation of the Survivability Assurance Office. Designed to deter or defeat counterspace threats, SAO houses two separate functional sectors – research, development, test, and evaluation (RDT&E), and systems acquisition. SAO develops and acquires cutting-edge solutions to enable the flow of critical data in contested space environments to national and military users to ensure mission success.

SYSTEMS ENGINEERING DIRECTORATE (SED)

During the early existence of the NRO, systems engineering efforts and architecture requirements were generally decentralized functions disbursed throughout the individual directorates and programs, with no common NRO enterprise-level program or approach. Throughout the late 1990s and early 2000s, the struggles of the Future Imagery Architecture (FIA) program and the resulting Congressional scrutiny highlighted the need for a more robust NRO strategy for oversight of systems engineering processes. Beginning in 1998, several corporate level offices were formed or realigned to implement a strategic direction for NRO enterprise-level systems engineering. Finally, on 10 September 2001, those offices were merged into the office of the Deputy Director for Systems Engineering (DDSE).

On 17 October 2006, the DDSE was dissolved and replaced by the Office of Deputy Director for Systems Integration and Engineering (DDSIE), and just one year later, in November 2007, SIE was renamed simply Systems Engineering. In October 2009, the group was officially declared the Systems Engineering Directorate. Today, SED continues to work toward improvements in efficiencies and adding optimum value to the NRO enterprise. The Systems Engineering Directorate defines, assesses, and delivers the Integrated Overhead Mission Enterprise that provides assured intelligence capabilities by providing enterprise engineering excellence ahead of the speed of change.

Today's NRO features over a dozen directorates and offices, each performing a vital part of the mission that NRO follows every day — to remain the world's preeminent reconnaissance organization and to safeguard the American people. For more than 60 years, the NRO has employed an amazingly talented and dynamic workforce to develop new innovative technologies and introduce new concepts of operation to keep the NRO at the forefront of space surveillance and innovation. In the future, the NRO will undoubtedly face new unknown challenges and threats, but the NRO's brilliant diverse workforce will meet those challenges and will continue to keep the agency at the leading edge in reconnaissance technology.

PRINCIPAL NRO LEADERS BY OFFICE AND TERM OF SERVICE

BIOGRAPHIES

2002 - 2022

MR. JAMES E. "JIM" ARNOLD

DIRECTOR, ADVANCED SYSTEMS
AND TECHNOLOGY DIRECTORATE (AS&T)
16 JANUARY 2008 – 3 JUNE 2010

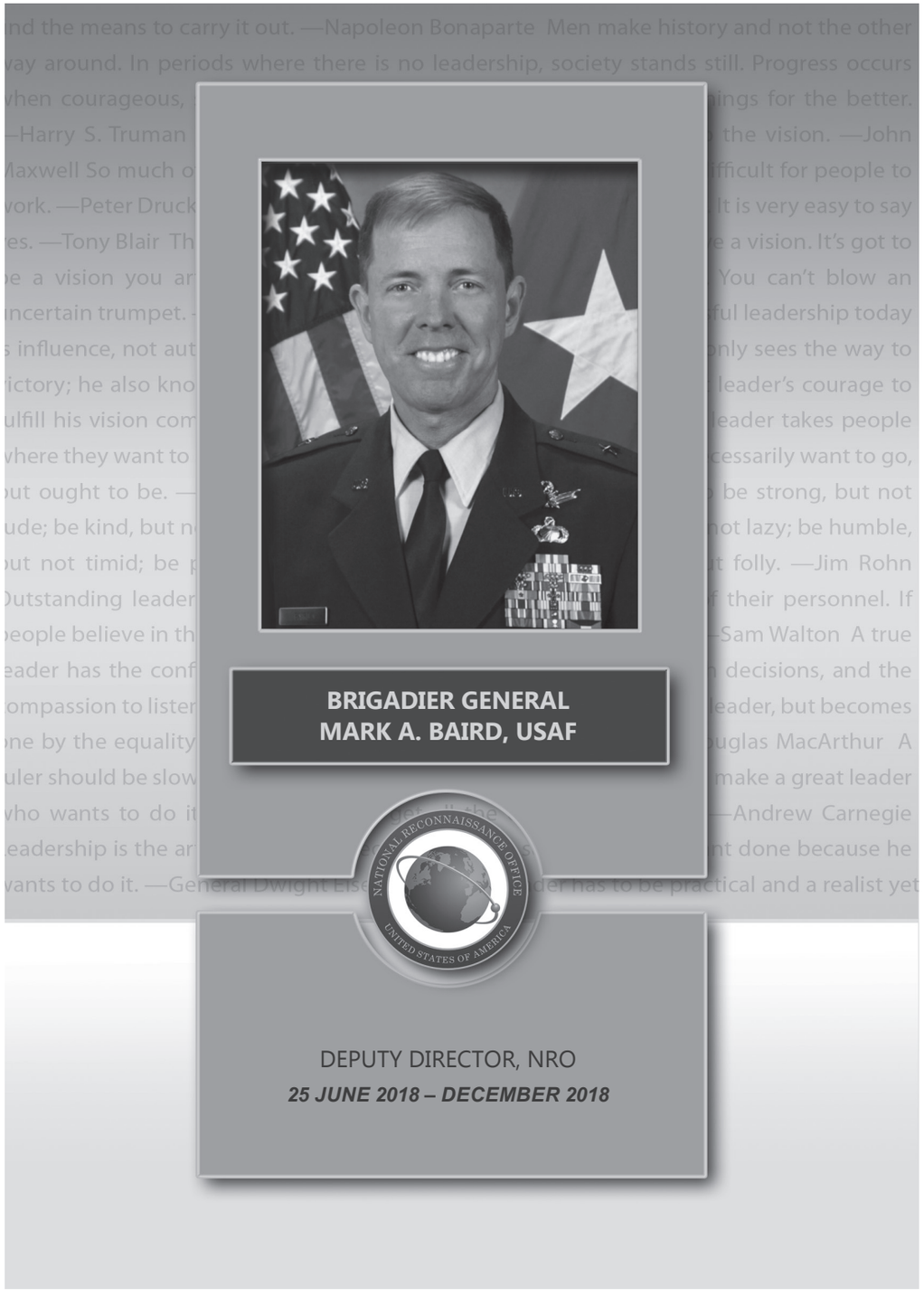
Mr. James Everette "Jim" Arnold graduated from Georgia Tech in 1977 with a Bachelor of Science in Electrical Engineering with a specialty in Digital Communications. He then graduated from MIT in 1979 with a Master's of Science in Electrical Engineering and Computer Science with an emphasis in Digital Signal Processing.

Mr. Arnold first joined the Central Intelligence Agency in 1975 as a COOP student working in the Communications Directorate. After graduation, he worked at AT&T/Bell Laboratories in Whippany, New Jersey, doing exploratory development work in the Loop Transmission Directorate from 1977 to 1983 — the early era of deploying fiber optics to the local loop. He has held a variety of positions of increasing responsibility since then, including assignments as a CIA Directorate of Science and Technology Strategic Planner; Chief of an advanced R&D element within the Office of Special Projects, Chief of a technical analytic center in the Office of Technical Collection, and Chief of an engineering center which designed, fabricated, and deployed tactical collection hardware. He has also held a variety of other technical and supervisory positions within CIA's Directorate of Science and Technology, and his contributions to these classified efforts has been continually recognized.

Between November 2002 and August 2006, Mr. Arnold served as Director of a unit within the CIA's Office of Global Access, Directorate of Science and Technology. In this capacity he was responsible for the research, development, deployment, and Operations and Maintenance for a multi-disciplinary, multi-Agency program.

Mr. Arnold became Director of the Advanced Systems & Technology Directorate in January 2008 after serving as its Deputy Director. He served as director until June 2010.

Mr. Arnold's passion is to utilize technological and operational innovation to achieve strategic access to actionable intelligence and to exploit that advantage by providing the data in a timely and exploitable form. Mr. Arnold died 3 June 2010.



Mark A. Baird earned a Bachelor of Science in Business Management and Finance from Florida State University in 1989 and a Master of Science in Operations Management from the University of Arkansas in 1990. Second Lieutenant Baird entered active duty in 1989 as a distinguished graduate of the Air Force Reserve Officer Training Corps program at Florida State University.

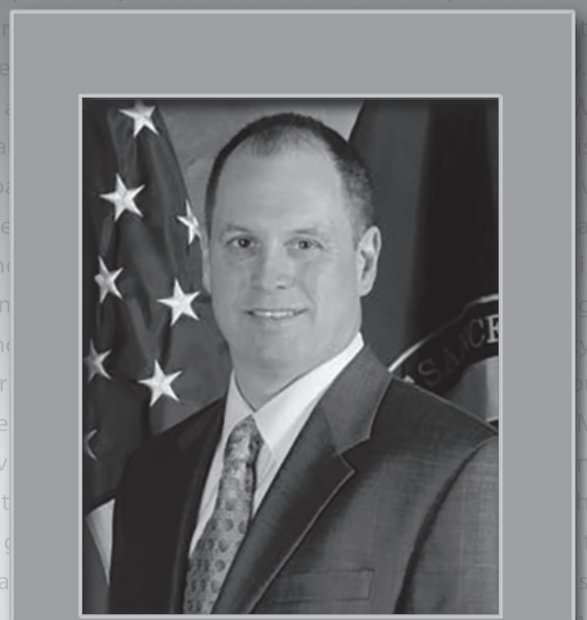
During his career, General Baird served in a variety of acquisition positions, including contingency contracting officer, procuring contracting officer, program manager, HQ staff officer, squadron commander, and senior materiel leader. He spent one year in industry studying space propulsion under Pratt & Whitney. He was selected for the prestigious Air Force Legislative Fellowship and the Secretary of Defense Corporate Fellowship.

Colonel Baird was first assigned to the NRO in June 2010 as the Senior Materiel Leader of the Low Earth Orbit Spacecraft Acquisition Group. From there, he was named Chief of the Evolved Expendable Launch Vehicle Acquisition Division at the Space and Missile Systems Center, Los Angeles Air Force Base and then Director of the Space Superiority Systems Directorate, also at the Space and Missile Systems Center.

In September 2014, Colonel Baird became Commander of the Air Force Installation Contracting Agency at Air Force Materiel Command, then Special Assistant to the Commander for Ground Based Strategic Deterrent, also at Air Force Materiel Command. In April 2016, he was named Vice Commander of the Space and Missile Systems Center, Los Angeles AFB. In June 2017, Brigadier General Baird relocated back to the Washington, DC area, being named Director of Space Programs, Office of the Assistant Secretary for Acquisition.

Brigadier General Baird was named Deputy Director of the NRO in June 2018. As DDNRO, his responsibilities included assisting the NRO Director and Principal Deputy Director in managing the NRO's strategic and tactical operations. Also, as the Commander, Air Force Element, he managed all Air Force personnel and resources assigned to the NRO, and he served as the senior adviser to the DNRO on all military matters. He served there until December 2018.

Among the many awards and decorations Brig Gen Baird received during his career were the Defense Superior Service Medal, Legion of Merit, Defense Meritorious Service Medal, Meritorious Service Medal with three oak leaf clusters, Air Force Commendation Medal with four oak leaf clusters, and Air Force Achievement Medal with four oak leaf clusters.



MR. RANDAL C. BARBER

DIRECTOR, MISSION SUPPORT DIRECTORATE
25 DECEMBER 2011 – 7 MAY 2018

Randal C. “Randy” Barber graduated with a bachelor of science degree in aeronautical engineering from Embry-Riddle Aeronautical University in 1984 and a master of science degree in aerospace engineering from the University of Maryland in 1986.

Mr. Barber joined the Central Intelligence Agency in 1986 and served as a Directorate of Intelligence careerist from 1986 through 1995 in the Office of Scientific Weapons Research as an aircraft analyst and first line supervisor. During this time, he also served rotational assignments in the Directorate of Science and Technology’s (DS&T) Office of Special Projects and Office of Technical Collection (OTC). In 1995, Mr. Barber became a DS&T careerist and served as Chief, Systems Analysis Staff for the Clandestine SIGINT Operations Group in OTC and was promoted to the Senior Intelligence Service in 1997. Mr. Barber then served an interim assignment in the Office of Technical Service as a senior advisor.

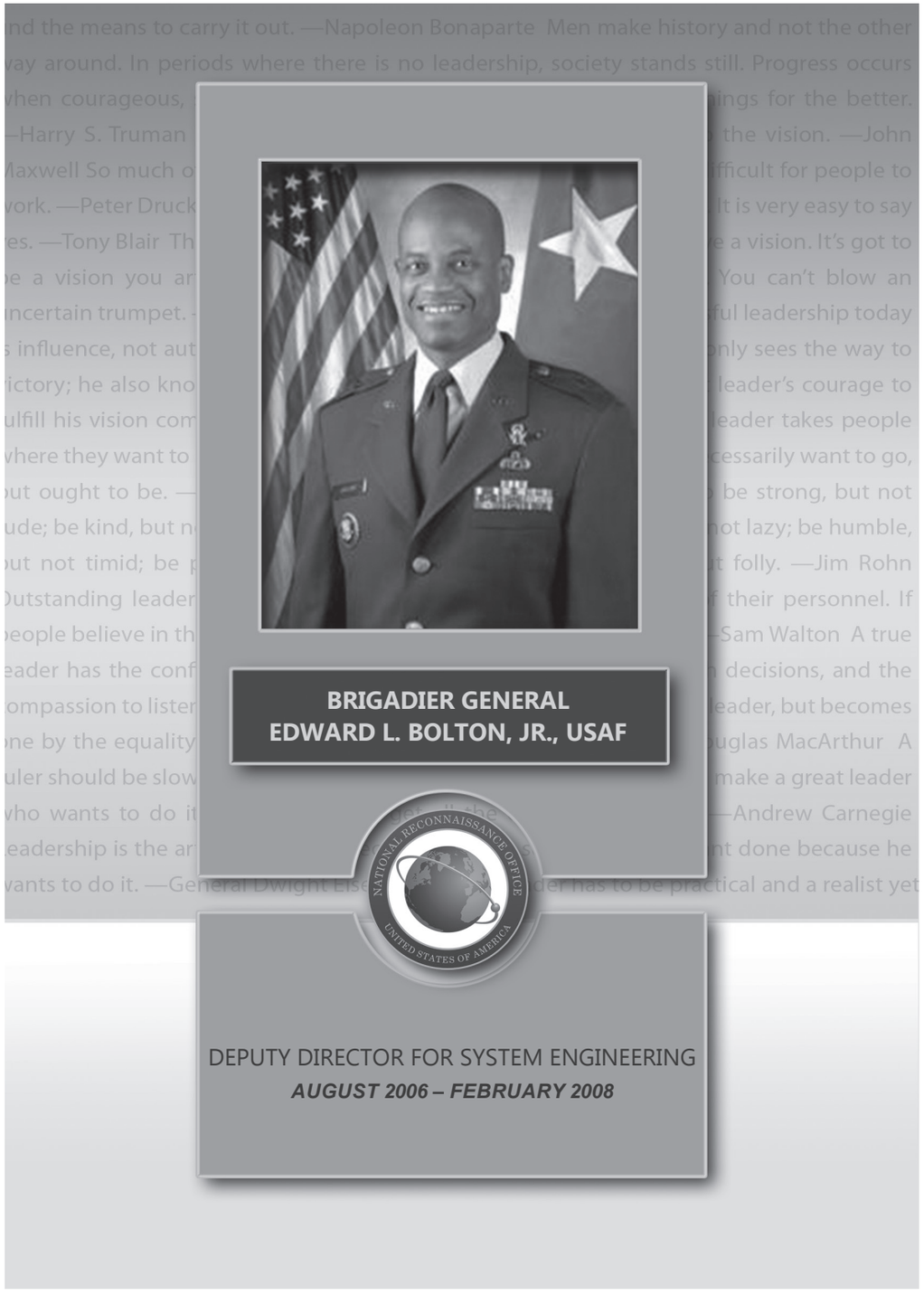
Mr. Barber joined the NRO in 1998 as the Deputy Director, Architectures Group, Communications Directorate and was selected to consolidate NRO Special Communications under the Mission Integration Office. In 2002, Mr. Barber was appointed to the Director of Central Intelligence’s NSA-CIA Strategic Partnership Advisory Group. He served as the Technical Director for a national-level program from 2003-2005.

Mr. Barber joined the Director of National Intelligence Open Source Center in June 2005 as Director of Mission Integration. He was appointed as Director, Emerging Media Group in June 2007.

Mr. Barber served as the Deputy Director for the Advanced Systems and Technology Directorate at the NRO from April 2011 to December 2011.

On 25 December 2011, Mr. Barber was named the Director for the Mission Support Directorate at the National Reconnaissance Office. He served there until 7 May 2018, preceding his retirement the following month.

Mr. Barber chaired several Intelligence Community committees, including the National Special Communications Working Group, Interagency Target Analysis Group, and Air Weapons Systems Subcommittee of Weapon and Space Systems Intelligence Committee.



Edward L. Bolton Jr. began his Air Force career as an enlisted cost and management analyst. In 1980, he was selected for the Airmen Education and Commissioning Program and was commissioned as a second lieutenant in 1983 after completing an electrical engineering degree at the University of New Mexico and Officer Training School. He earned his Master of Science in Systems Management from the University of Southern California, Los Angeles in 1986 and a second Master of Science degree in national security strategy from the National War College in 2000.

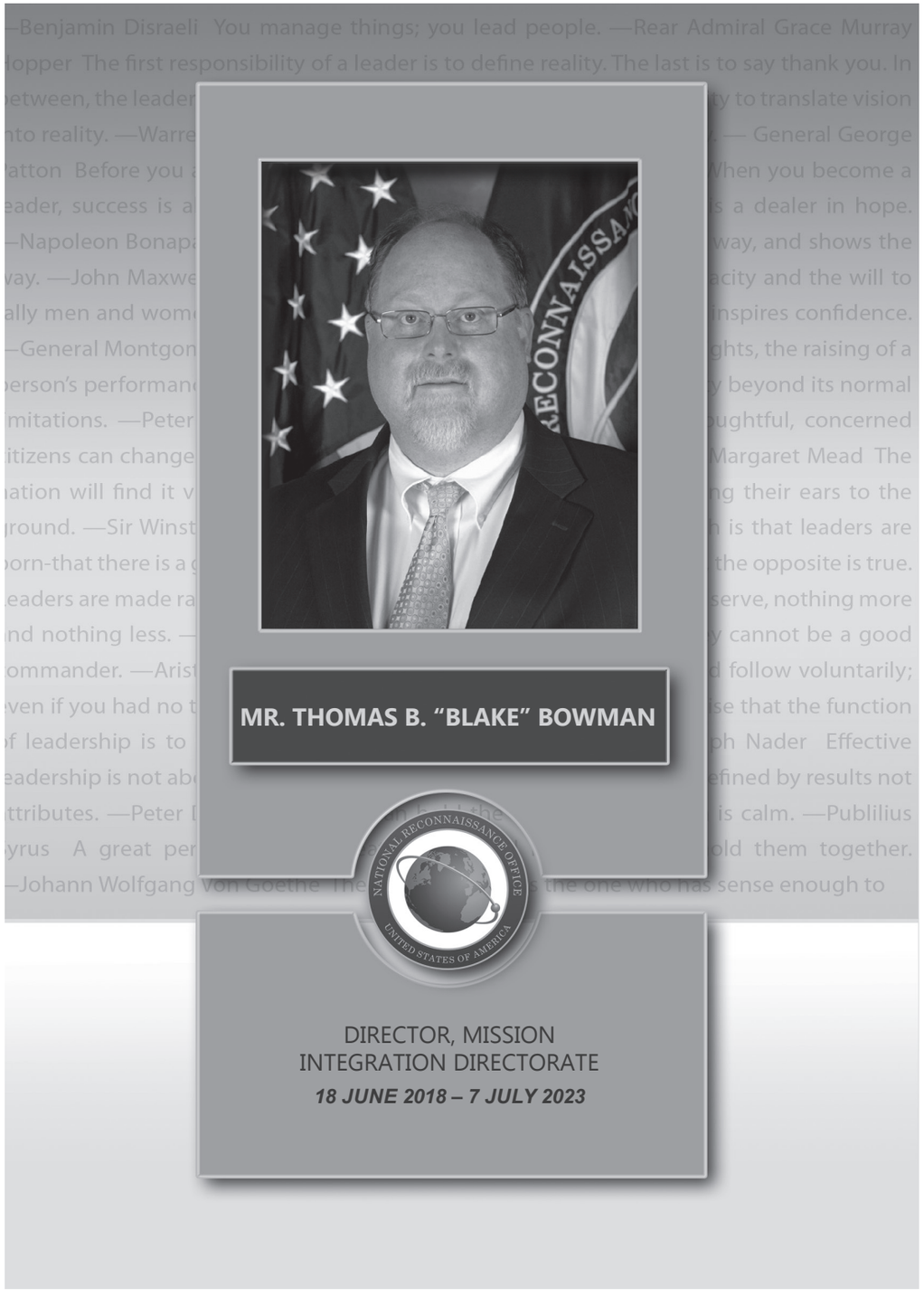
His staff experience included serving as a systems requirements manager at Headquarters Air Force Systems Command and Chief of the Spacelift Vehicles Requirements Branch at Headquarters Air Force Space Command.

From July 1997 to July 1999, Lt Col Bolton commanded the 30th Range Squadron during its highest operations tempo in a decade and the 30th Operations Group at Vandenberg Air Force Base, California. His squadron won the General Kutyna Award in 1999 as the top spacelift squadron in Air Force Space Command, and he led the 30th Space Wing to its first Guardian Challenge victory.

From June 2000 to May 2002, Col Bolton was Director for Defense Policy at the National Security Council in the Executive Office of the President. And from July 2003 to December 2005, he also commanded the Satellite and Launch Control Wing and the Launch and Range Systems Wing. The California Air Force Association selected the Launch and Range Wing as the 2005 Unit of the Year.

In August 2006, Col Bolton was named Deputy Director for Systems Integration and Engineering at the National Reconnaissance Office. He won the NRO Leadership Award for 2008 and was awarded the 2009 NRO Gold Medal. He was promoted to Brigadier General on 22 June 2007. He served there until February 2008, and he departed the NRO in October 2008 after a short stint as the Principle Deputy to the NRO's Chief Operating Officer.

Major General Bolton is the recipient of the Defense Superior Service Medal with oak leaf cluster, the Legion of Merit with oak leaf cluster, the Meritorious Service Medal with three oak leaf clusters, the Air Force Commendation Medal, the Air Force Achievement Medal with three oak leaf clusters, the Air Force Outstanding Unit Award with three oak leaf clusters, and the Air Force Organizational Excellence Award with two oak leaf clusters.

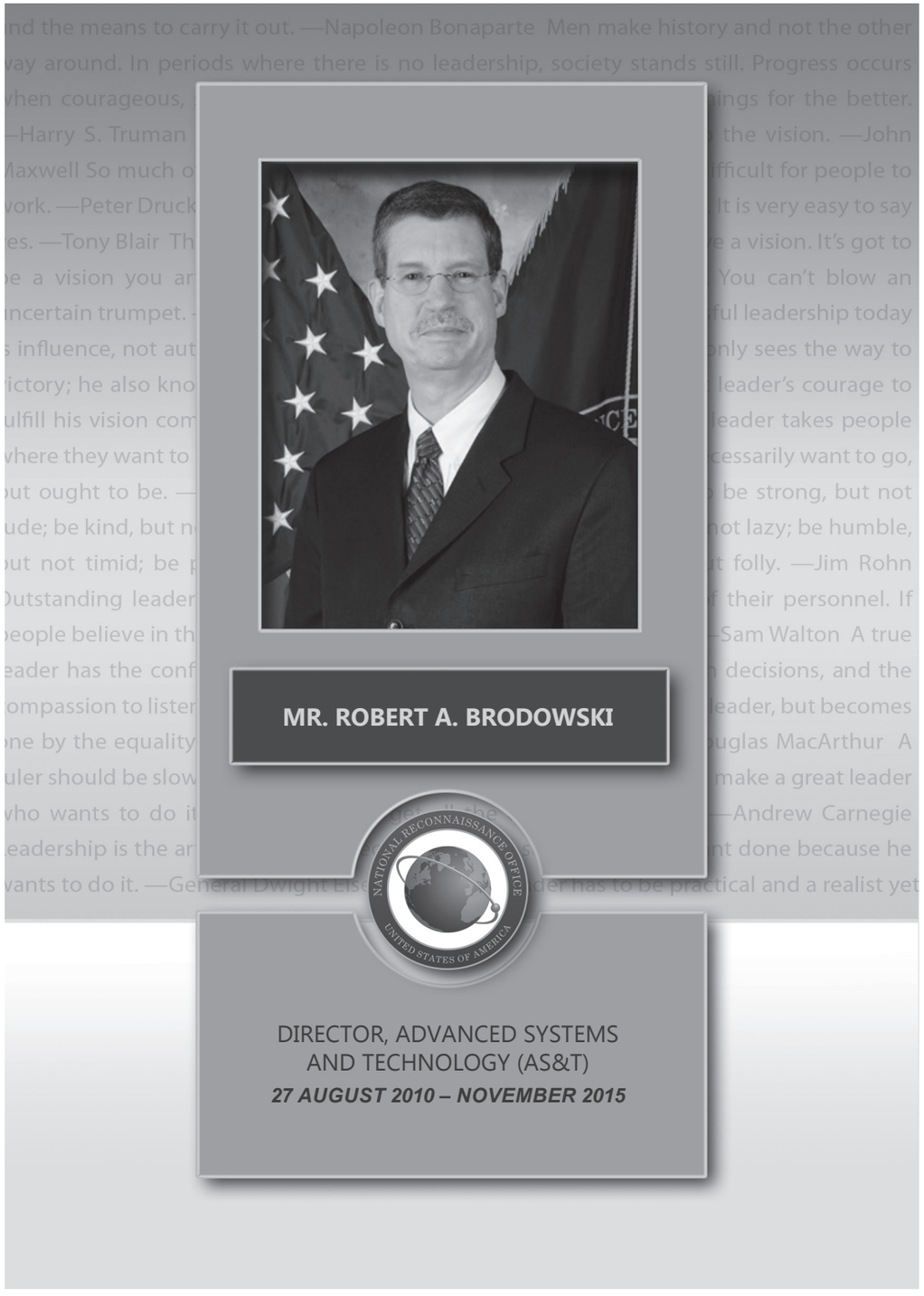


Thomas B. "Blake" Bowman graduated from Auburn University with a bachelor's degree in aerospace engineering in 1993.

Mr. Bowman held a variety of positions throughout his career with the CIA, NRO, State Department, and the U.S. Air Force. He began his career as a cooperative education student in the Office of Scientific and Weapons Research in 1989. He worked as an all-source analyst focused on air warfare and air defense issues. After the fall of the Soviet Union, from August 1997 to August 1998, Mr. Bowman worked in the Political and Military Affairs Bureau at the State Department as a Foreign Affairs Officer and as a special assistant for technical issues to the Assistant Secretary of Politico-Military Affairs. Mr. Bowman first came to the NRO in April 1999, serving until June 2001. He then held a number of senior level positions and was promoted into the SIS ranks in March 2009 after serving as the Chief of CIA's Collection Analysis Center and as the Chief of Staff of the ODNI's National Counterproliferation Center.

In addition, Mr. Bowman served the CIA as the Deputy Principal to the IC ITE Mission Users' Group. As an executive in the Office of Advanced Analytics, Mr. Bowman led the strategic work necessary for delivering advanced analytic capabilities to the CIA. Mr. Bowman served as the Principal Deputy Director of MID, the Senior Data Officer for the Directorate of Analysis, and the Deputy Chief Learning Officer at CIA.

Mr. Bowman was selected to serve the NRO as Director of the Mission Integration Directorate (MID) in June 2018 and CIA's Directorate of Science and Technology as Director of the Office of Space Reconnaissance (OSR) in May 2019. As the D/MID, Mr. Bowman was responsible for the day-to-day operations of a large directorate that brings overhead capabilities directly to both National Intelligence and U.S. Military customers. MID exists primarily to ensure overhead capabilities are brought to bear against enduring challenges and to champion the development of new capabilities vital to the nation's security. As D/OSR, Mr. Bowman managed the DS&T officers assigned to the NRO. He served as Director of MID until 7 July 2023.



Mr. Robert A. “Bob” Brodowski earned a Bachelor of Aerospace Engineering degree through the Cooperative Education Program at Georgia Institute of Technology in 1979 and a Master of Business Administration degree from the Florida Institute of Technology in 1991.

Mr. Brodowski began his career with the National Aeronautics and Space Administration, serving 13 years with NASA in different program management, systems engineering, and propulsion engineering positions. His NASA program experience includes the Space Shuttle Main Engine, Solid Rocket Booster, the Space Station, and numerous upper stage and advanced re-usable cryogenic propulsion systems. Prior to joining the Central Intelligence Agency in 1997, Mr. Brodowski operated his own private consulting business and served in various program management and engineering positions within the aerospace industry.

Mr. Brodowski served in IMINT as the Deputy System Program Director of the joint DoD/IC Space Radar Integrated Program Office, in SIGINT as the Space Systems Program Office, Director of Systems Engineering, and as the Chief Systems Engineer for several agency programs. He then served as Deputy Director, Advanced Systems and Technology Directorate, National Reconnaissance Office, for more than two years before being named Director, AS&T in August 2010. He served as Director, AS&T, until November 2015.

Mr. Brodowski’s career spanned over 30 years of experience related to program and project management, systems engineering, systems integration, and technology development. His accolades include multiple NRO Sentinel Awards, NRO Innovation and Achievement Awards, CIA Exceptional Performance Awards, and NASA Group Achievement Awards.

MS. MICHELE BRUNNGRABER

DIRECTOR,
SYSTEMS OPERATIONS DIRECTORATE
AUGUST 2008 – SEPTEMBER 2009

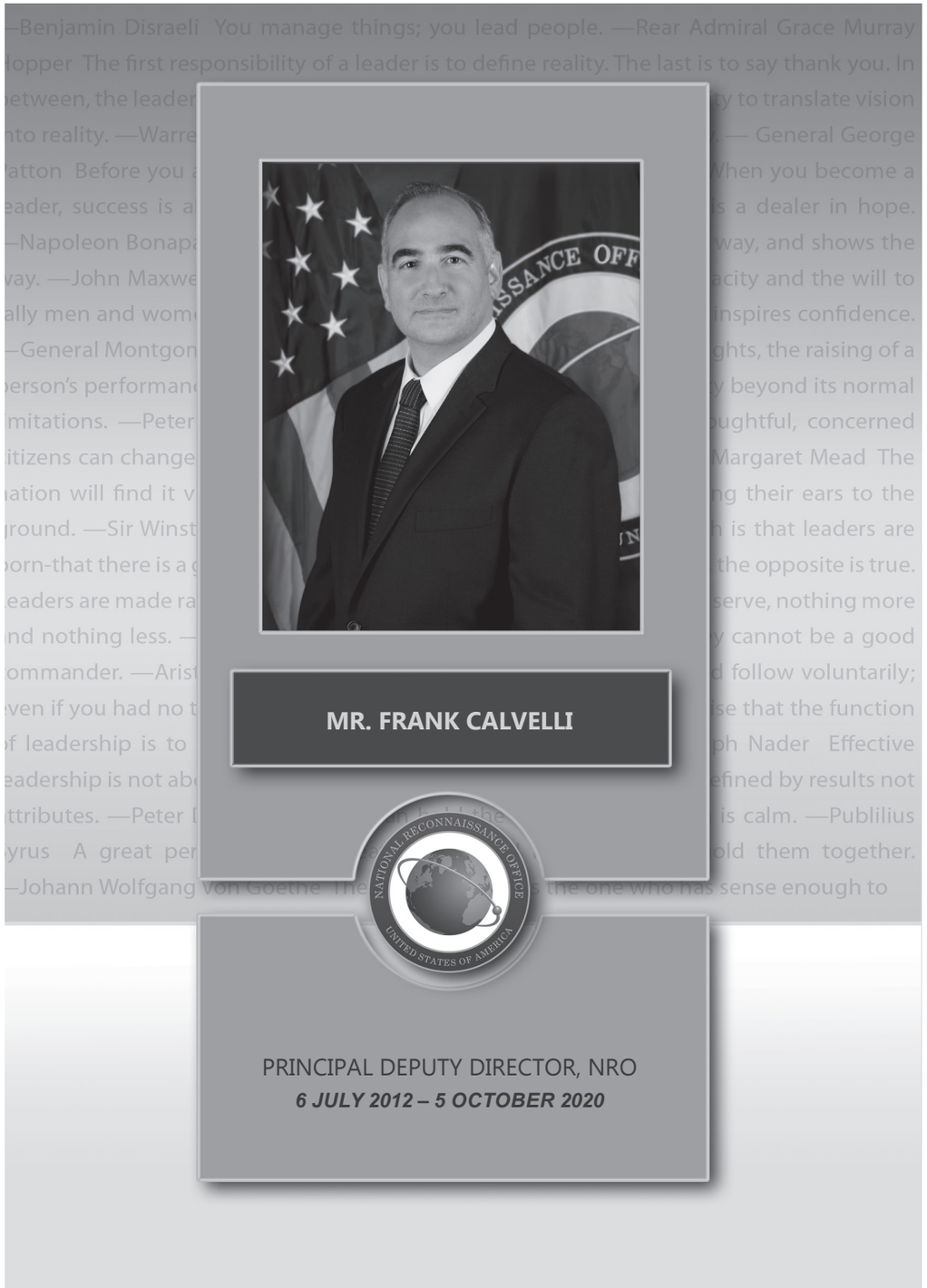
Originally from Honolulu, Hawaii, Michele Brunngraber earned her bachelor's degree in electrical engineering from the Rochester Institute of Technology in 1988 and her master's degree in national security strategy from the National War College in 2002.

Ms. Brunngraber was a career Intelligence Community officer with experience throughout the Community. She began her career working for the National Security Agency (NSA) in 1985 with various assignments in areas such as Information Security, Research and Development (R&D), and Telecommunications. While at NSA, she also had a joint assignment supporting the National Geospatial Intelligence Agency (NGA), where she led and administered multi-agency planning for assured enterprise architecture and delivery programs. Ms. Brunngraber was also the Director of the Joint Management Office for the Future Imagery Architecture (FIA) Program and the Air Base Support Commander of NSA's largest field station.

Ms. Brunngraber joined the NRO in 1990, where she held numerous assignments in COMM, IMINT, and SIGINT as a program manager or systems engineer in R&D, payload development, satellite acquisition, spacecraft launch and initialization, new program starts, ground system development, and end-to-end systems engineering. Ms. Brunngraber holds the distinction of being the first woman space vehicle manager at NRO. During her time at NRO, she also served at two ground stations.

Ms. Brunngraber served as the Deputy Associate Deputy Director of National Intelligence for Architecture, Engineering, and Integration in the Office of the Director of National Intelligence.

Ms. Brunngraber was appointed Director, Systems Operations (SO) in August 2008. As Director for SO, Ms. Brunngraber was responsible for the operations and maintenance of all NRO overhead reconnaissance systems, ground stations, and ground processors used to conduct intelligence activities essential for United States and her allies' national security. She served there until September 2009.



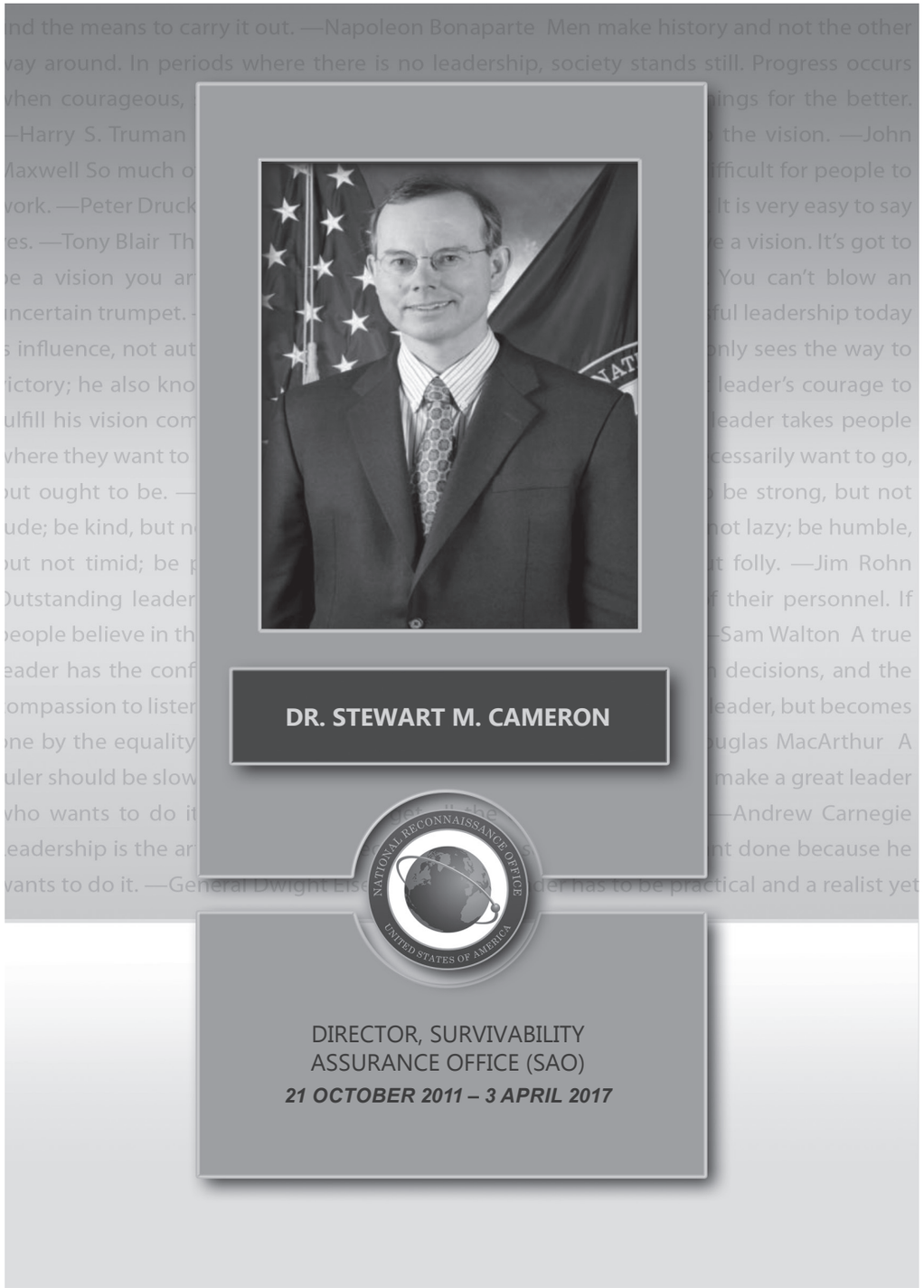
Frank Calvelli earned a Bachelor of Science in computer science from the State University of New York at Potsdam in 1986, and a Master's in 1992 in Business Administration from Loyola College in Baltimore, Maryland. He joined the CIA in 1986.

Mr. Calvelli has held a variety of senior positions within the NRO, including satellite and ground system acquisition, systems engineering, and mission operations. He served in positions across SIGINT, AS&T, GEOINT, COMM, and Systems Engineering. In 2007, Mr. Calvelli served as Deputy of the Systems Operations Directorate, eventually named the Mission Operations Directorate, and played a key role in setting up the newly-established directorate. From 2008 to 2009, Mr. Calvelli served as Chief of Facilities of the Joint Defense Facility at Pine Gap in Australia.

In March 2011, Mr. Calvelli was responsible for standing up the Special Communications Office (SCO) at the NRO, under the direction of DNRO Bruce Carlson. This office was created to deliver timely and assured special communications essential for national security. He served there until January 2012, at which time he was named Deputy Director of the Office of Technical Service at the CIA.

Mr. Calvelli was appointed Principal Deputy Director, National Reconnaissance Office (PDDNRO) on 6 July 2012. As the PDDNRO, he provided overall day-to-day management of the NRO, with decision responsibility as delegated by the Director, NRO. In the absence of the DNRO, he acted on the Director's behalf on all matters. During his tenure, he oversaw 20 successful spacecraft launches. He stepped down on 5 October 2020.

His awards and honors include the Presidential Rank Award for Distinguished Service, National Intelligence Distinguished Service Medal, CIA Distinguished Career Intelligence Medal, the NRO Distinguished Performance Medal, and the NRO's Jimmie D. Hill Award for his visionary leadership and steadfast executive management of the NRO.



Stewart M. Cameron received his Ph.D. in Chemical Physics from MIT in 1987. His graduate research involved nonlinear optical spectroscopy and the use of laser stimulated photon echoes to understand atomic and molecular scattering dynamics.

Early in his career, Dr. Cameron joined the Laser Program at Lawrence Livermore National Labs and jointly held an Assistant Professor position in the Department of Applied Science at UC Davis.

In 1993, he moved to Sandia National Laboratories in Albuquerque, New Mexico, where he remained until fall 2005. While at Sandia, Dr. Cameron was both a manager and a Distinguished Member of the Technical Staff, running a special projects group specializing in directed energy and remote sensing laser applications for the DoD and Intelligence Community.

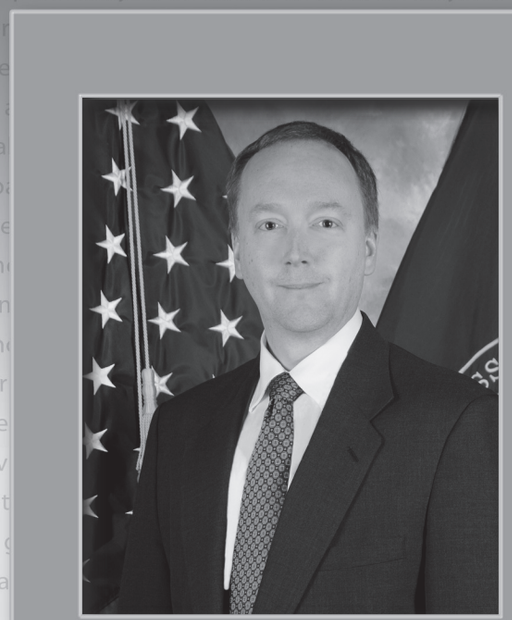
From 2004 through 2005, Dr. Cameron also served as Chief Technical Officer to the Deputy Undersecretary of Defense for Intelligence (Preparation and Warning) on counterspace issues.

In late 2005, Dr. Cameron moved to Washington, DC and accepted a position as a Senior Scientist with the CIA in the Directorate of Science and Technology.

Dr. Cameron began his time at the NRO in Systems Engineering (SED), and in October 2009, he was appointed the Advanced Systems and Technology Directorate's Senior Southwest Technical Laboratory Liaison at Kirtland Air Force Base in Albuquerque, New Mexico. In October 2010, Dr. Cameron was appointed Special Assistant for NRO Space Protection.

On 21 October 2011, Dr. Cameron, a member of the CIA's Senior Intelligence Service, was named the first Director of the Survivability Assurance Office for the NRO. SAO develops technologies, operating concepts, and operational capabilities for integration into NRO space and ground systems. He served in that capacity until 3 April 2017.

Dr. Cameron was the recipient of the 2016 Charyk Award, presented by the National Space Club and Foundation at the 59th Annual Goddard Memorial Dinner on 11 March 2016, in Washington, DC. The Charyk Award was named after Dr. Joseph V. Charyk, who served as the first Director of the NRO and the Undersecretary of the Air Force, from 1961-1963. The Charyk Award was established in 1999 to annually recognize an individual, in or supporting the NRO, who has made an outstanding personal contribution to the national intelligence space program.



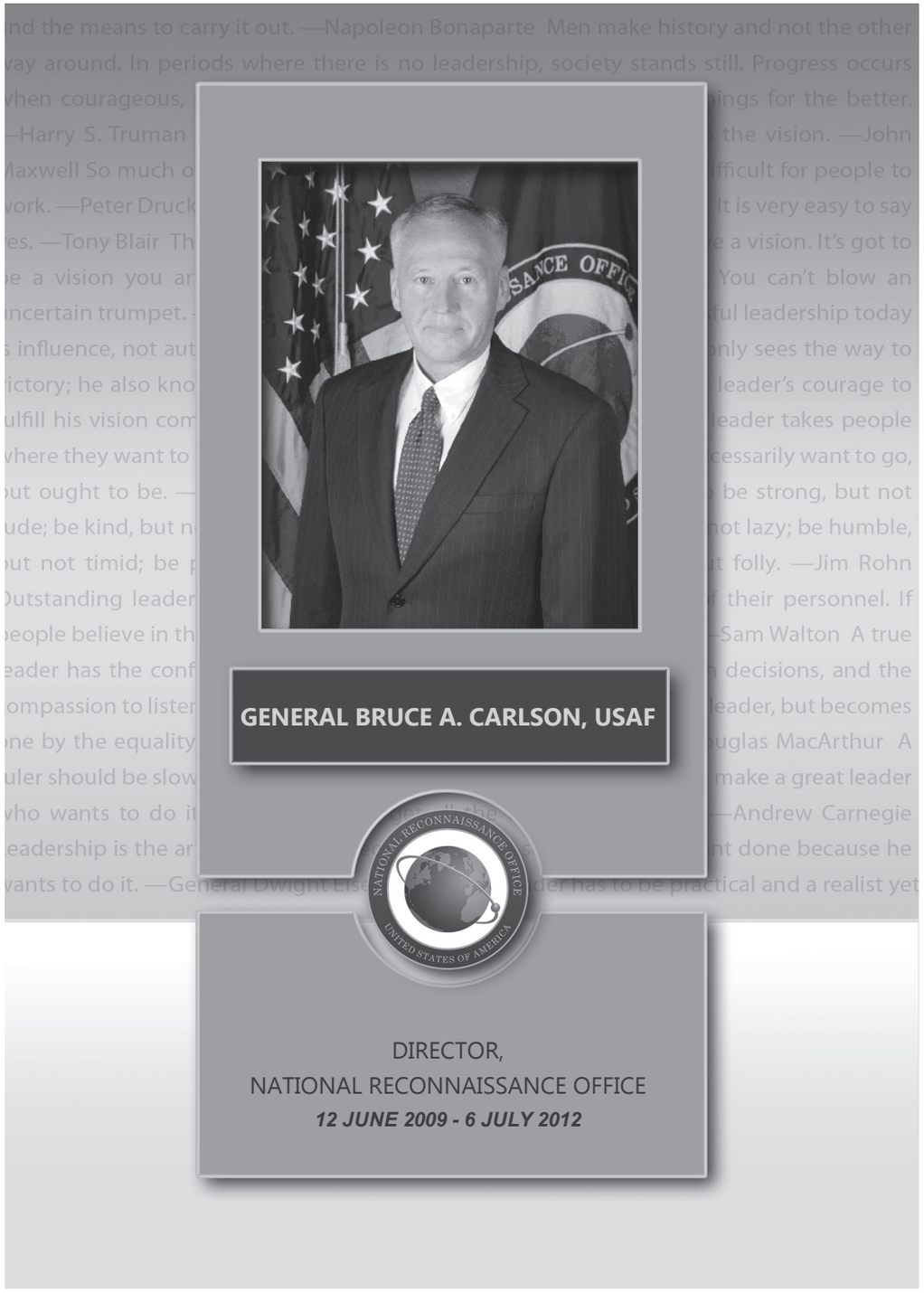
MR. DAVID CAREY

PRINCIPAL DEPUTY DIRECTOR,
MISSION OPERATIONS DIRECTORATE
MARCH 2012 – DECEMBER 2012

David Carey received both his bachelor's (1989) and master's (1991) degrees in aerospace engineering from the University of Notre Dame.

Mr. Carey began his CIA career in 1991, and his experience spanned all-source weapons analysis in the Directorate of Intelligence/Weapons Intelligence, Nonproliferation, and Arms Control (and its predecessors). Within the Directorate of Science and Technology, he worked operations (from tasking to dissemination) for various INTs on both airborne and overhead platforms. He served twice at an NRO Mission Ground Station, once as the Deputy Chief of Operations (2003-2006). He also served as the Principal Deputy Director of MOD.

Mr. Carey was named Director of NRO's Mission Operations Directorate in March 2012. As the Director, he provided direct leadership and direction to a cadre of civilian and contractor personnel. He also provided direct support to our military, Intelligence Community, and policy makers to deliver critical signals intelligence and near real-time imagery. Mr. Carey concurrently served as the NRO's Senior Central Intelligence Agency Directorate of Science and Technology Officer. He served there until December 2012.



Bruce Allen Carlson was born in Hibbing, Minnesota. He holds a Bachelor of Arts degree (1971) from the University of Minnesota, Duluth and a Master of Arts degree (1980) from Webster University, St. Louis, Missouri. He also is a graduate of the U.S. Air Force Fighter Weapons School (1979), Nellis AFB, Nevada and a Distinguished Graduate, Naval War College (1989), Newport, Rhode Island.

Second Lieutenant Carlson began his military career as a commissioned officer in 1971 after graduating with distinction from the Air Force ROTC program at the University of Minnesota, Duluth. He was a command pilot with more than 3,700 flying hours in ten different aircraft, and saw combat as a forward air controller in the OV-10 Bronco. His various flying assignments included commanding the 49th Fighter Wing at Holloman AFB in New Mexico, the Air Force's first stealth fighter wing. His staff assignments included positions at Tactical Air Command, Headquarters U.S. Air Force, and the offices of the Secretary of the Air Force and Secretary of Defense. He also served as the Director of Force Structure, Resources and Assessment on the Joint Staff; Commander, 8th Air Force, Barksdale AFB, Louisiana; and Joint Functional Component Commander for Space and Global Strike, U.S. Strategic Command, Offutt AFB, Nebraska.

In August 2005, prior to his retirement from the U.S. Air Force, General Carlson served as Commander Air Force Materiel Command, Wright-Patterson AFB, Ohio, which is responsible for development, testing, acquisition and sustainment of Air Force weapons systems. In that role, he had responsibility for 74,000 people and $59 billion annually. He was promoted from Lieutenant General to General, pinning on his fourth star, on 1 September 2005. After retiring from the United States Air Force in January 2009, he served as a defense industry consultant and as a member of the Board of Directors of EADS North America.

In April 2009, Carlson was called as a general authority and member of the Church of Jesus Christ of Latter-day Saint's Second Quorum of the Seventy. He held that position until October 2015, concurrent with his service at the NRO.

General Carlson was appointed the 17th Director of the National Reconnaissance Office on 12 June 2009 and served until 6 July 2012. He oversaw the NRO's fiftieth anniversary celebrations in 2011, and he worked to prepare the NRO for another five decades of exciting technical innovation and dedication to safeguarding the security of our nation.

Among Director Carlson's many awards and decorations are the Defense Distinguished Service Medal with oak leaf cluster, Distinguished Service Medal with oak leaf cluster, Legion of Merit, the Meritorious Service Medal with two oak leaf clusters, the Air Force Commendation Medal with two oak leaf clusters, and the Order of the Sword, Air Force Materiel Command.

Floyd L. Carpenter received his commission through the ROTC program at Texas A&M University in 1977, where he also earned his bachelor's degree in economics. He later received master's degrees in industrial technology from Texas A&M in 1986 and in national security strategy from the National War College in 1998.

General Carpenter commanded at the squadron, group and wing levels, and deployed as commander of combat forces in support of operations Desert Strike, Allied Force, Enduring Freedom, and Iraqi Freedom.

After studying as a student at Vance Air Force Base and Castle Air Force Base, Second Lieutenant Carpenter served as a B-52 standardization and evaluation copilot, 410th Bomb Wing at K.I. Sawyer Air Force Base in Michigan from August 1979 to February 1982. For the following four years, First Lieutenant and then Captain Carpenter served as a T-38 pilot instructor at Randolph Air Force Base and then Reese Air Force Base in Texas. In April 1986, Captain Carpenter moved to Carswell Air Force Base, also in Texas, where he served as a B-52 instructor pilot, flight commander, aircraft commander, and wing executive officer of the 7th Bomb Wing.

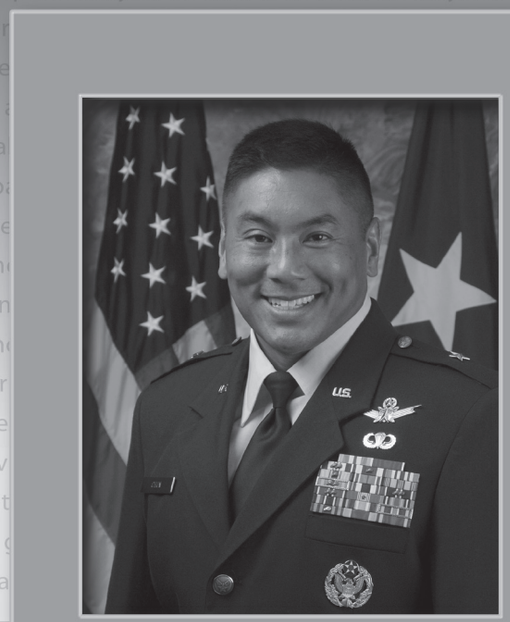
In August 1989, upon his promotion, Major Carpenter left Texas for Offutt Air Force Base in Nebraska where he served as the Advanced Systems Program Manager and Director of Requirements for the Headquarters of Strategic Air Command. After a year at the Air Command and Staff College at Maxwell Air Force Base, Major Carpenter was named Chief, Rated Force Management, and Deputy Chief, Air Force General Officer Matters, Director of Personnel at the Pentagon. He was promoted to Lieutenant Colonel in June 1993 while serving in that role.

In June 1995, Lieutenant Colonel Carpenter was named operations officer and Commander of the 96th Bomb Squadron at Barksdale Air Force Base, Louisiana. After a year at the National War College, Lieutenant Colonel Carpenter was named Commander of the 5th Operations Group, Minot Air Force Base in North Dakota in July 1998. He was promoted to Colonel the following month.

In June 2000, Colonel Carpenter moved to Hawaii where he served as Deputy Chief of Staff and then executive assistant to the Commander at U.S. Pacific Command, Camp H.M. Smith. In July 2002, he was made Commander of the 2nd Bomb Wing at Barksdale Air Force Base before being named Commander of the Air Force Officer Accessions and Training Schools at Maxwell Air Force Base in 2004. While serving there, he was promoted to Brigadier General in November 2004.

In June 2005, Brigadier General Carpenter was named Deputy Director for National Systems Operations, the Joint Staff, and Deputy Director for Military Support (DDMS), NRO. In 2006, while serving as DDMS, the NRO combined the roles of DDMS and Deputy Director for National Support, establishing the role of Deputy Director for Mission Support. General Carpenter served in that role until March 2007.

Major General Carpenter is a command pilot with more than 4,200 hours in the B-52, T-37 and T-38, including 300 combat hours. His major awards and decorations include the Defense Superior Service Medal with oak leaf cluster, Legion of Merit with oak leaf cluster, Bronze Star Medal with oak leaf cluster, Meritorious Service Medal with silver oak leaf cluster, Air Medal with two oak leaf clusters, Air Force Commendation Medal, Air Force Achievement Medal, Combat Readiness Medal, National Defense Service Medal with bronze star, and NATO Medal with bronze star (Former Republic of Yugoslavia). He also earned the 1996 Mackay Trophy for the U.S. Air Force Most Meritorious Flight of the Year.



BRIGADIER
GENERAL CARY C. CHUN, USAF

DIRECTOR,
MISSION OPERATIONS DIRECTORATE
SEPTEMBER 2009 – MARCH 2012

Cary C. Chun was born in Cavite, Philippines, at Sangley Point Naval Air Station when his father was on active duty in the U.S. Coast Guard. He was commissioned as a second lieutenant from the U.S. Air Force Academy in 1985, with a Bachelor of Science in Operations Research. He then earned his master's degree in systems management from the University of Southern California in 1987. In 1990, he earned a second master's degree in space operations from the Air Force Institute of Technology. And in 2003, he earned his third master's degree in Strategic Studies from the Air War College.

He gained extensive space operations experience working with Combatant Commands, Air Force Space Command, 14th Air Force, the NRO, and Central Air Forces. He graduated from the Space Warfare Center's Space Tactics School in 1996.

From May 2000 to June 2002, Lt Col Chun commanded the 614th Space Operations Squadron at Vandenberg AFB, California. From June 2003 to June 2005, Col Chun served as Commander of the NRO Operations Group at Onizuka Air Force Station, California. In his next assignment, he served as commander of the Space Operations Wing at the Aerospace Data Facility, Buckley AFB, Colorado. In 2007, he served as the Director of Space Forces while deployed to Southwest Asia for operations Enduring Freedom and Iraqi Freedom. From June 2008 to September 2009, Col Chun served as the Commander of the 50th Space Wing, Schriever Air Force Base, Colorado. He was promoted to Brigadier General during that assignment.

In September 2009, Brigadier General Chun was named the Deputy Commander for Joint Functional Component Command for Space (JFCC-SPACE), U.S. Strategic Command (USSTRATCOM) and the Director of Mission Operations, NRO. As Deputy Commander JFCC-SPACE, he helped lead all Department of Defense Space Forces aligned with USSTRATCOM and provided tailored, responsive, local, and global effects in support of National, USSTRATCOM, and Combatant Commander objectives. As Director of Mission Operations, he led operations for all NRO overhead reconnaissance systems, ground stations, operational communications, and the operations center used to conduct intelligence activities essential for U.S. and her allies' national security. He served there until March 2012.

His notable awards and achievements include the Defense Superior Service Medal with oak leaf cluster, Legion of Merit Defense Meritorious Service Medal with two oak leaf clusters, Meritorious Service Medal with oak leaf cluster, Joint Service Commendation Medal, Air Force Commendation Medal with oak leaf cluster, Joint Service Achievement Medal, and Air Force Achievement Medal. He also won the 1991 Outstanding squadron graduate at Squadron Officer School, 2000 Field Grade Officer of the Year from the California Air Force Association, 2005 National Reconnaissance Office Leadership Award, 2006 Office of the Secretary of the Air Force Leadership Award, 2007 National Security Agency Bronze Medallion, and 2007 National Reconnaissance Office Gold Medal.

MR. JAMES L. "JIMMY" COMFORT

DIRECTOR,
SURVIVABILITY AND ASSURANCE OFFICE
16 MARCH 2020 – PRESENT

James L. "Jimmy" Comfort graduated with a Bachelor of Aerospace Engineering degree from Georgia Tech in 1985. He later earned his Master of Science in Engineering Management from the University of Colorado, Boulder in 1995.

Colonel (Ret) Comfort entered the Air Force in 1985 as a graduate of Georgia Tech's Reserve Officer Training Corp program and was assigned to Onizuka AFS. His operations experience included seven different weapons systems. He was the Operations Officer for the 3rd Command and Control Squadron at Offutt Air Force Base, Nebraska, the 13th Space Warning Squadron at Clear Air Force Station, Alaska, and the 1st Space Launch Squadron at Cape Canaveral AFS, Florida.

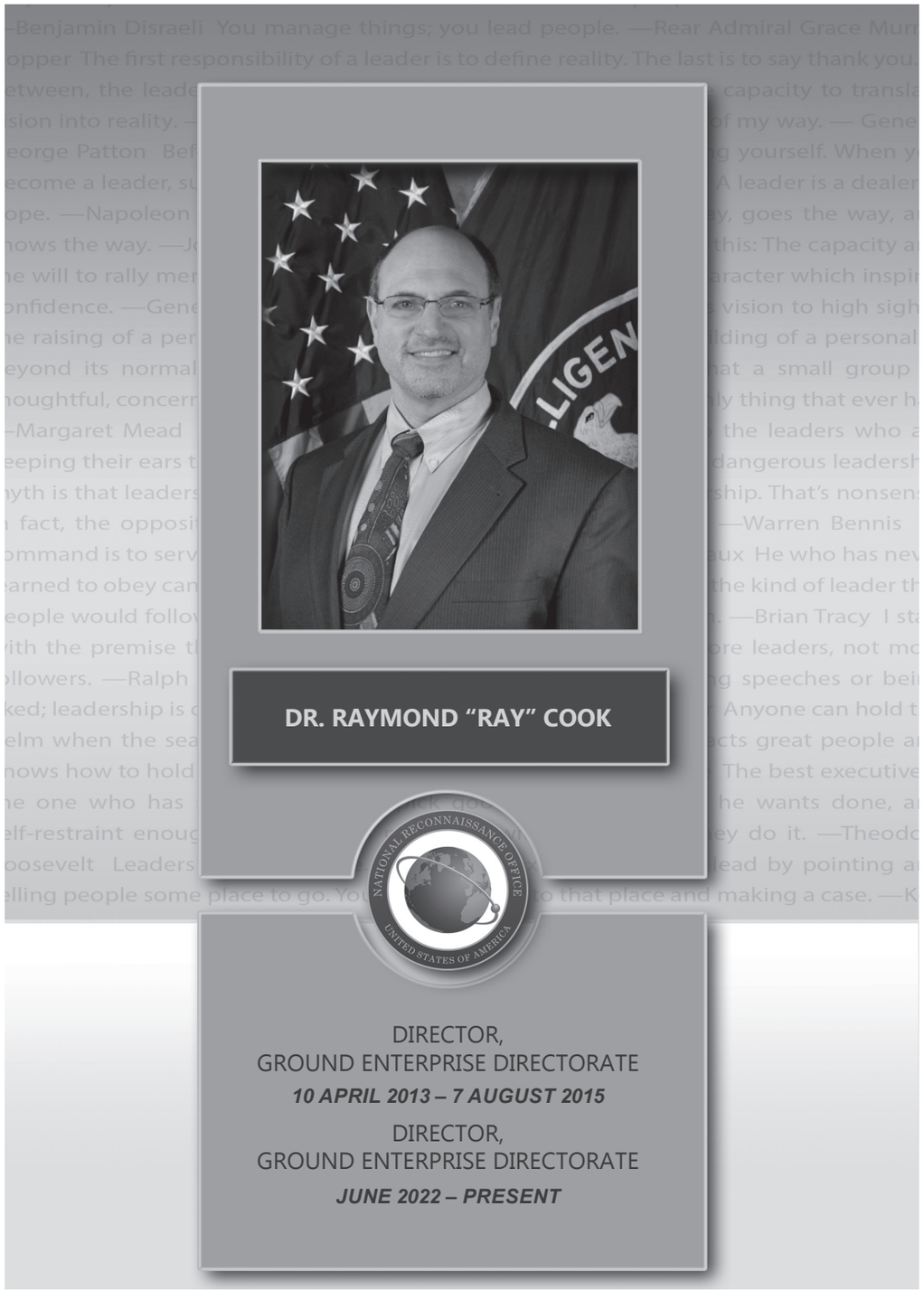
His staff experience included tours at the MILSATCOM Joint Program Office, where he was a Space Systems Test Manager, MILSTAR Flight Operations Director and Chief, Advanced Network Planning and Control. He served at Headquarters Air Force Space Command as Advanced MILSATCOM Command Lead and Executive Officer to the Director of Requirements. Col (Ret) Comfort also served at the Pentagon in Headquarters U.S. Air Force as Chief Wargaming and Experimentation Integration Branch and Executive Officer to the Director of Command and Control.

From July 2003, Col (Ret) Comfort was the Squadron Commander for the 3rd Space Launch Squadron, Cape Canaveral Air Force Station, Florida, where he commanded a 102-person operations squadron that conducted all Titan IV processing and space launch operations for Defense Support Program, MILSTAR, and NRO satellites.

Col (Ret) Comfort first came to the NRO in July 2005, serving as Chief Systems Engineer, Systems Engineering Office, Imagery Intelligence Systems Acquisition and Operations Directorate (IMINT). In August 2007, he was named Deputy Program Manager of the NRO's Electro-Optical System Program Office in IMINT. From October 2010, Col (Ret) Comfort served as Deputy Director, Imagery Intelligence Systems Acquisition Directorate.

Col Comfort retired from the Air Force and was appointed a Defense Intelligence Senior in July 2013, and served as Deputy and Technical Director, Imagery Intelligence Systems Acquisition Directorate, NRO. In December 2018, he was named Principal Deputy Director, Geospatial Intelligence Systems Acquisition Directorate (GEOINT).

In March 2020, Mr. Jimmy Comfort, a member of the Defense Intelligence Senior Executive Service, was appointed as the Director of the National Reconnaissance Office's Survivability Assurance Office (SAO).



Raymond "Ray" Cook received undergraduate, Master's, and Ph.D. degrees in biomedical engineering from the Rensselaer Polytechnic Institute in Troy, New York, completing his studies in 1992.

Dr. Cook's first assignment in the CIA was with the Office of Research and Development within the Directorate of Science and Technology (DS&T), where he developed and deployed data collection and processing capabilities against emerging telecommunication signals – for which he was recognized with his first CIA "Engineer of the Year" award (1999). In 2003, he was selected by the DS&T to serve as the Chief of Research and Development and then Chief of Engineering at a major overseas collection installation, where he was responsible for developing new capabilities and operating and maintaining the underlying significant data center infrastructure.

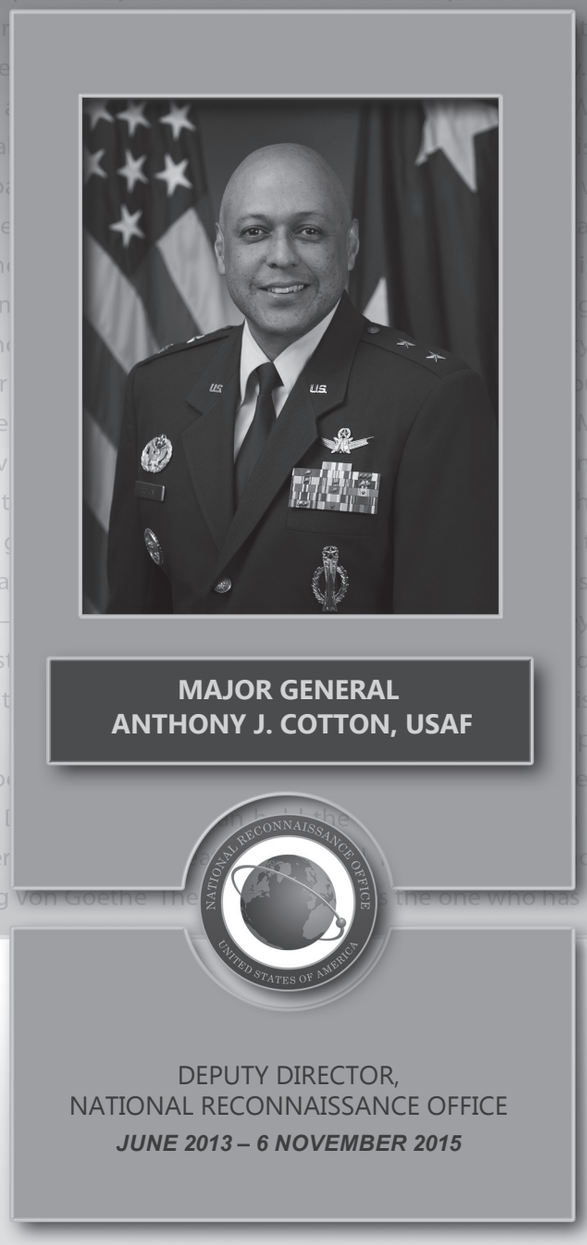
Next, Dr. Cook led a cross-Agency processing and analysis mission within the CIA. In this role, he was responsible for processing, analyzing, and reporting intelligence from data collected by both Intelligence Community and Department of Defense elements. He was also responsible for developing the applications and Information Technology infrastructure and services that underpinned this mission, as well as for ensuring compliance with appropriate agency data access and data sharing authorities and policies. During this assignment, Dr. Cook was recognized as a Director of National Intelligence Fellow (2010) and with his second CIA "Engineer of the Year" award (2009).

From 2013 to 2015, Dr. Cook served in his first assignment at the NRO as the Director of the Mission Operations Directorate. In this capacity, Dr. Cook was responsible for delivering NRO's mission, including the innovative operations of NRO satellites, data processing, and dissemination systems at the NRO's mission ground-stations and headquarters elements.

In 2014 Dr. Cook was selected as the first Director for the Office of Space Reconnaissance (OSR) within the DS&T. Through OSR, the DS&T deploys technically expert staff across all mission areas within the NRO. From 2015 to 2017, Dr. Cook was appointed by President Obama to serve as the Intelligence Community Chief Information Officer, where he was responsible for the Enterprise IT architecture and strategy across the seventeen IC Agencies and Elements, and in particular, for the continued acquisition of the IC Information Technology Enterprise.

From 2018 to 2022, Dr. Cook served as the CIA DS&T Chief Technology Officer (CTO). As CTO, he developed and guided the DS&T's technical cadre, developed and communicated the DS&T's technology and data strategies, and conducted outreach to leverage the power of CIA's technical partners.

Dr. Cook returned to the NRO in June 2022 and was appointed Director, Ground Enterprise Directorate. In this capacity, he led an 800 person multi-agency team of acquisition and intelligence professionals to plan, acquire, and deliver state-of-the-art ground systems that connect space systems to space operators, mission partners, and end-users to fulfill the requirements of the Intelligence Community, the Department of Defense, and allied partners.



MAJOR GENERAL
ANTHONY J. COTTON, USAF

DEPUTY DIRECTOR,
NATIONAL RECONNAISSANCE OFFICE
JUNE 2013 – 6 NOVEMBER 2015

Anthony James Cotton graduated with a Bachelor of Science degree in political science from North Carolina State University, Raleigh, North Carolina in 1986. He then earned a Master of Science degree in administration from Central Michigan University, Mt. Pleasant, Michigan in 1991.

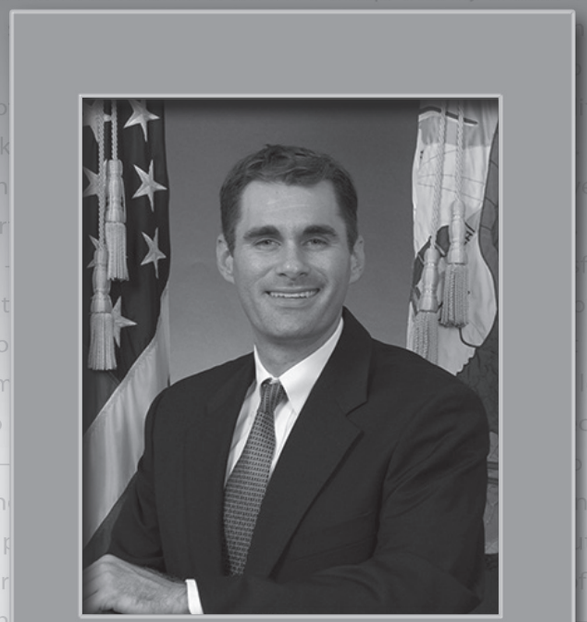
Second Lieutenant Cotton entered the Air Force through the Reserve Officer Training Corps Program at North Carolina State University in 1986. He began his career as a missile officer and held a variety of operational space and headquarters staff assignments. He commanded at the squadron, group, and wing levels.

From June 2005 to April 2008, Lieutenant Colonel Cotton served as Deputy Director, Secretary, and Chief of Staff of the Air Force Executive Action Group as well as the Director of Preparation and Planning and the Senior Military Assistant to the Undersecretary of Defense for Intelligence.

In April 2008, Colonel Cotton was named Commander of the Space Operations Group at Aerospace Data Facility East, Fort Belvoir. He next served as Vice Commander and then Commander of the 341st Missile Wing at Malmstrom Air Force Base, Montana. In August 2011, Brigadier General Cotton became Commander of the 45th Space Wing and Director of the Eastern Range at Patrick AFB in Florida.

In June 2013, Brigadier General Cotton was named Deputy Director, NRO. His responsibilities included assisting the Director and Principal Deputy Director in managing the strategic and tactical operations of the NRO. Also, as the Commander, Air Force Element, he managed all Air Force personnel and resources assigned to the NRO and served as the senior adviser to the DNRO on all military matters. He was promoted to Major General in July 2015, and he served there until November 2015.

Among the many awards and decorations received by General Cotton during his Air Force career were the Distinguished Service Medal with two oak leaf clusters, the Defense Superior Service Medal with oak leaf cluster, the Legion of Merit with oak leaf cluster, the Defense Meritorious Service Medal, the Meritorious Service Medal with three oak leaf clusters, Air Force Commendation Medal with oak leaf cluster, the Air Force Achievement Medal with oak leaf cluster, the National Defense Service Medal with device. He also received the NRO Superior Service Medal.



MR. ANDREW D. COX

DIRECTOR, COMMUNICATIONS SYSTEMS DIRECTORATE (COMM),

DECEMBER 2008 – 15 JULY 2011

A graduate of Colgate University, Andrew D. Cox began his career as a software programmer and integrator in the Defense industry. Mr. Cox worked on several different intelligence and command and control systems for the Navy and DoD, developing applications on multiple platforms and designing enterprise management and inventory software.

Mr. Cox entered government service in 1997 at the Space and Naval Warfare Systems Command (SPAWAR), serving in several engineering positions until becoming the Technical Director for the command. He led the development effort to migrate legacy systems to a Joint DoD baseline, and was one of the original engineers that developed and deployed the Navy's largest operational network afloat, known as Information Technology 21 (IT-21).

In 1998, Mr. Cox was chosen to become Chief Engineer for the Global Command and Control System – Maritime program. From the program's existing baseline of over 250 interfaces with afloat and ashore C4I systems, the program passed the largest operational test in Naval C4I history. Serving afterwards in SPAWAR's C2ISR systems division, Mr. Cox reported to the Director of the NRO's Communications Directorate as the Chief Engineer for Naval Fires Network, an effort to consolidate several major systems in three commands in support of time-critical strike.

In 2002, Mr. Cox moved into the Program Executive Office, C4I and Space (PEO C4I and Space) as the Technical Director, providing technical oversight over all programs within the PEO. Mr. Cox was selected as a member of the Senior Executive Service in 2004 and served as Deputy PEO C4I and Space, leading the program evaluation and integration efforts for all of the Navy's Command, Control, Communications, Computers, and Intelligence programs.

In 2006, Mr. Cox was assigned as Deputy Program Executive Officer, Space Systems, providing acquisition oversight for Navy satellite development programs, including the Mobile User Objective System, UHF Follow-on, and Syncom IV or Leasat. He was assigned concurrently as Executive Director of the SPAWAR Space Field Activity, responsible for Navy personnel assigned to the NRO. Mr. Cox also served as the Senior Civilian Advisor to the Navy Space Cadre, reporting to the Commander, Navy Network Warfare Command. From 2007 to 2008, Mr. Cox served as Deputy Director of the NRO's Communications Systems Acquisition and Operations Directorate.

In December 2008, Mr. Cox was appointed Director, COMM at the National Reconnaissance Office. As COMM Director, Mr. Cox was responsible for the successful execution of all communications satellite systems acquisitions within the NRO, as well as the acquisition of all global terrestrial networks. His responsibilities spanned the design, acquisition, launch, deployment, and operations support for current and future COMM systems. He served there until July 2011.

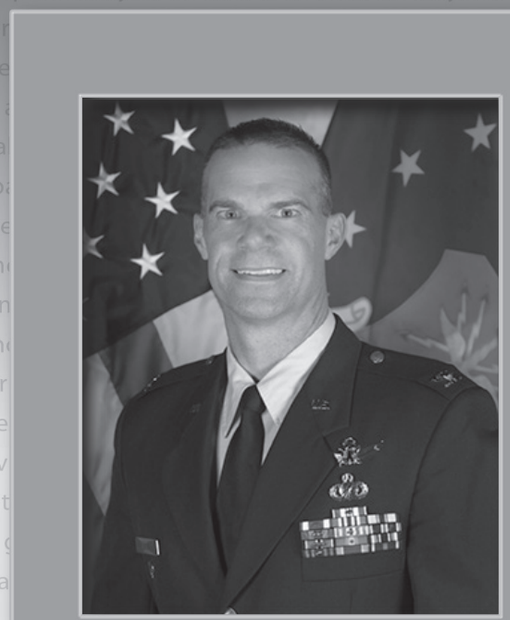
Mr. Cox received several awards for his service, to include the Navy Meritorious Civilian Service Award and the Navy Superior Civilian Service Award.

Born in Bangor, Maine, Alan D. Davis graduated from North Carolina State University in 1985 with a Bachelor of Science in Aeronautical Engineering and received his commission in August 1985 after completing Officer Training School as a Distinguished Graduate. From 1985 to 1991, he was assigned to Warner-Robins AFB, Georgia, where he served as an Aerospace Structural Engineer on C-141, A/C-47, WB-57, and C-140 aircraft and as the Chief of Systems and Ground Safety for the C-141 Directorate.

From 1991 to 1994, Col Davis was an Associate Professor of Aerospace Studies and Commandant of the Cadet Corps at Louisiana Tech University. In 1994 he moved to Los Angeles AFB, California, in the Launch Vehicles System Program Office where he led numerous Delta II vehicle and ground projects, including the Delta II Advanced Launch Control System and the construction of the first Space Launch Squadron Operations Building. In 1997, he transferred locally to the Military Satellite Communications Systems Program Office as Chief, Orbital Operations Division, where he was responsible for all Program Office preparations for Defense Satellite Communications System and MILSTAR launch and on-orbit checkout. In 1999, Col Davis began his first NRO assignment as Director of Ground Segment Development in the Directorate of Signals Intelligence at NRO Headquarters, where he supported ground infrastructure upgrades for the Integrated Overhead SIGINT Architecture.

After being selected as an NRO Fellow in 2001, he became the Military Assistant to the Director of the NRO and Under Secretary of the Air Force. In 2002, Col Davis was reassigned to Air Force Space Command at Peterson AFB, Colorado, serving as Chief of the Space-Based Radar (SBR) Branch in the Directorate of Requirements. He collected, integrated, and adjudicated DoD and Intelligence Community requirements for the SBR system. From 2004 to 2006, Col Davis served as Commander, NRO Cape, at Cape Canaveral Air Force Station, Florida, where he was responsible for the integration, ground transportation, processing, and launch of all NRO satellites at the Cape. Col Davis was then assigned as a Student at the Naval War College in Newport, Rhode Island. He then served as the Deputy Director for the Office of Space Launch in Los Angeles, CA.

In August 2009, Colonel Davis was named the Director for the Office of Space Launch. OSL is responsible for the successful delivery of every NRO satellite on orbit, on time. He served there until his retirement in July 2011.



COLONEL CHAD J. DAVIS, USAF

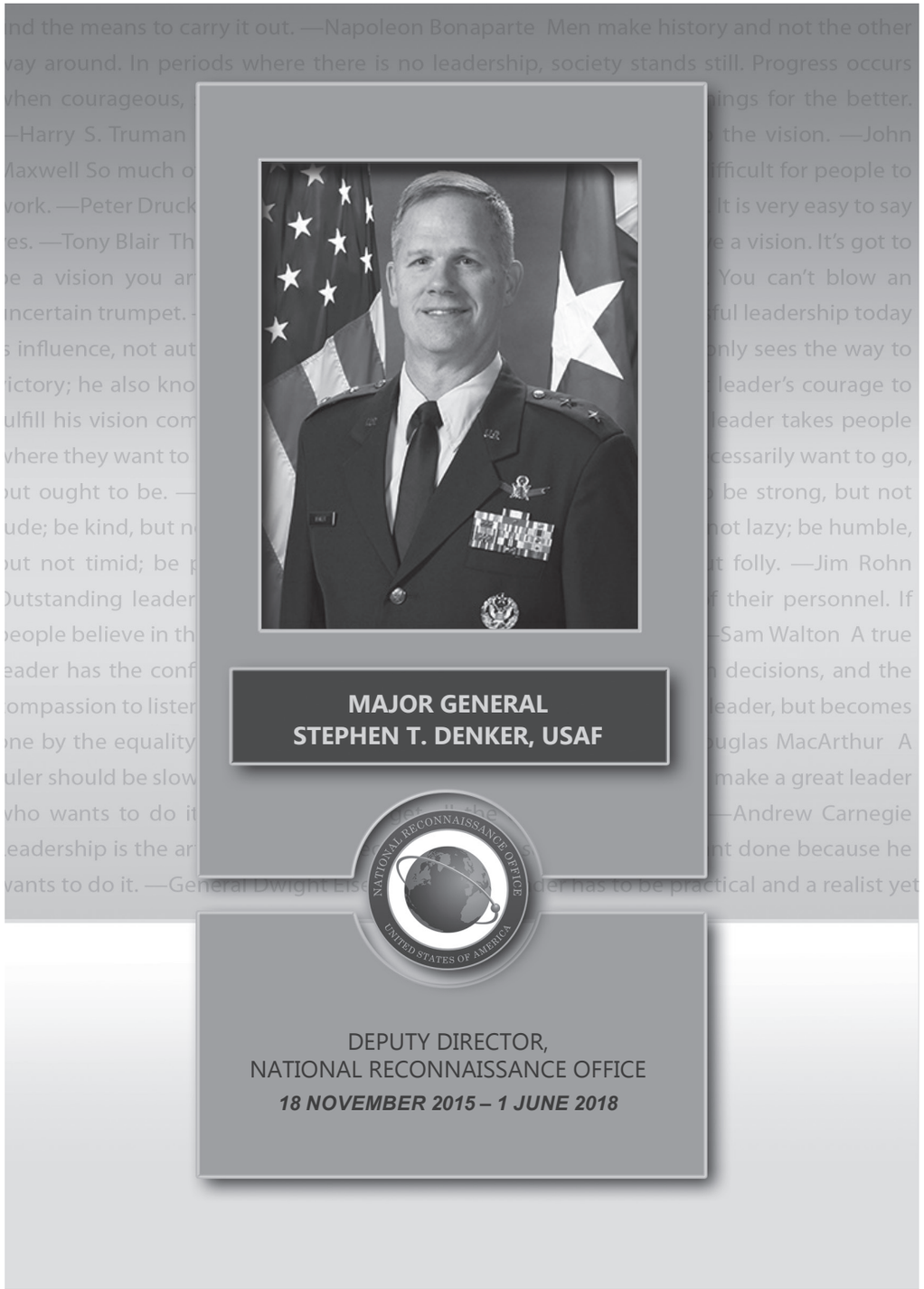
DIRECTOR, OFFICE OF SPACE LAUNCH
JULY 2019 - PRESENT

Chad J. Davis began his career as a graduate of the United States Air Force Academy in 1995, with a bachelor's degree in mechanical engineering. In 1999, he earned a master of science degree in aeronautical engineering from the Air Force Institute of Technology. He also earned two master of arts degrees in national security and strategic studies from the Naval (2007) and Army (2015) War Colleges.

Col Davis began his career as a Laser Vulnerability Engineer for the Air Force Research Laboratory in Albuquerque, New Mexico. In June 1999, he served as a space systems intelligence analyst for the Air Force, before accepting a position as an Associate Professor with the Air Force Academy in July 2003.

In July 2007, Col Davis came to the NRO as a program manager, where he later served as chief engineer and management executive. In June 2015, Col Davis earned Pentagon experience, serving on the Joint Staff as a Joint Warfighting Capability analyst and the Special Access Program Coordinator for the Vice Chairman of the Joint Chiefs of Staff. He then served on the Office of the Secretary of Defense staff as the Deputy Director for Space and Missile Defense Systems in the Office of Space, Strategic and Intelligence Systems. In July 2017, Col Davis returned to the NRO as Senior Materiel Leader, Space Systems Program Office, Signals Intelligence Systems Acquisition Directorate, as well as serving as the NRO Operations Squadron Commander.

In July 2019, Colonel Davis was named the Director, Office of Space Launch. In that role, he had total launch responsibility for eleven critical satellite reconnaissance programs, led a 700-member government and contractor organization with three squadrons. Colonel Davis orchestrated booster acquisition, system integration, mission transport and processing for launch missions with values exceeding $3 billion. He also served as Mission Director for all NRO launches—the single authority for NRO launch mission success.



Stephen T. Denker graduated from the University of Minnesota, Minneapolis with a Bachelor of Aerospace Engineering and Mechanics degree in 1985. He then earned his Master of Science in Systems Management from the University of Southern California, Los Angeles in 1988. He earned another master's degree in National Resources Strategy from the Industrial College of the Armed Forces in 2004.

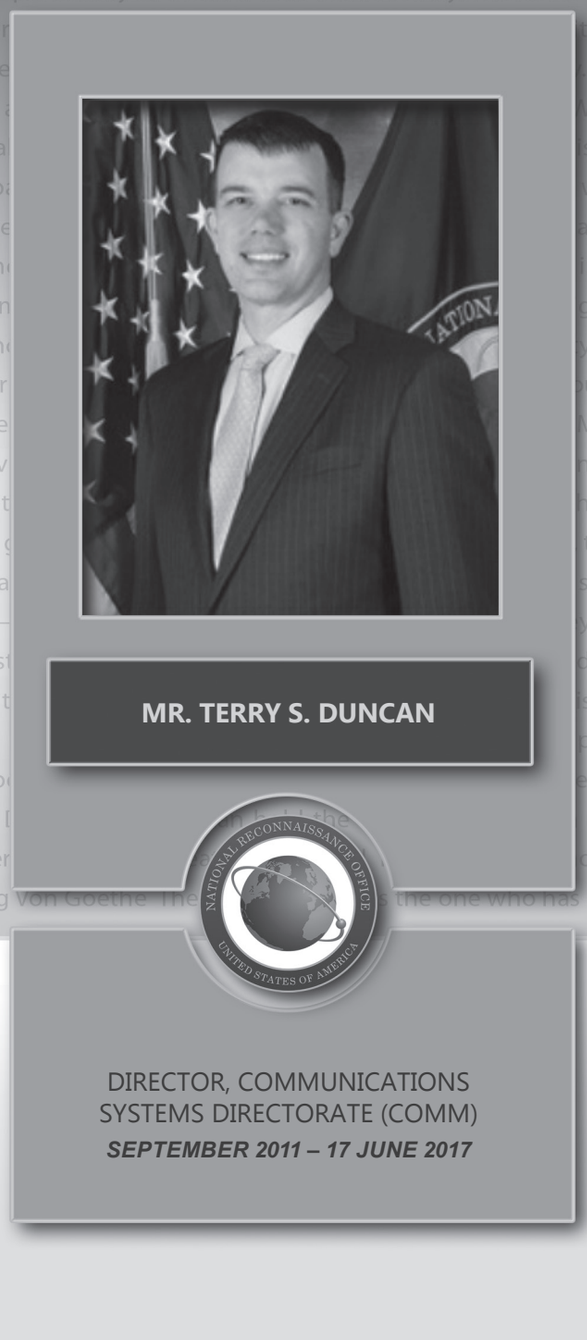
Second Lieutenant Denker entered the Air Force in 1986 after graduating from the University of Minnesota, receiving a commission as a distinguished graduate of the Air Force Reserve Officer Training Corps program. He began his career as a spacecraft engineer at Los Angeles Air Force Base, California, followed by acquisition assignments with the Strategic Defense Initiative Organization, now known as the Missile Defense Agency, and the Special Programs organization at the Pentagon. His operations experience included developmental test and evaluation activities and specialized operations on a variety of space and ground systems. He commanded at the squadron, group, and wing level and served as executive officer, deputy division chief on the Assistant Secretary of the Air Force (Acquisition) staff.

In June 2001, Lieutenant Colonel Denker was named to the Under Secretary of the Air Force's Office of Space Applications as Deputy Director of the Mission Operations Group then Commander of the Space Operations Group. In August 2004, He was made Commander of the 84th Specialized Management Squadron at Hill Air Force Base. In March 2006, Colonel Denker was made Commander of the Air Force Element and Chief of Mission Engineering at RAF Menwith Hill. In July 2009, he was named Commander of the Space Operations Wing and the Commander of ADF-C.

In January 2011, Brigadier General Denker was named Commandant, Air Command and Staff College, and Vice Commander, Spaatz Center for Officer Education, Air University, Maxwell Air Force Base, Alabama. He next served as the Director of Strategic Plans, Programs and Analyses, Headquarters Air Force Materiel Command, Wright-Patterson Air Force Base, Ohio. In August 2014, Major General Denker became the Director of Integrated Air, Space, Cyberspace and ISR Operations at Air Force Space Command Headquarters, Peterson Air Force Base in Colorado.

In November 2015, Major General Denker was named Deputy Director of the NRO. His responsibilities included assisting the Director and Principal Deputy Director in managing the strategic and tactical operations of the NRO. Also, as the Commander, Air Force Element, he managed all Air Force personnel and resources assigned to the NRO and he served as the senior adviser to the DNRO on all military matters. He served there until June 2018.

During his career, Major General Denker was awarded the Distinguished Service Medal, the Defense Superior Service Medal, the Legion of Merit with oak leaf cluster, the Defense Meritorious Service Medal with oak leaf cluster, the Meritorious Service Medal with three oak leaf clusters, the Joint Service Commendation Medal, the Air Force Commendation Medal, the Joint Service Achievement Medal, the Air Force Achievement Medal, the National Intelligence Exceptional Achievement Medal, the NRO Distinguished Service Medal, the NRO Superior Service Medal, the National Security Agency Bronze Medallion, and the National Geospatial-Intelligence Agency Medallion for Excellence.



MR. TERRY S. DUNCAN

DIRECTOR, COMMUNICATIONS
SYSTEMS DIRECTORATE (COMM)
SEPTEMBER 2011 – 17 JUNE 2017

Mr. Terry Scott Duncan was a 1992 distinguished graduate of the U.S. Air Force Academy with a Bachelor of Science in Electrical Engineering and a 1994 distinguished graduate of the George Washington University with a Master of Science in Computer Science.

Mr. Duncan began his Air Force officer career as a graduate student and intern at Goddard Space Flight Center, developing command and control systems for small satellite programs. Following completion of his graduate degree, he joined the U.S. Air Force Phillips Laboratory as a computer scientist and electrical engineer, developing high performance computing systems for beam control, tracking, and data acquisition systems at the Starfire Optical Range. As a junior officer, Mr. Duncan held team lead, program management, and lead engineer positions on space situational awareness development programs. He left active duty in 1998.

From 1998 to 2008, Mr. Duncan served as an Air Force civilian assigned to the Air Force Research Laboratory, where he was responsible for directing the Air Force's $150 million annual research portfolio of ground- and air-based optical directed energy technology development. He led development and transition programs in tactical and strategic high energy laser weapons, space situational awareness, laser communications, and ballistic missile defense. Mr. Duncan held leadership and management positions in the Optics Division, including division chief, branch chief, chief engineer, acting technical advisor, and program manager.

In 2008, Mr. Duncan was selected as a member of the Senior Executive Service and served as the Director, Systems Engineering in the Communications and Networks Programs in the Office of the Secretary of Defense (OASD/NII), focusing on ensuring end-to-end interoperability across DoD communications and networks programs. In 2009, Mr. Duncan was selected as the Director for Communications and Networks Programs in OASD/NII, where he had oversight responsibility for the nation's military communications and networks programs and activities.

In September 2011, Mr. Terry Duncan was named Director, Communications Systems Directorate at the National Reconnaissance Office. As COMM Director, Mr. Duncan was responsible for the successful execution of all communications satellite and global terrestrial network system acquisitions within the NRO. His responsibilities spanned the decision, acquisition, launch, deployment, and operations support for current and future COMM systems. Mr. Duncan was appointed the NRO's Chief Information Officer on 15 September 2014, when the roles of COMM Director and CIO were officially combined. Mr. Duncan also served as the Deputy Program Executive Officer, Space Systems, providing acquisition oversight for Navy satellite programs, including the Mobile User Objective System, UHF follow-on, and Syncom IV or Leasat.

Mr. Duncan received several awards for his service, to include the 2015 Meritorious Presidential Rank Award, the 2014 DoD's distinguished civilian service award, the 2003 Arthur S. Flemming award in Applied Science, the 2002 AFRL Commander's Cup award, and numerous Air Force, AFRL, and OASD/NII technical and performance awards. He was a recipient of the NASA Program for Research and Education in the Space Technologies Graduate Fellowship.

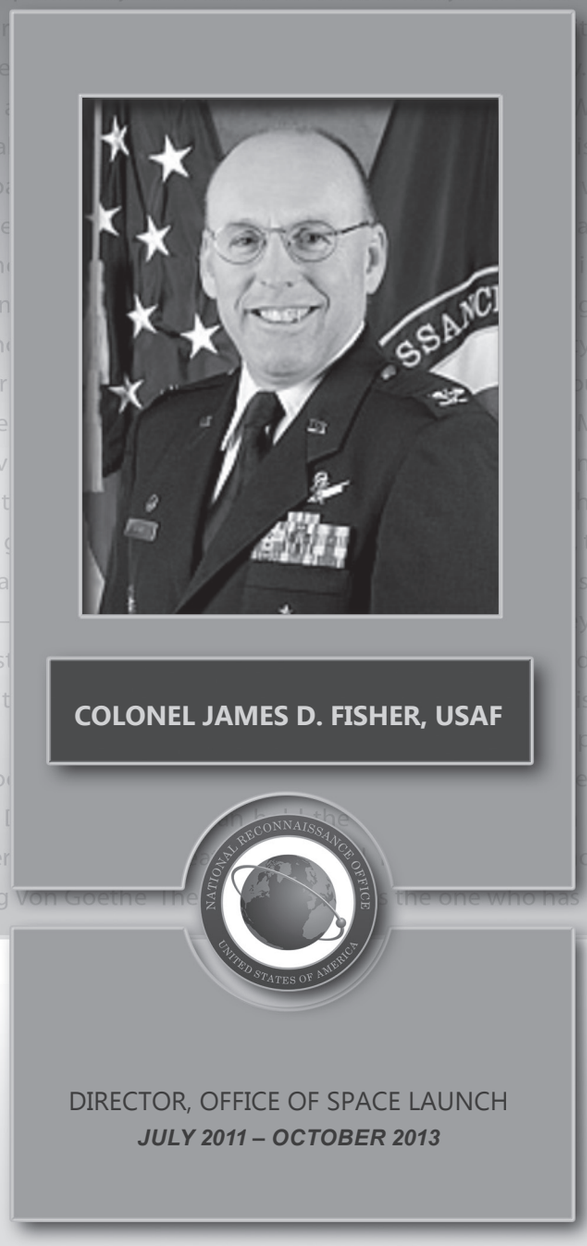
Mr. Duncan died 17 June 2017, while serving as the Director of COMM.

Dr. Susan E. Durham graduated with a Bachelor of Science degree in Physics from Georgia State University, a Master of Science degree in Nuclear Science from the Air Force Institute of Technology, and a Doctorate degree in Physics from the University of New Mexico.

Dr. Durham enlisted in the military after high school in 1977, and she worked several years as an aircraft maintenance mechanic before earning her commission under the auspices of the Air Force Enlisted Commissioning Program. She went on to serve a diverse military career which included working as an orbital analyst and as a nuclear weapons systems analyst, as well as leading research programs in hyperspectral imaging, data fusion, and multiple SPACECAP projects. She retired in 2001 from her final military assignment as lead of NRO/AS&T's Problem-Centered Research Team.

Dr. Durham joined the Central Intelligence Agency in 2001. She spent 10 years at the CIA's Directorate of Science and Technology, Intelligence Technology Innovation Center, and at the Office of the Chief Scientist. During her early years, she conducted research into agent-based modeling, nanotechnology, and deception detection. During a later tour, she served as team lead of the technical support to HUMINT team, where she led a talented group of Agency officers conducting research into a wide variety of mission areas.

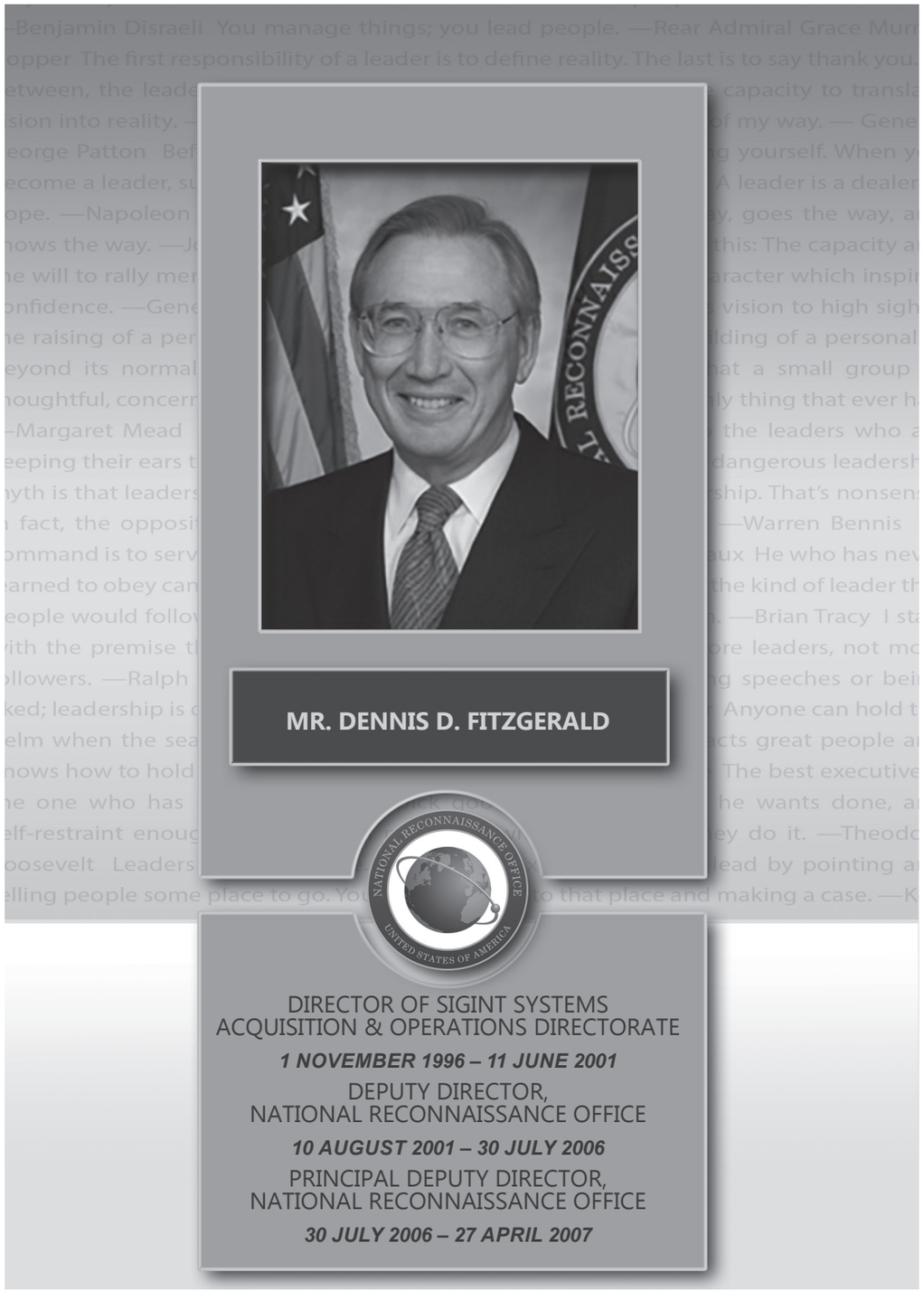
Dr. Susan Durham became the Director, Advanced Systems and Technology Directorate, National Reconnaissance Office, in November 2015 after serving as Deputy Director, AS&T for nearly four years. She served there until April 2022.



James D. Fisher was a 1986 graduate from Ohio University with a degree in electrical engineering (ROTC scholarship). He also earned a Master of Science in Management. He held positions as a Missile Launch Officer; Guidance System Engineer/ Program Manager; Technical degree Advisor to the Assistant Secretary of State for Political–Military Affairs; Air Force Space Command Lead for the Evolved Expendable Launch Vehicle Program; Commander, Ascension Air Field South Atlantic Ocean; Commander, NRO Communications Operations Launch Squadron; Chief of Safety and Environmental, NRO Office of Space Launch; and Chief Engineer, NRO Office of Space Launch. He worked in operations, requirements, acquisition, and political-military affairs while working in OSD, two major commands, the Intelligence Community, and overseas.

Col Fisher served as the System Program Manager, Intercontinental Ballistic Missile (ICBM) Systems Division. The Division was a tenant unit on Hill AFB and an Air Force Material Command unit reporting to the Air Force Nuclear Weapons Center located at Kirtland AFB in Albuquerque, New Mexico. The organization was responsible for inception-to-retirement integrated weapons system management of the Minuteman and Peacekeeper ICBM weapon systems. They developed, acquired, and supported silo-based ICBMs, while providing program direction and logistics support as the single face to the customer. They were also responsible for acquisition, systems engineering and depot repair; managed equipment spares, provided storage and transportation; and accomplished modifications and equipment replacement to maintain silo-based ICBM systems.

Colonel Fisher was named Director for the Office of Space Launch in July 2011. The OSL provides direction, guidance and supervision over all matters pertaining to Director of National Intelligence space launch activities and executes Mission Director authorities for NRO launches as specifically delegated by the Director, NRO. He served there until October 2013.



Born in New Haven, Connecticut, Dennis David Fitzgerald received his Bachelor of Science degree in physics from Fairfield University in Fairfield, Connecticut in June 1964. Between 1968 and 1980, he earned four Master of Science degrees—in applied physics, mathematics, electrical engineering, and space technology—from Johns Hopkins University in Baltimore, Maryland.

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

In January 1974, Fitzgerald joined the CIA's Directorate of Science and Technology. During most of his government career he served with the DS&T's Office of Development and Engineering at the NRO. At the NRO, he held leadership positions in the predecessor programs of the current Imagery Intelligence, Signals Intelligence, and Advanced Systems and Technology Directorates. In the Office of Development and Engineering's Systems Analysis Group between 1974 and 1980, he worked on advanced technologies and new concepts for overhead intelligence collection.

In 1980, he became involved with collection systems procurement as deputy director of the Technology Application Group. In 1982, he served as the deputy director for systems collection with responsibility for imagery vehicle procurement.

He served two tours of duty outside of the Office of Development and Engineering: first as associate director of the National Photographic Interpretation Center, where he supervised transition of the improved NPIC data system from development through operation, and second as deputy director of the CIA's Office of Research and Development. In October 1994, Jeffrey K. Harris, director of the NRO, appointed Fitzgerald to lead the newly established Office of Systems Applications. There Fitzgerald coordinated international and commercial affairs and efforts to develop smaller satellites than those currently in use.

On 1 November 1996, he became director of the SIGINT Systems Acquisition and Operations Directorate at the NRO. He also served concurrently as director of the CIA Office of Development and Engineering, an appointment made in October 1995. On 11 June 2001, Fitzgerald returned to CIA headquarters as associate deputy director of DS&T. On 10 August 2001, he returned to the NRO as deputy director. After an Air Force/NRO statement of intent made the deputy director a two-star Air Force position on 30 July 2006, Fitzgerald became NRO's first principal deputy director of national reconnaissance, where he served until 27 April 2007.

Fitzgerald's awards include the Senior Intelligence Service Distinguished Officer Award, the Senior Intelligence Service Meritorious Officer Award, the Central Intelligence Agency Medal of Merit, the Central Intelligence Agency Intelligence Commendation Award, and the National Reconnaissance Office Gold Medal. In addition to his interest in horse racing, Fitzgerald was an avid runner and completed 10 marathons. He held certificates as a professional engineer (in New York and Virginia) and was a licensed master electrician (Virginia). He died on 31 December 2008.

MR. BENJAMIN L. GIMENO

DIRECTOR,
BUSINESS PLANS AND OPERATIONS
MAY 2007 – JULY 2011

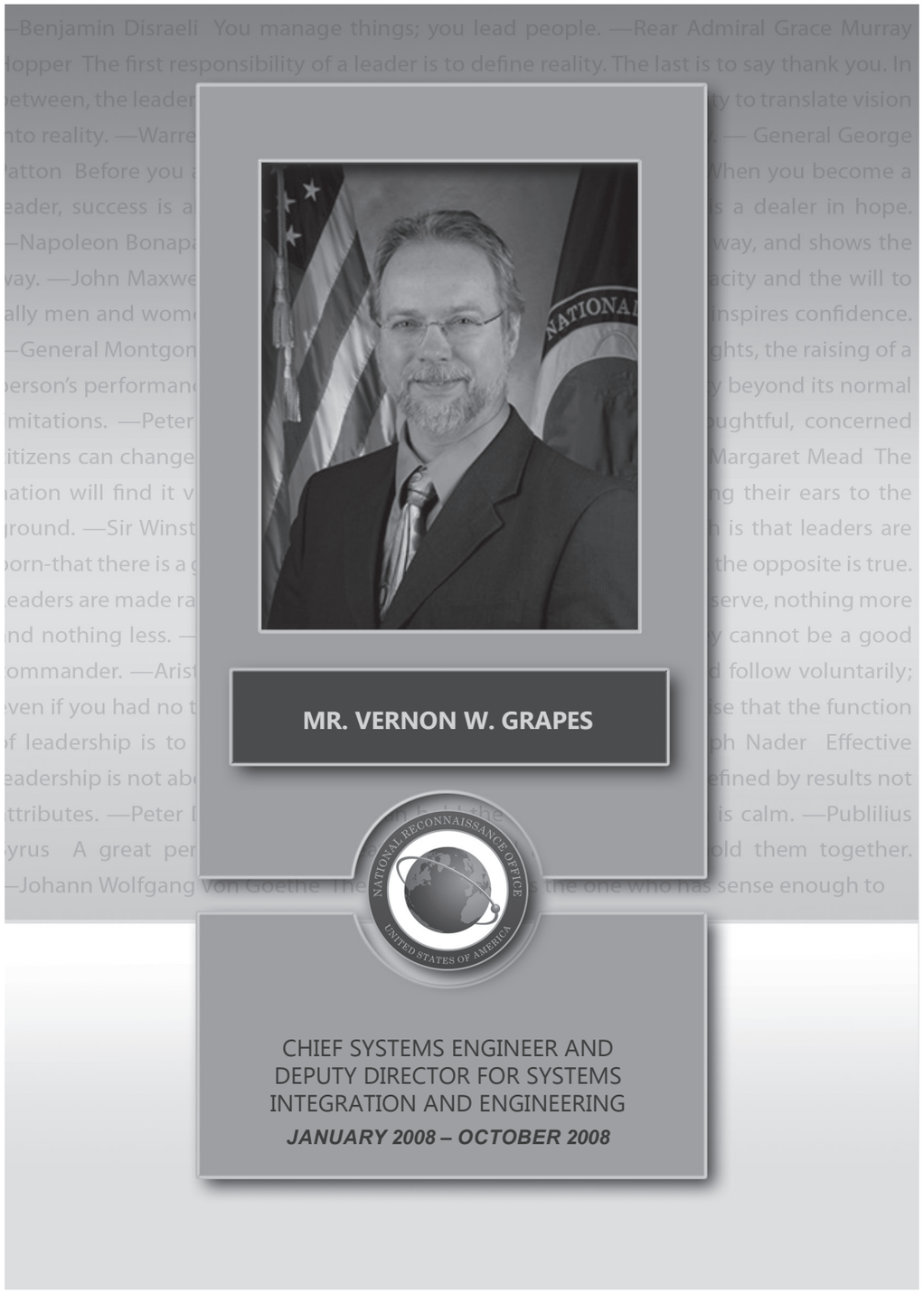
Mr. Benjamin L. Gimeno graduated from the University of Colorado with a bachelor's degree in physics. He began his intelligence career in 1977 when he joined the Central Intelligence Agency. He first served as an intelligence analyst assigned to the Office of Imagery Analysis in the CIA's Directorate of Intelligence responsible for imagery-based reporting on foreign nuclear weapons programs, nonproliferation issues in general, industrial analysis, and analysis of advanced weapons systems.

From 1996 to 2001, Mr. Gimeno was assigned to the NRO's AS&T Directorate where his duties included coordinating R&D for space applications across industry, U.S. government laboratories, and academia; and cultivating new sources of innovation and helping them to connect with the right organizations within the NRO. He also facilitated the transition of NRO's R&D efforts to other Intelligence Community members.

From 2001 to 2003, Mr. Gimeno was the Legislative Liaison officer for the NRO's Technology Enterprise, keeping Congress informed of NRO's research and development program. From 2003 to 2006, Mr. Gimeno was the Director of Legislative Liaison and was responsible for all communications and interactions with Congress, including preparing testimony for the Director of NRO, defending the NRO budget before the Congressional oversight committees, and traveling with members of Congress and their staff to NRO sites and contractor facilities to facilitate understanding the scope of NRO programs.

From 2006 to 2007, Mr. Gimeno served as the Director of the Office of Strategic Communications, a new office that consolidated the functions of Legislative Liaison, the Office of Corporate Communications, and International Liaison to better coordinate the flow of information outside the NRO and to the NRO workforce.

Mr. Benjamin L. Gimeno was assigned to the position of Deputy Director, National Reconnaissance Office, Business Plans and Operations in May 2007. In that role, he was responsible for all financial and contracting activities related to NRO programs and operations, disciplined Congressional liaison, and providing a cohesive resource perspective to NRO leadership. He served there until July 2011.



Vernon W. Grapes served as an enlisted member of the U.S. Marine Corps from 1976 to 1978. He earned his Bachelor of Science in Electrical Engineering from John's Hopkins University in 1986 and his Master of Science in Engineering Management in 2000.

Before his federal service, Mr. Grapes worked for several years in private industry in quality control, electronic repair and calibration, and electronic systems design.

Mr. Grapes began his career in the CIA serving in the Office of Technical Collection (OTC) within the Directorate of Science and Technology. He served in various positions of increasing responsibility in operations, engineering, and acquisition. He led and directed budget formulation and execution, systems engineering, and targeting analysis, while prosecuting some the highest priority targets identified by the Intelligence Community.

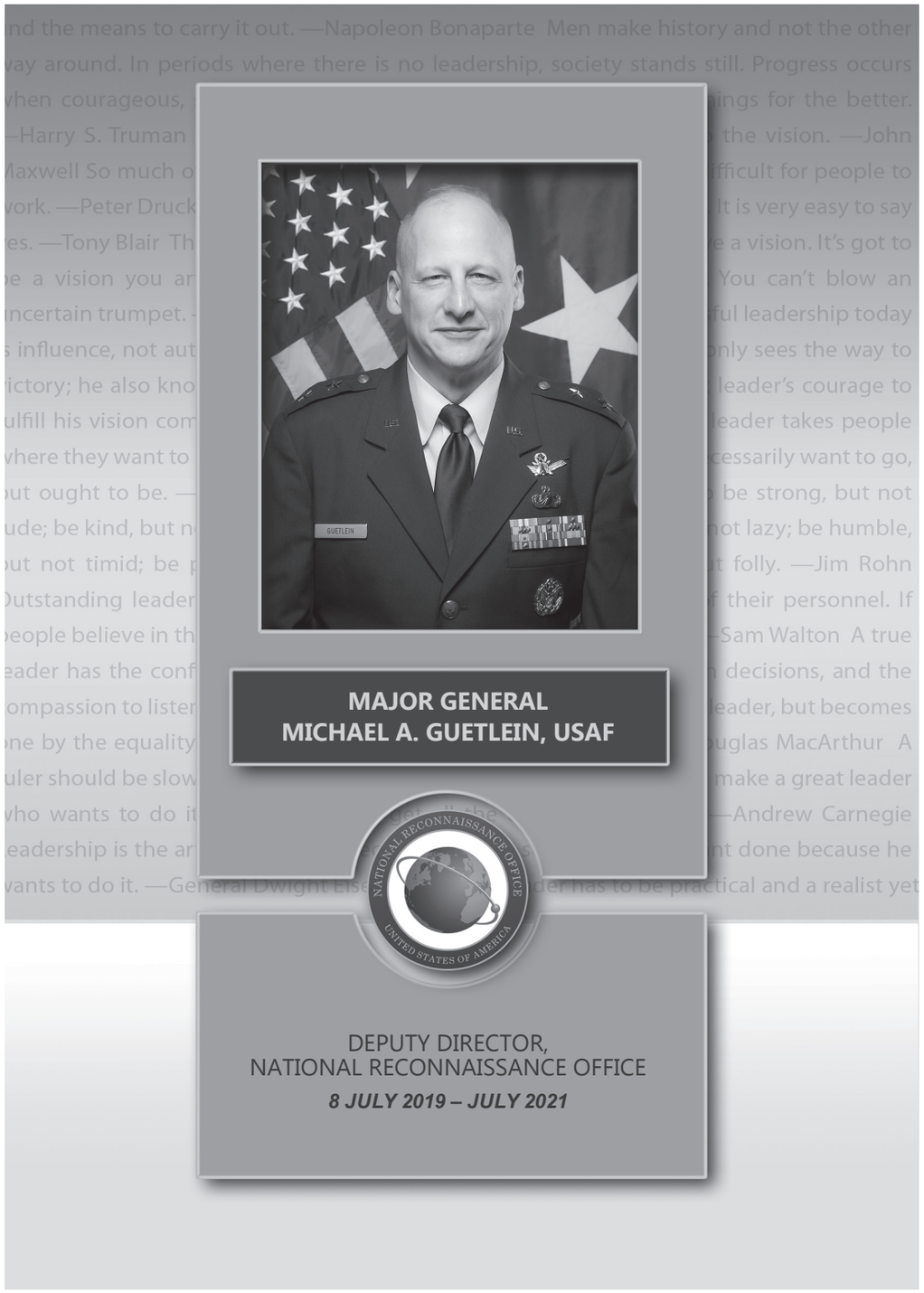
Mr. Grapes has also held civilian positions with the Air Force/Electronic Systems Command, Hanscomb AFB, with responsibilities in systems engineering, project management, and O&M. He served two tours at the Joint Defense Facility Pine Gap in Alice Springs, Australia, where he was responsible for various assignments including the Chief of Engineering.

Mr. Grapes held the positions of both Director of Systems Engineering and Deputy Director of the Ground Systems Office within the Signals Intelligence Systems Acquisition and Operations Directorate at the NRO. This office is responsible for engaging in a constructive partnership with the National Security Agency to define and acquire the capabilities needed to conduct mission management of overhead SIGINT, process the intercepted signal data, and provide the information services essential for U.S. national security.

In 2005, Mr. Grapes served as the Director of the Systems Engineering and Technology Office within the Signals Intelligence Systems Acquisition and Operations Directorate at the NRO. In this capacity, he provided the architectural systems engineering and integration to define and verify the implementation of the end-to-end overhead SIGINT program. He also managed the development of leading-edge technologies to continuously improve the NRO's ability to exploit new and emerging SIGINT targets. Finally, he worked closely with the National Security Agency to identify and satisfy evolving user needs while ensuring systems interoperability with other intelligence providers.

In October 2006, when DNRO Kerr reorganized Systems Engineering and created a new Directorate of Systems Integration and Engineering, Mr. Grapes was named the NRO's Chief Systems Engineer as well as the new Systems Integration and Engineering Directorate's Deputy Director.

In January 2008, Mr. Grapes was named the NRO's Chief Systems Engineer and Deputy Director for Systems Integration and Engineering at the NRO. He was responsible for developing and managing an integrated NRO architecture, leading cross-program studies, analyses, and requirements allocation; and providing the technical underpinnings for major NRO decisions. He supported the Director by ensuring that the activities of the CSE and NRO engineering policy were seamlessly integrated with corporate acquisition management, while effectively achieving the strategic objectives of the NRO. He remained there until October 2008.



Michael A. “Mike” Guetlein graduated from Oklahoma State University with a bachelor of science degree in mechanical aerospace engineering and was commissioned in 1991 through ROTC. He also earned master’s degrees from Wright-State University in Business Administration in 1995, George Washington University in Organizational Management in 1999, and the Naval War College in National Security and Policy Making in 2005.

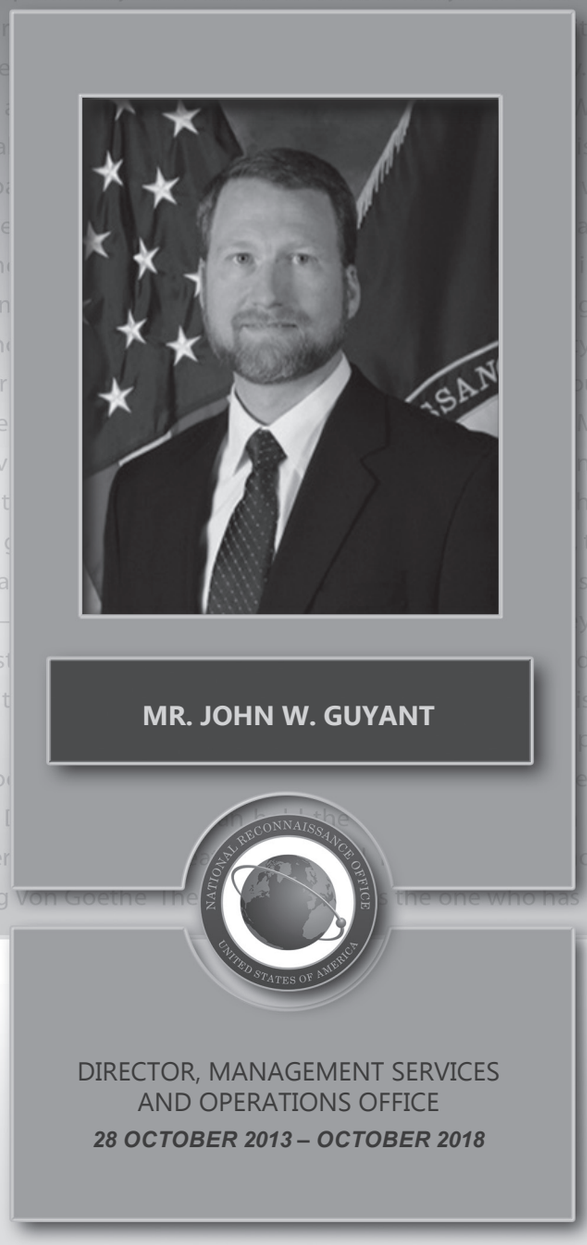
General Guetlein served various assignments in aircraft development, space systems acquisition, and aircraft maintenance to include assignments at Headquarters Air Force and at Air Force Special Operations Command, with two deployments in support of operations Allied Force in Kosovo and Joint Endeavor in Bosnia. His experience included the AC-130 gunship, B-2 stealth bomber, next-generation aerial refueling tanker, space-based missile detection systems, and counterspace systems.

In June 2008, Lieutenant Colonel Guetlein was named Commander of the Rapid Reaction Squadron, Peterson Air Force Base. He then served as a Secretary of Defense Corporate Fellow, Space Exploration Enterprises, before he was named Senior Materiel Leader, Space Based Infrared System Production Division, Los Angeles AFB. In September 2014, Colonel Guetlein was named Program Director of the Remote Sensing Systems Directorate, also at Los Angeles AFB.

In April 2017, Brigadier General Guetlein became the Program Executive for Programs and Integration for the Missile Defense Agency. Programs in his portfolio included Ground-based Midcourse Defense, Targets and Countermeasures, Terminal High Altitude Area Defense System, and Foreign Military Sales programs with Israel, Saudi Arabia, and the United Arab Emirates, as well as several classified programs. His portfolio included more than 2,000 civilian, military, and contractor personnel at locations worldwide.

Brigadier General Guetlein was named the Deputy Director of the NRO in July 2019; he was promoted to Major General in September 2019. His responsibilities included assisting the Director in managing the strategic and tactical operations of the NRO. Additionally, as the Commander, Space Force Command Element, he managed all military personnel and resources assigned to the NRO and served as the senior advisor to the DNRO on all military matters. He served there until July 2021.

Throughout his career, General Guetlein earned the Defense Distinguished Service Medal, the Distinguished Service Medal, the Defense Superior Service Medal, the Legion of Merit with oak leaf cluster, the Meritorious Service Medal with silver oak leaf cluster, the Air and Space Commendation Medal with three oak leaf clusters, and the Air and Space Achievement Medal with oak leaf cluster.



MR. JOHN W. GUYANT

DIRECTOR, MANAGEMENT SERVICES
AND OPERATIONS OFFICE

28 OCTOBER 2013 – OCTOBER 2018

John W. Guyant began his career in 1987 as a cooperative education student employee while majoring in business management and human resources at Indiana University. Following three student employee assignments with the CIA, Mr. Guyant graduated cum laude from Indiana University in December 1989 and began full-time employment with the CIA as a contracting officer.

Mr. Guyant served in numerous contracting officer, staff officer, and program management assignments across the CIA's directorates and as Chief of Support for an Office of Communications Regional Center. He served in multiple NRO assignments, including the Office of Plans and Analysis Contracts Team, the Acquisition Center of Excellence, and as the Director, IMINT Contracts, from April 2005 through April 2007. Upon completion of the latter tour, Mr. Guyant was awarded the NRO's Medal of Distinguished Service. He then moved to the CIA's Recruitment Center as Deputy Director. Following that assignment, Mr. Guyant served as the CIA Chief Learning Officer, heading up CIA University.

Mr. Guyant was named Director, Management Services and Operations Directorate at the NRO on 28 October 2013. He oversaw critical support activities to include worldwide medical, facilities management, logistics, and transportation services. He served there until October 2018.

Mr. Guyant led multiple business change initiatives after graduating from the CIA's inaugural "Black Belt" Six Sigma process improvement training. He also attended senior leadership training at both the Kellogg School of Business and at the John F. Kennedy School of Government.

MR. MICHAEL M. "MIKE" HALE

DIRECTOR,
GROUND ENTERPRISE DIRECTORATE
3 JANUARY 2013 – DECEMBER 2016

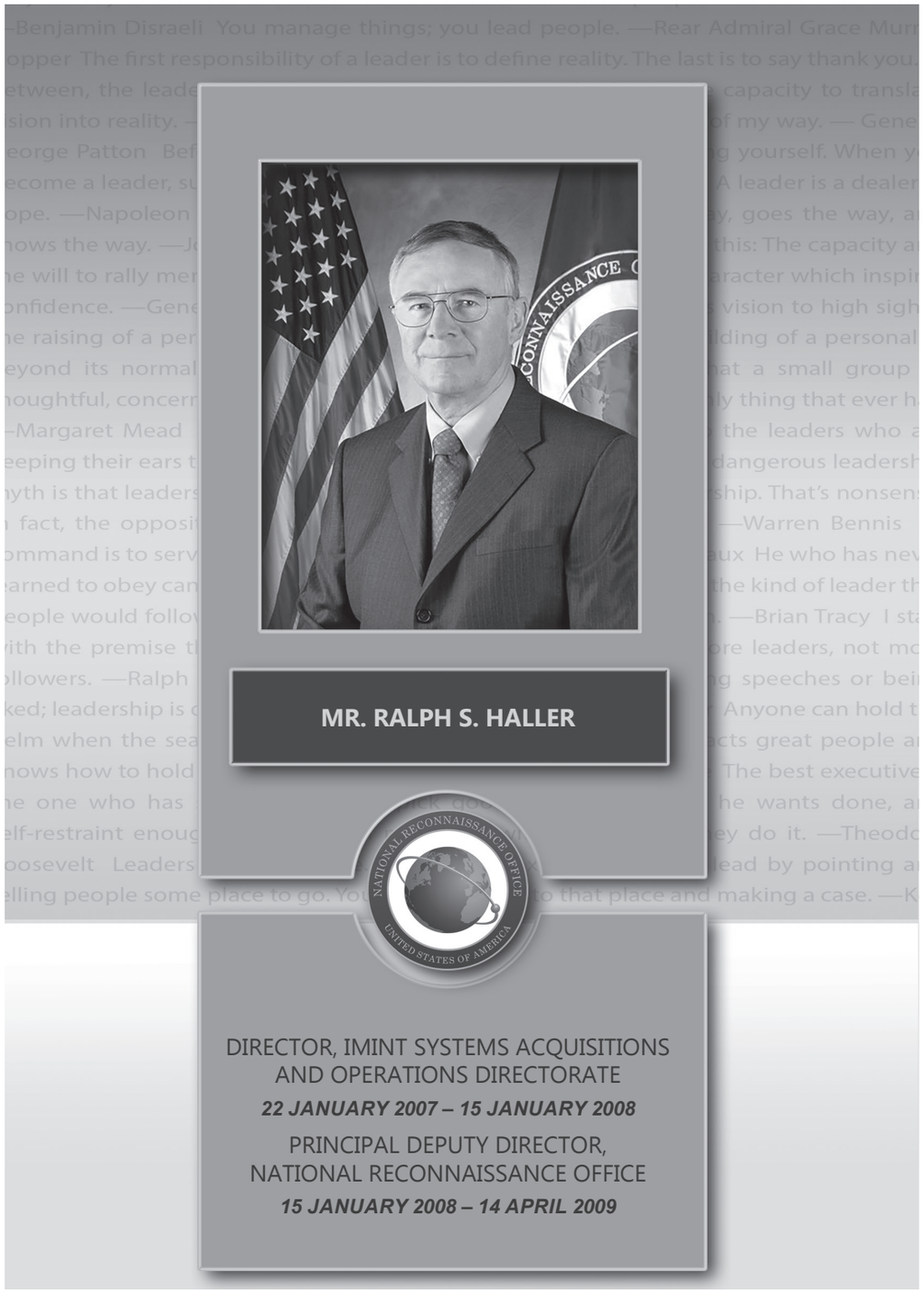
Michael M. "Mike" Hale graduated with his Bachelor's degree from the U.S. Air Force Academy in Colorado Springs. He earned his Master's degree in contract management from the Air Force Institute of Technology in 1990.

Mr. Hale served in acquisition roles for space, aircraft, missile, command and control, communications, intelligence, information technology, surveillance, and reconnaissance systems. He commanded a contracting squadron, served in the Office of the Assistant Secretary of the Air Force for Acquisition, and served in a Defense agency.

From July 1993 to July 1997, Mr. Hale served in a variety of contracting and acquisition positions at the NRO. He then served as the Commander of the 49th Contracting Squadron at Holloman AFB. Mr. Hale returned to the NRO in August 2002 to serve as the Director of Contract Policy. In December 2003, he was named Director of Contracts for the IMINT Directorate. The following year, in May 2004, Mr. Hale was named the NRO's Deputy Director of Contracts.

Mr. Hale retired from active duty in 2006 and was appointed to the Defense Intelligence Senior Executive Service (DISES) in February 2007. In August 2008, he was named Deputy Director for the Signals Intelligence Systems Acquisition Directorate. In April 2012, he was named Program Director, Activity-Based Intelligence System Program Office.

In January 2013, Mr. Hale was named the Director of the Ground Enterprise Directorate, Chief Data Officer, Component Acquisition Executive, and Department of Defense Cadre Executive Director at the NRO. As GED Director, he led a multi-faceted and multi-agency team of acquisition and intelligence professionals to plan, synchronize, strategize, and collaborate to deliver multiple major system acquisitions connecting space systems to space operators, mission partners, and end-users necessary to fulfill the requirements of the Intelligence Community, the DoD, and allied partners. He served there until December 2016.



Ralph S. Haller began his career in 1968 with a commission in the U.S. Air Force, after earning a bachelor's degree in photographic science from the Rochester Institute of Technology. As his initial assignment, he attended the University of Arizona, receiving a master's degree in optical science. Subsequent assignments included Patrick Air Force Base, supporting Defense Advanced Research Projects Agency (DARPA) programs, and Wright-Patterson Air Force Base, analyzing Measurement and Signature Intelligence (MASINT) data.

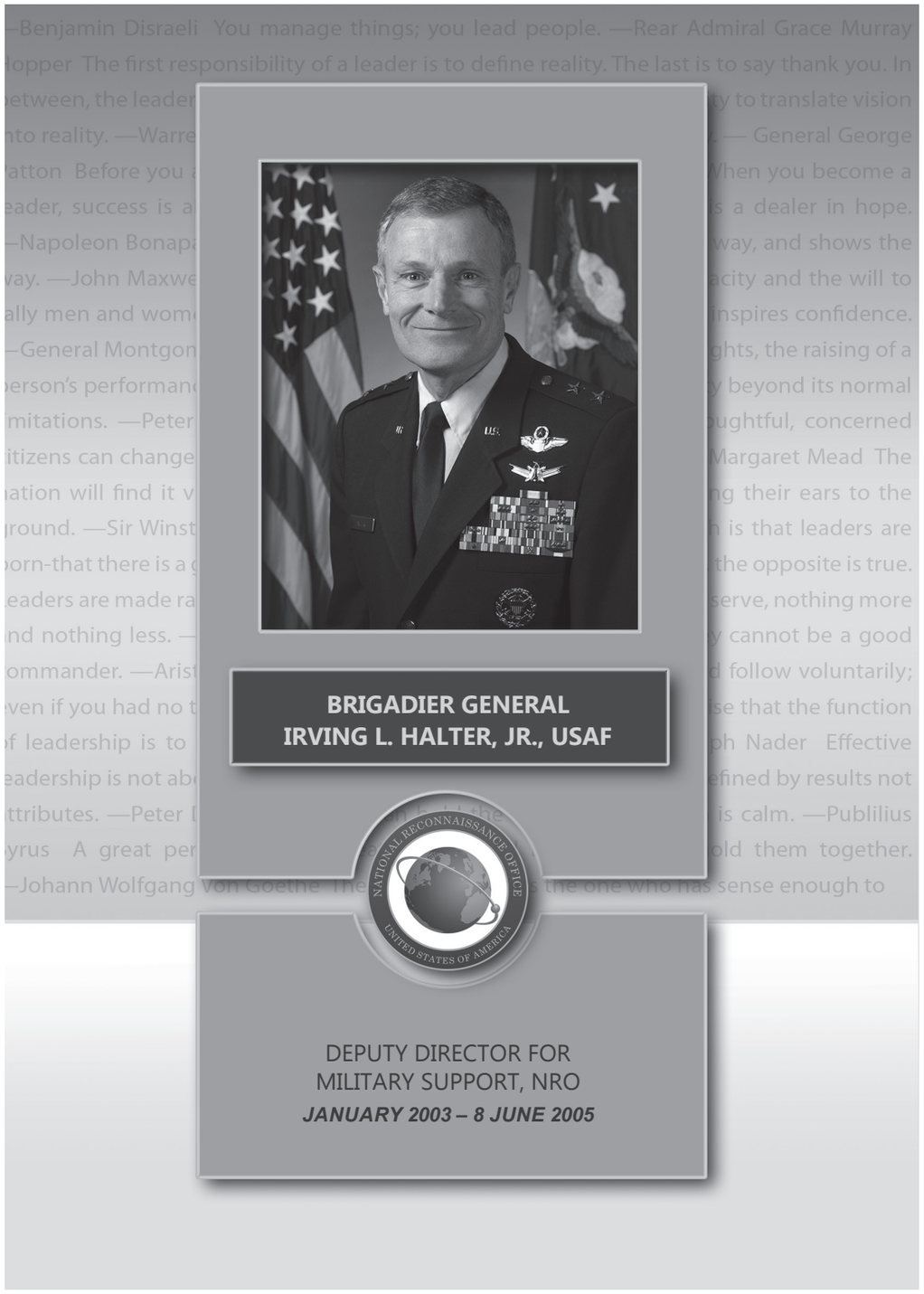
He joined the CIA's OD&E in 1975, where for the next 10 years, he developed components for large, space-based, collection systems. In 1985, he left the CIA to manage subcontracts for Lockheed Missiles and Space Corporation on a project to create a major state-of-the-art sensor system. He rejoined the CIA two years later to head the Data Management and Processing Division of a major intelligence program. That same year he became the Chief of that program's Systems Analysis Staff, performing full-range internal systems engineering services. In 1989, he led the Imagery Systems Directorate in the NRO's Office of Plans and Analysis, which performed systems engineering activities across the NRO's imagery intelligence programs. In 1991, he returned to direct the Systems Analysis Staff. The 1992 integration of NRO Programs A, B, and C, re-designated his position as Director, Systems Engineering for the Imagery Systems and Operations (IMINT) Directorate.

Mr. Haller left the NRO in 1993 to direct an operations group in the CIA's Office of Technical Collection, retiring in 1994. Moving to industry, he became the Director of Technology for Orbital Science Corporation's OrbView program. He then became Director of Technology Operations for Lockheed Martin Special Programs, which helped integrate all of Lockheed-Martin's space-based imagery intelligence activities. In 1997, Mr. Haller became an independent consultant supporting several government and industry imagery programs. In 2000, he returned to Lockheed Martin Special Programs, as Vice President for signals intelligence programs. Mr. Haller returned to private consulting in 2001. While consulting, he participated in several high-profile technical Independent Review Teams and was instrumental in the NRO's hyperspectral research.

Mr. Haller became Director of the NRO's IMINT Directorate on 22 January 2007, where he supervised the development of new imaging and MASINT collections systems.

Mr. Haller became the NRO's third Principal Deputy Director on 15 January 2008. The Director of National Intelligence appointed him to that position with the concurrence of the Deputy Secretary of Defense. As the NRO's Principal Deputy Director, he also served as the Deputy Assistant to the Secretary of the Air Force (Intelligence Space Technology). He served in that role until 14 April 2009.

Mr. Haller's awards include the Intelligence Commendation Medal, the SIS Meritorious Officer Award, and the Intelligence Medal of Merit.



Irving Leslie Halter, Jr., a native of southern New Jersey studied history at the U.S. Air Force Academy and was commissioned upon graduation in 1977. In 1990, he earned his master of science degree in international relations from Troy State University.

Over the course of his career, he served in eight fighter units, including tours in the Pacific, Europe, and the United States. He commanded an operational fighter squadron, an operations group, a fighter wing, a composite wing and a numbered air force.

From July 1990 to December 1991, during Desert Storm, Major Halter served as the Director of Operations, 8th Air Support Operations Group, and Fighter Liaison Officer, Headquarters VII Cops at the Kelly Barracks in Stuttgart, Germany as well as the VII Corps Forward in Saudi Arabia. During that period, he also served as an F-15C Detachment Commander during Operation Provide Comfort, flying combat missions over Northern Iraq.

From January 1992 to December 1993, Major then Lieutenant Colonel Halter served as an assistant operations officer and, later, operations officer for the 22nd Fighter Squadron, Bitburg Air Base, Germany. From January 1994 to June 1995, he served as Commander of the 493rd Fighter Squadron, RAF Lakenheath, England. After serving as a National Defense Fellow with the Secretary of Defense Strategic Studies Group, in June 1996, Lieutenant Colonel Halter was named Commander of the 1st Operations Group at Langley Air Force Base in Virginia.

From July 1998 to August 1999, Colonel Halter served as Chief of the Air Superiority Division and Combat Forces Division, Directorate of Programs, Office of the Deputy Chief of Staff for Plans and Programs at the Air Force's headquarters in Washington, DC. In August 1999, he returned to RAF Lakenheath in England, this time serving as Commander of the 28th Fighter Wing. From March 2001 to January 2003, Colonel then Brigadier General Halter served as Commander of the 266th Wing out of Mountain Home Air Force Base in Idaho.

Brigadier General Halter was named Deputy Director for Military Support, NRO in January 2003. He concurrently served as Deputy Director for National Systems Operations, J3, the Joint Staff, until June 2005.

Major General Halter is a command pilot with more than 3,200 flying hours, including 180 combat hours and more than 2,200 in the F-15. His awards include the Distinguished Service Medal, the Defense Superior Service Medal with oak leaf cluster, the Legion of Merit with two oak leaf clusters, the Bronze Star Medal with oak leaf cluster, the Meritorious Service Medal with three oak leaf clusters, the Air Medal with oak leaf cluster, the Air Force Commendation Medal with two oak leaf clusters, and the Air Force Achievement Medal. His other notable achievements include the National Intelligence Medal of Achievement, the National Reconnaissance Office Medal of Distinguished Performance (Gold Medal), and the National Geospatial-Intelligence Agency Medallion for Excellence.

Tina Harrington grew up in Southern California and Colorado. She began her career as a technical staff member undergraduate with The Aerospace Corporation. She supported multiple programs in this role, including Inertial Upper Stage (IUS) and MILSTAR. She received a Bachelor of Science degree in mathematics from California State University, Northridge, in 1991.

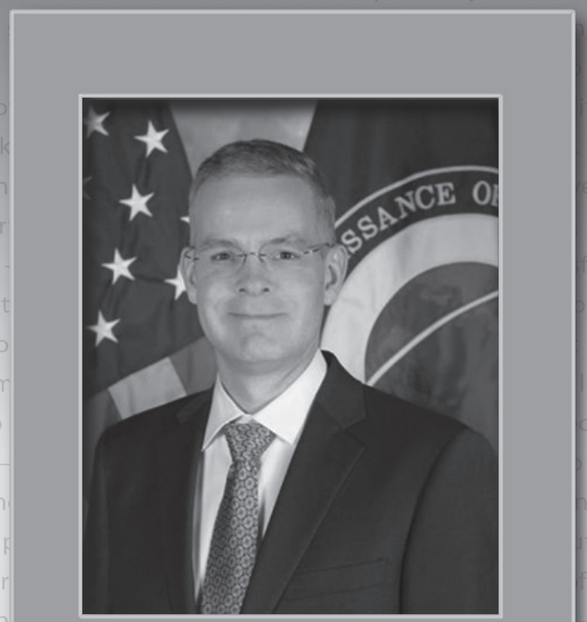
Upon graduation from college, Ms. Harrington became a full-time Member of the Technical Staff (MTS) for The Aerospace Corporation. Her initial assignments as an MTS included support to GPS and RADCAL, an experimental satellite. She also supported several NRO programs including support to multiple architecture studies that determined the SIGINT path. In 1995, she transitioned to full time support to the NRO where she served in a system engineering role on the development of the next generation of SIGINT systems. She also served as a mission thread lead, coordinating and executing all aspects of the initialization and checkout of a new satellite. In 2002, Ms. Harrington transitioned to become a system director with the Aerospace Corporation, continuing to support the NRO.

Ms. Harrington joined the CIA in May 2006 and was assigned to the Directorate of Science and Technology (DS&T/OD&E), with duty in the NRO Low Earth Orbit System Program Office (LSPO), SIGINT Directorate. Upon entry, she served as Deputy Director, Systems Engineering LSPO. In 2007, as part of the NRO larger transformation, Ms. Harrington stood up and directed the new LSPO Missions Department. This role included responsibility for all payload hardware, mission analysis, payload software development, and mission engineering in support of future and ongoing initiatives. In 2009, Ms. Harrington became the Deputy Director of the LSPO, where her responsibilities included program management of the acquisition and development of a state-of-the-art satellite collection system to include the technical, operations, budget, and schedule. As the lead civilian within the organization, she was responsible for the leadership and management of the government staff comprised of approximately 80 multi-agency, multi-service personnel including CIA, Air Force, Navy, DoD and a support team of System Engineering and Technical Assistance (SETA) and Federally Funded Research and Development Centers (FFRDC) personnel.

In 2010, Ms. Harrington joined the Air Force as a civilian to take the role of the Chief Scientist, SIGINT Directorate at the NRO where her responsibilities included leading Intelligence Community and Department of Defense studies on satellite based signals intelligence architectures for 2020 and beyond.

In June 2012, Ms. Harrington was named Director of the Systems Engineering Directorate. There she led the requirements, interfaces, and schedule development for the NRO future architecture to ensure that the new integrated system would accomplish mission needs. She served there until December 2013.

In December 2013, Ms. Harrington, as a member of the Defense Intelligence Senior Executive Service, was named Director of the Signals Intelligence Systems Acquisition Directorate. As SIGINT Director, she led a joint team responsible for the design, development, and acquisition of United States Signals Intelligence Space Systems for the Intelligence Community, military services, and allied partners.



MR. JOHN M. HOOD

DIRECTOR, COMMUNICATIONS
SYSTEMS DIRECTORATE (COMM)
13 NOVEMBER 2017 – PRESENT

Mr. John Hood graduated from the University of Florida in Gainesville, Florida in 1989. Commissioned as an Ensign upon graduation through the University's NROTC program, he earned his Wings of Gold in 1991 after completing Naval Flight Officer (NFO) training in Pensacola, Florida.

After completing training as an ES-3A "Shadow" pilot in 1992, he was ordered to the "Black Ravens" of Fleet Air Reconnaissance Squadron Six (VQ-6) and held positions as the Electronic Warfare Officer, Avionics Division Officer, and Schedules Officer. While at VQ-6, he deployed aboard the USS Saratoga (CV-60) as part of the Navy's first operational ES-3A Detachment. While deployed, he participated in operations in the Mediterranean, Adriatic Sea, and over the former Yugoslavia.

Following his tour with VQ-6, Mr. Hood was selected to attend the Naval Postgraduate School at Monterey, California. After earning his Master of Science in Systems Technology (Space Systems Operations) in 1996, he was assigned to the staff of Carrier Air Wing Three (CVW-3) as the Assistant Strike Operations Officer at Naval Air Station Oceana, Virginia. He deployed aboard the USS Theodore Roosevelt (CVN-71) and USS Enterprise (CVN-65) in the Mediterranean and Persian Gulf, and he participated in combat operations over the former Yugoslavia and Iraq, flying in the EA-6B Prowler with the "Zappers" of Electronic Attack Squadron One Three Zero (VAQ-130) and with VQ-6 in the Navy's very last operational ES-3A detachment before this aircraft was withdrawn from service in 1999.

Upon completion of his tour with CVW-3 in 1999, Mr. Hood was ordered to the Space and Naval Warfare Systems Command Space Field Activity with duty at the National Reconnaissance Office. During this tour, he was assigned to a satellite program office where he supported systems engineering, integration, and test efforts for an imagery spacecraft system. While at the NRO, he was selected as an Aerospace Engineering Duty Officer. Following his NRO tour, Mr. Hood was assigned to the National Security Space Office (NSSO) in 2002, where he led multiple studies to define future Department of Defense and Intelligence Community space architectures and requirements.

After NSSO, Mr. Hood was ordered to the Naval Air Systems Command, Patuxent River, Maryland, in 2005 as the Chief Systems Engineer for the Precision Targeting Workstation and Distributed Common Ground System-Navy programs. Mr. Hood returned to the NRO in 2007, where he served as the Deputy Chief Systems Engineer of the NRO's communications relay satellite program within Communications Systems Directorate's Space Systems Group (SSG). In June 2008, he was selected to attend the Industrial College of the Armed Forces at National Defense University, Washington, D.C. He graduated with distinction in 2009, earning a Master of Science in National Resource Strategy. Immediately following graduation, Mr. Hood returned once again to the NRO as the Deputy Director of SSG. In December 2012, he was selected to be a Major Program Manager as the Director of SSG. Mr. Hood retired from the Navy in May 2017 after 28 years of Active Duty service.

Mr. John Hood was selected as Director of the Communications Systems Directorate and Chief Information Officer for the National Reconnaissance on 13 November 2017.

BRIGADIER GENERAL
JEFFREY C. HORNE, USA

DEPUTY DIRECTOR FOR MISSION SUPPORT
6 APRIL 2007 – JULY 2009

Jeffrey C. Horne earned a bachelor of science degree in business administration from The Ohio State University in 1980, a master of science degree in information systems management from the U.S. Naval Postgraduate School in 1991, and a master of science degree in security and strategic studies from the U.S. Army War College in 2000.

Horne entered the Army through the ROTC program at OSU. His 29-year career spanned numerous assignments in information systems management and analysis, operations, communications, training and doctrine management, and support coordination. He served as an analyst at the National Security Agency, an action officer for the Joint Staff, Director Communications and Information Systems Engineering Branch, Supreme Atlantic Allied Command, and the Training and Doctrine Command System Manager, National Missile Defense Program, U.S. Army Space and Missile Defense Command.

From June 2000 to June 2004, Colonel Horne worked on the National Missile Defense Program as training and doctrine command systems manager, U.S. Army Space and Missile Defense Command. From July 2004 to January 2006, he served as Deputy Commanding General for Operations, U.S. Army Space and Missile Defense Command/U.S. Army Forces Strategic Command out of Peterson Air Force Base. In August 2005, he was promoted to Brigadier General. From January 2006 to December 2007, Brigadier General Horne served in Iraq under Operation Iraqi Freedom as the Joint Fires and Effects Coordinator for the Multi-national Corps-Iraq, V Corps.

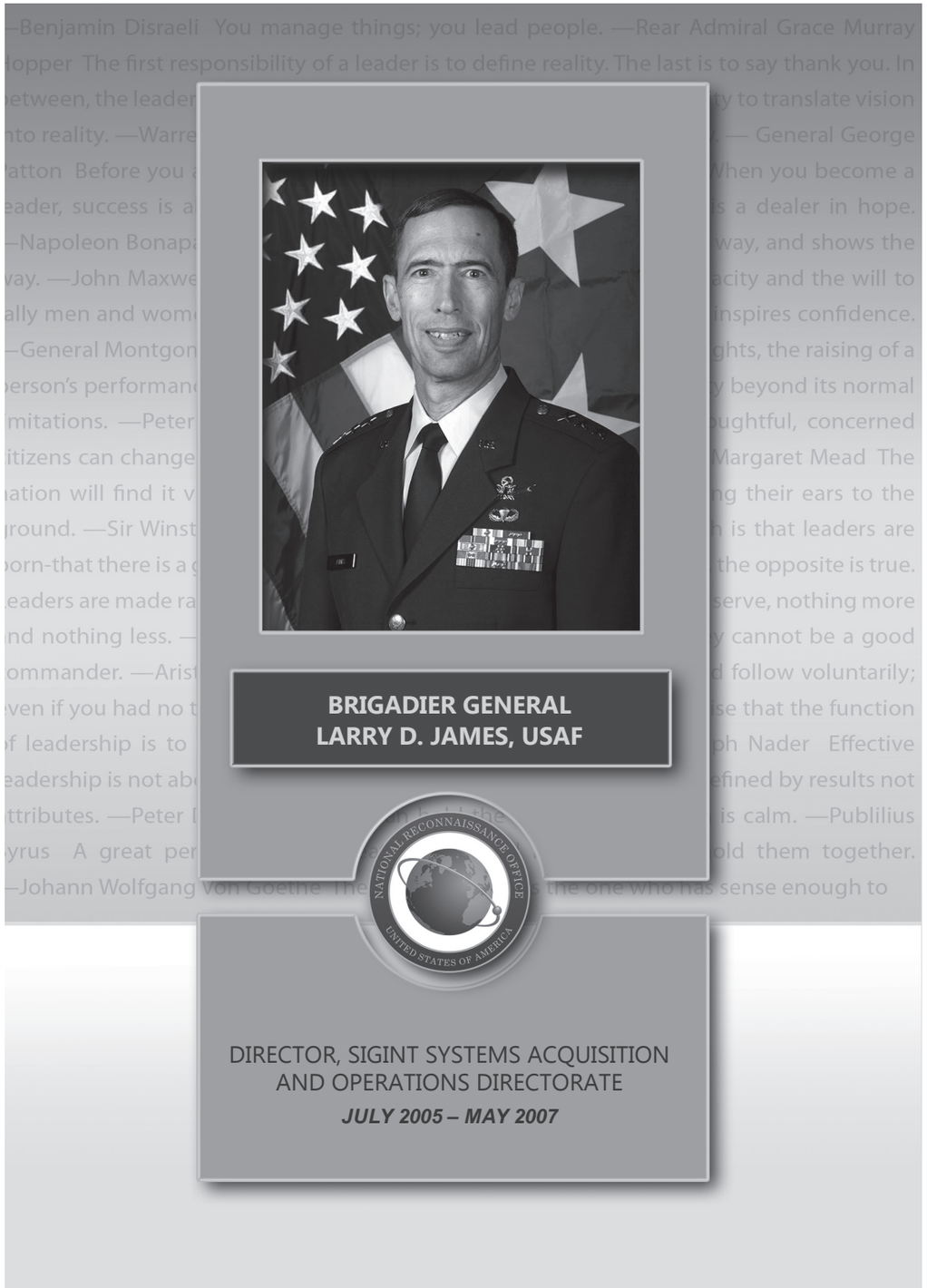
In April 2007, Brigadier General Jeffrey C. Horne was named the Deputy Director for Mission Support (DDMS) at the National Reconnaissance Office and Deputy Commander, Joint Functional Component Command for Space, U.S. Strategic Command. As DDMS, Brigadier General Horne was responsible for engaging users to understand specific operational and intelligence problems and coordinate the delivery of NRO-wide rapid-response solutions in collaboration with mission partners. He also managed the NRO Operations Center and, in collaboration with U.S. Strategic Command, provided space situational awareness and supported defense space control and space protection. He served in that capacity until July 2009.

Clint H. Hunt was born in Madison, Tennessee, and entered the Air Force as a graduate of the University of Tennessee ROTC program, where he earned a bachelor's degree in political science. He later earned master's degrees in human resource management from Lesley University and logistics management from the Air Force Institute of Technology.

His career spanned a wide variety of space, acquisition, and missile assignments, including the Evolved Expendable Launch Vehicle Program Element Monitor on the Air Staff, Commander of the 1st Air and Space Test Squadron at Vandenberg Air Force Base, and Chief of Space Professional Management for Space Command.

From October 2010 to August 2012, Col Hunt served as the Chief of the Space Control and Advanced Technologies Division, Directorate of Space Programs on the Air Staff. There he served as an executive-level mission area advisor. In August 2012, Col Hunt came to the NRO where he served as the Chief of Staff and Executive Officer to the NRO Deputy Director. From January 2013 until October 2013, Col Hunt served as the Deputy Director of the Office of Space Launch where he led OSL contracts, finance, and technical teams.

In October 2013, Colonel Hunt was named the Director of the Office of Space Launch. In that role, he commanded total launch responsibility for eleven critical satellite reconnaissance programs and led a 700-member government and contractor materiel group with three squadrons. He orchestrated booster acquisition, system integration, and mission transport and processing with mission values exceeding $3 billion. He also served as the Mission Director for all NRO reconnaissance launches — the single authority for NRO mission success. He served there until November 2016.



Larry D. James entered the Air Force as a distinguished graduate of the U.S. Air Force Academy in 1978, and he earned his master's degree in astronautical engineering from the Massachusetts Institute of Technology in 1983.

His career spanned a wide variety of operations, intelligence and acquisition assignments, including space shuttle payload specialist, Air Staff program element monitor, Chief of Operations, 14th Air Force and Director of Signals Intelligence, National Reconnaissance Office. He commanded at the squadron, group, wing and numbered Air Force levels.

In January 1983, Captain James was selected as a space shuttle payload specialist in the Manned Spaceflight Engineers program and Chief of the Global Positioning System (GPS), Space Systems Division, Headquarters Space and Missile Center, Los Angeles AFB. Although he did not fly on the shuttle, he remained with the GPS program until 1991. After being promoted to Major on 1 April 1988, James attended the Air Command and Staff College from July 1988 to July 1989. Major James then returned to the GPS program to serve as program element monitor.

In July 1991, Major James served as executive officer to the Director of Space Programs, Assistant Secretary of the Air Force for Acquisition at the Pentagon. He was then promoted to Lieutenant Colonel on 1 April 1992 before attending the Air War College from August 1992 to July 1993. In September 1993, Lt Col James was named Commander of the 45th Spacecraft Operations Squadron, Cape Canaveral Air Force Station. The following year, he was named the station's Deputy Commander of the 5th Space Launch Squadron.

Lt Col James then served as Deputy Commander, 45th Operations Group, Patrick AFB; the Deputy Chief of the Space Control Mission Team, the Chief of Requirements and Programs Branch of the Integration Division, and the Chief of the Integration Division of the Directorate of Plans, U.S. Space Command, Peterson AFB. While serving there, James was promoted to Colonel on 1 December 1997.

From August 1998 to June 2000, Col James served as Commander, 614th Space Operations Group and Chief of Operations, 14th Air Force, Vandenberg AFB, and then as executive officer to the Commander of the North American Aerospace Defense Command.

In April 2001, Col James was named Commander of the 50th Space Wing at Schriever AFB. In June 2003, Col James was made Assistant Director of Air and Space Operations, Headquarters of Air Force Space Command. On 1 February 2004, James was promoted to Brigadier General. In July 2004, he was named Vice Commander of the Space and Missile Systems Center at Los Angeles AFB.

The following year, in July 2005, Brig Gen James was named Director of the NRO's Signals Intelligence Acquisition and Operations Directorate. As SIGINT Director, he led the joint team responsible for the design, development, and acquisition of United States Signals Intelligence Space Systems for the Intelligence Community, military services, and allied partners. He served there until May 2007.

Lieutenant General James received the Defense Superior Service Medal with oak leaf cluster, Legion of Merit with three oak leaf clusters, Bronze Star Medal, Meritorious Service Medal with three oak leaf clusters, and the Air Force Commendation Medal.

Jan L. Janssen received a Bachelor of Liberal Arts in Physics from Drake University in 1977, a Master of Science in Metallurgy from Iowa State University in 1980, and completed various executive curriculums at CIA, Brookings Institute, Aspen Institute, and Pennsylvania State, Harvard, and Northwestern universities.

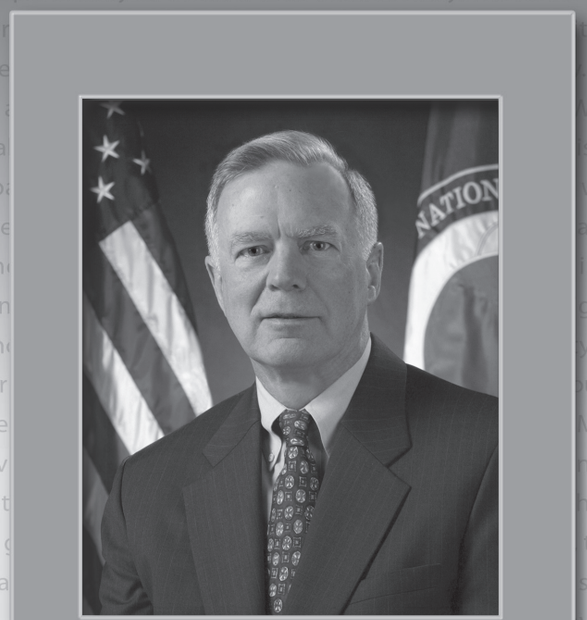
Preceding her CIA career, Ms. Janssen worked in industry, initially as an electronic packaging/ failure analysis engineer, and subsequently ascended to several different engineering managerial positions (systems, mechanical/ manufacturing, and quality engineering supervisor). Ms Janssen also taught high school advanced physics, electronics, and computer science courses in the Des Moines, Iowa public school system.

Ms. Janssen served in the Central Intelligence Agency, Directorate of Science and Technology, Office of Development and Engineering, assigned to the NRO beginning in 1990.

She spent her early Agency career in various NRO/IMINT engineering roles, where ultimately she became the first Chief Systems Engineer for the EIS System, the then NRO's new imagery architecture. Ms. Janssen served as the Executive Assistant to two Directors of the National Reconnaissance Office from 1995 to 1997.

Ms. Janssen served in the NRO's Signals Acquisition and Operations Directorate as the LSPO Acquisition Manager, developing and delivering its first satellite system. She served in the NRO's Advanced Systems and Technology Directorate as the Program Director for the acquisition of a complex, new source and method, prototype demonstrator from November 2001 to March 2007. Ms. Janssen served as the Director of the Systems Engineering Office (SEO), within the NRO Imagery Acquisition and Operations Directorate, from March 2007 to February 2008. She served as the first Director, Corporate Business Operations for the COO from February to October 2008. In addition, she served as the Principal Deputy, NRO Chief Operating Officer from October 2008 to September 2009.

In September 2009, Ms. Janssen was named the Director, Ground Enterprise Directorate. She served there until September 2012.



DR. DONALD M. KERR

DIRECTOR,
NATIONAL RECONNAISSANCE OFFICE
26 JULY 2005 - 5 OCTOBER 2007

Donald MacLean Kerr, Jr. was born in Philadelphia, Pennsylvania. He received his Bachelor of Science in Electrical Engineering from Cornell University in 1963 and went on to earn a Master's of Science in Microwave Electronics in 1964 and his PhD in Plasma Physics in 1966 for "Electronic Properties of the Penning Discharge Plasma."

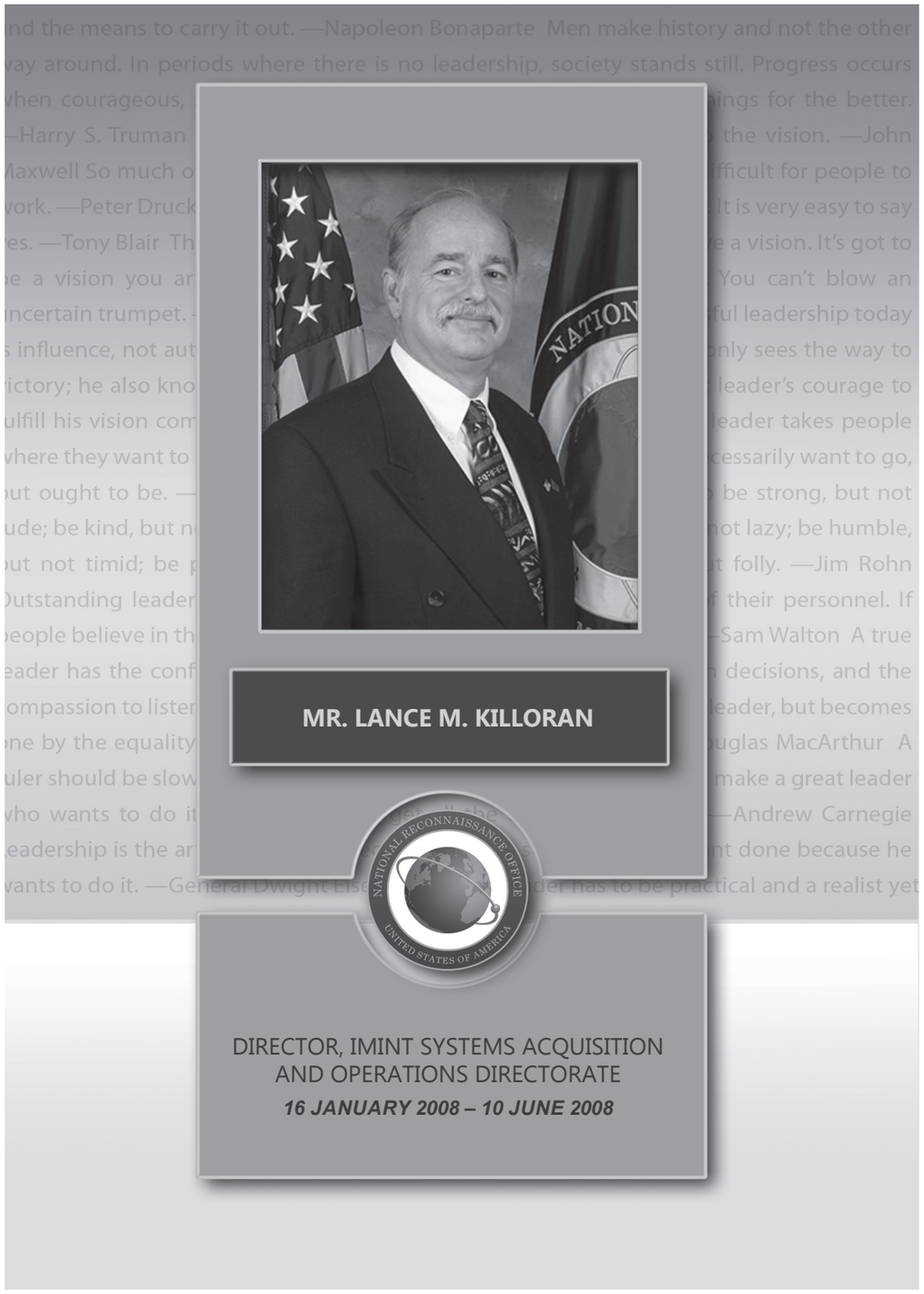
Dr. Kerr began his career in 1966 at Los Alamos National Laboratory working in high altitude weapons effects, nuclear test detection, and ionospheric physics. Dr. Kerr moved to the Department of Energy in 1976 as Deputy Manager of the Nevada Operations Office. He then served in Washington, D.C., as Deputy Assistant Secretary and Acting Assistant Secretary first for Defense Programs and then Energy Technology, before returning to Los Alamos to serve as Director from 1979 to 1985.

Dr. Kerr held several key executive positions in private industry. He served as Senior Vice President and Executive Vice President, respectively, at EG&G, from 1985 to 1989. Dr. Kerr was President and Director of EG&G, Inc., from 1989 to 1992. From 1993 to 1996, he was Corporate Executive Vice President and Director at Science Applications International Corporation. From 1996 to 1997, he was Executive Vice President and Director at Information Systems Laboratories, Inc.

From October 1997 until August 2001, Dr. Kerr was as an Assistant Director of the Federal Bureau of Investigation. He was responsible for the Laboratory Division, which conducts forensic examinations; develops surveillance and tactical communications technologies; and supports law enforcement through research, training, and operational deployments. Dr. Kerr was appointed Deputy Director for CIA Science and Technology on 27 August 2001.

On 21 July 2005, Dr. Kerr became the fifteenth NRO Director. In October 2005, he was also appointed as the Assistant to the Secretary of the Air Force (Intelligence Space Technology). Dr. Kerr focused the strategic goals of the NRO on supporting real-time engagement and being the foundation for global situational awareness. He positioned the organization to develop, acquire, launch and operate an integrated overhead architecture. Dr. Kerr established partnerships with several organizations, including USSTRATCOM, and renewed important, historic relationships with the Air Force and CIA to promote development of present and future space professionals and intelligence officers. He served as DNRO until 5 October 2007.

A fellow of the American Physical Society and the American Association for the Advancement of Science, Kerr published frequently on nuclear weapons efforts, national security and arms control, energy technology, and ionospheric research. He received several awards for his public service, including the CIA Distinguished Intelligence Medal and the DOE Outstanding Service Award.



Lance M. Killoran graduated from the Missouri School of Mines in 1972 with a bachelor of science degree in mechanical engineering. He later graduated with his master's degree in technology management from The American University in 1978.

As a freshman undergraduate, he was recruited by the CIA into the cooperative work program to analyze Soviet ICBM and space reconnaissance vehicles. Upon graduation in 1972, he joined the CIA as a staff employee of the Foreign Missile and Space Analysis Center. From 1973 to 1975, Mr. Killoran was assigned to the Joint Defense Facility Pine Gap in Australia as an analyst, where in 1975, he was promoted to head of Mission Operations Planning.

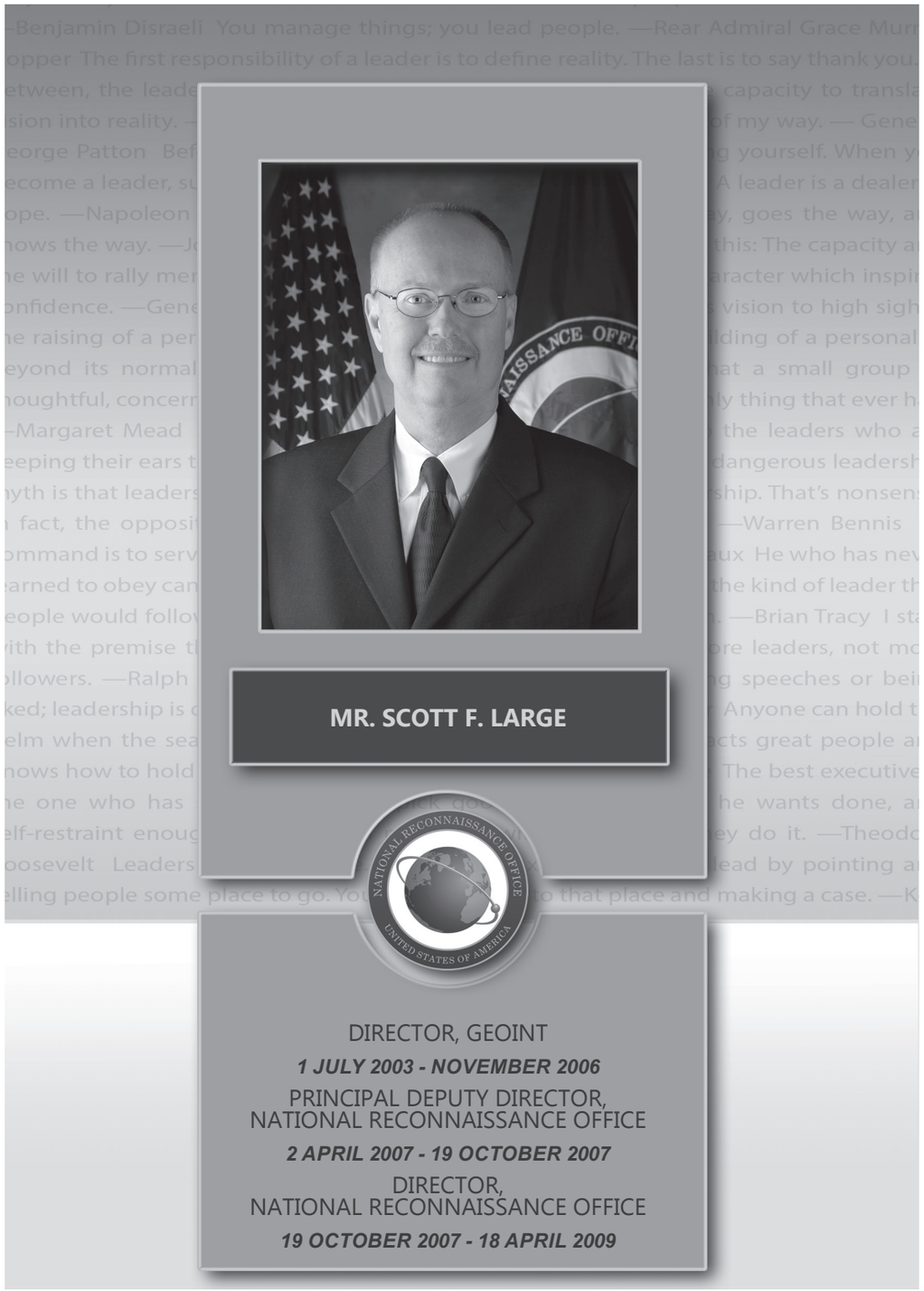
Mr. Killoran returned to the United States in 1976 to assume duties as the senior analyst for the Ballistic Launch Vehicles Branch of the Office of Weapons Research (later to become the Office of Science and Weapons Research (OSWR)). In 1982 he was selected for a one-year rotational assignment to the Advanced Systems Planning Group (ASPG) of the Collection Requirements and Analysis Staff. There he was charged with the responsibility for analysis and recommendations regarding NRO, NSA, and CIA Sigint, Imint, SAR, and Masint systems.

In 1983, Mr. Killoran changed career services from the DDI to the DDS&T of the CIA. He served the next three years with the Systems Engineering Branch of the Signal Handling and Recording Segment of SPG/OD&E, where in 1985, he was selected as branch chief. In 1986, at the request of the Director of OD&E, he became the Program B Representative to the Future SIGINT Capabilities Study. A year later, when the study was completed, Mr. Killoran was assigned to the Collection System Group, OD&E, and charged with forming and leading a Sigint R&D Division as its chief. In 1991, he was assigned as Chief, Systems Engineering Division, CSG. His new responsibilities included new concept development of Sigint, Imint, and Masint collection systems and associated R&D. When CSG was dissolved in late 1991, Mr. Killoran was recruited for the Program B Director's newly formed Systems Engineering Staff. In this capacity, his primary responsibility was Sigint oversight.

Mr. Killoran joined the newly formed High Altitude SIGINT Architecture Advanced Development Team in 1993. Upon its completion in 1994, he returned to the SPG (which had been reorganized and designated as GEO SPO), where he was selected to be Director, Systems Engineering, GEOSPO. When the SIGINT Directorate reorganized in October 1997, he was named Director, Systems Engineering, Space Systems Program Office (SSPO). In February 1998, he was selected to be Deputy Director, SSPO, and in February 2001, he became the Director of SSPO. He served there until May 2005. Mr. Killoran was awarded the Jimmie D. Hill award in 2006.

In January 2008, Mr. Killoran was named Director of the NRO's IMINT Directorate. He served in that role until June 2008.

In his over-30 years of experience within the Intelligence Community, Mr. Killoran also accepted a number of special assignments, including SALT 2 and START treaty negotiations support, establishment and operation of clandestine Sigint collection programs, Counter Narcotics Task Force as an OD&E Representative, Task Force Director for a Masint collection system, Titan Accident Investigation Board Member as NRO's representative, and co-chair of the Space Launch Broad Area Review.



Scott F. Large was born in Buffalo, New York and received a Bachelor of Science in Engineering in 1979 from the University of Central Florida, majoring in electro-optics and semiconductor devices. Before joining the government, he spent seven years in industry, during which time he received three patents in fiber optics technology.

Mr. Large joined the Central Intelligence Agency in 1986 as a Project Management Engineer in the Office of Development and Engineering, developing advanced spacecraft payloads at the NRO. He held various senior development and systems engineering positions within the NRO's Imagery Systems Acquisition and Operations Directorate through 1996. Also during this time, he served one year as the Executive Assistant to the Director of the NRO. In 1997, he became Deputy Director of the Future Imagery Architecture Program.

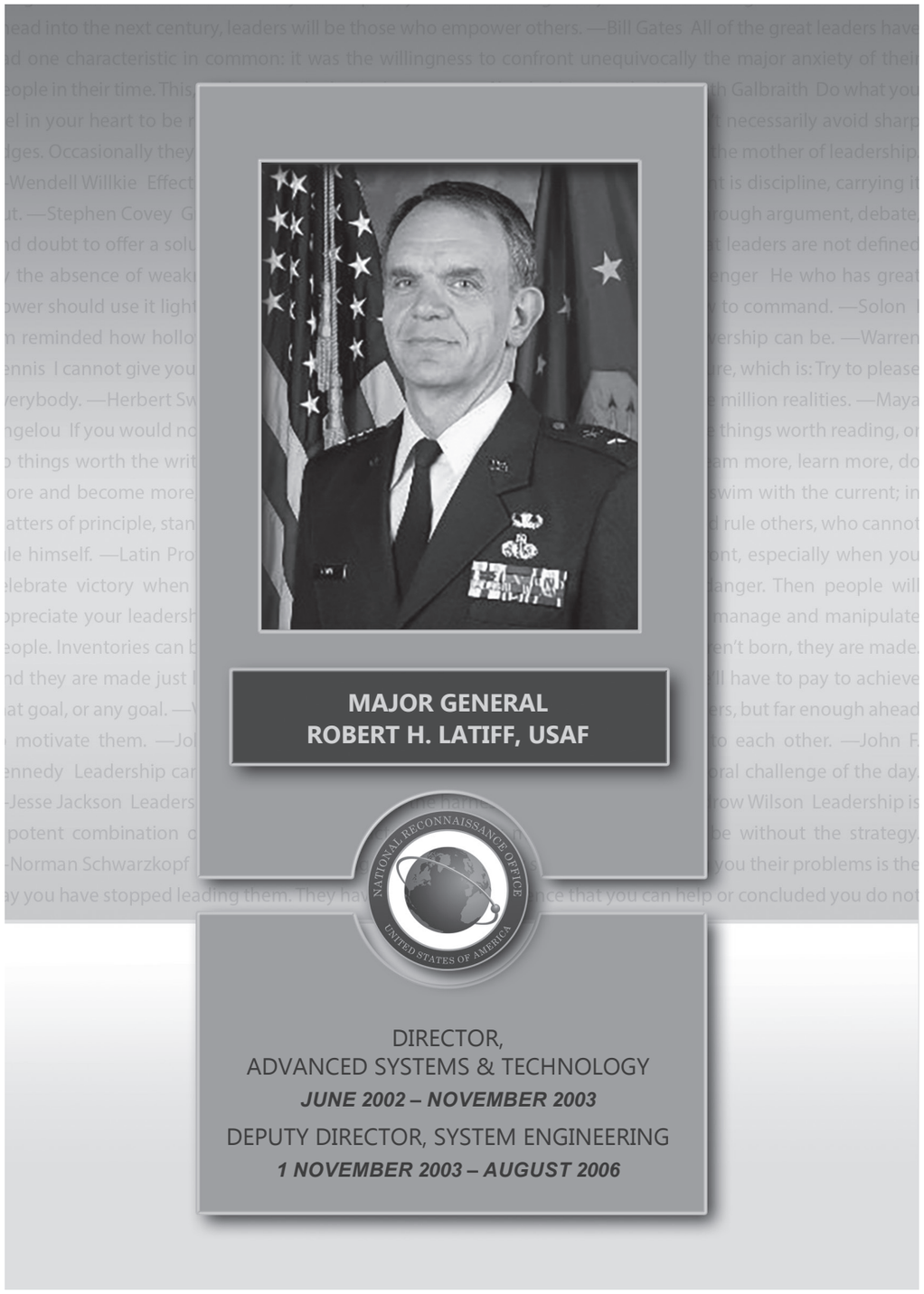
A year later, Mr. Large was appointed the Deputy Chief for Programs within the CIA Directorate of Operations' Technical Management Office. In this position, he helped administer a joint national program while assisting in the development of the program's strategic plan and program management process. In 2000, he was selected as Director of the Clandestine Signals Intelligence Operations Group in the Office of Technical Collection within the CIA's Directorate of Science and Technology. While there, he led the development and execution of critical collection operations for the Intelligence Community. In September 2000, he became the Deputy Director of the Office of Technical Collection.

Beginning in August 2001, Mr. Large served as the CIA's Associate Deputy Director for Science and Technology. Following that assignment, he moved back to the NRO to serve as the Director, Imagery Systems Acquisition and Operations Directorate, from July 2003 to November 2006. He then served as Director, Source Operations and Management Directorate at the National Geospatial-Intelligence Agency.

Mr. Scott F. Large became the second Principal Deputy Director of the NRO and Deputy Assistant to the Secretary of the Air Force (Intelligence Space Technology) on 2 April 2007.

Then on 19 October 2007, Large was appointed Director of the NRO. As DNRO, Mr. Large led the NRO through perhaps the most significant transformation in its history. The newly aligned NRO organization establishes the fundamental building blocks that will enable the NRO to efficiently develop, acquire, and operate a single integrated space and ground architecture, implement its strategic goals of being the foundation for global situational awareness, and provide multidiscipline intelligence information on timelines responsive to user needs. He resigned from the NRO on 18 April 2009.

His awards include the NRO Meritorious Service Medal, the NRO Superior Service Medal, the CIA Intelligence Commendation Medal, the CIA Director's Award, the NSA Director's Award, the NGA Medallion for Excellence, the NGA Distinguished Civilian Service Medal, the National Intelligence Distinguished Service Medal, the Secretary of Defense Medal for Exceptional Service, and the CIA Distinguished Career Intelligence Medal.



Major General Robert H. Latiff attended the University of Notre Dame, graduating with his Bachelor of Science in physics in 1971, his master's degree in materials science in 1973, and his PhD in materials science in 1974. He received his commission after completing the Army ROTC program at the University of Notre Dame as a distinguished graduate. He entered active service in the Army in 1974 and transferred to the Air Force in 1980. He has served on the headquarters U.S. Air Force staff and the staff of the Secretary of the Air Force.

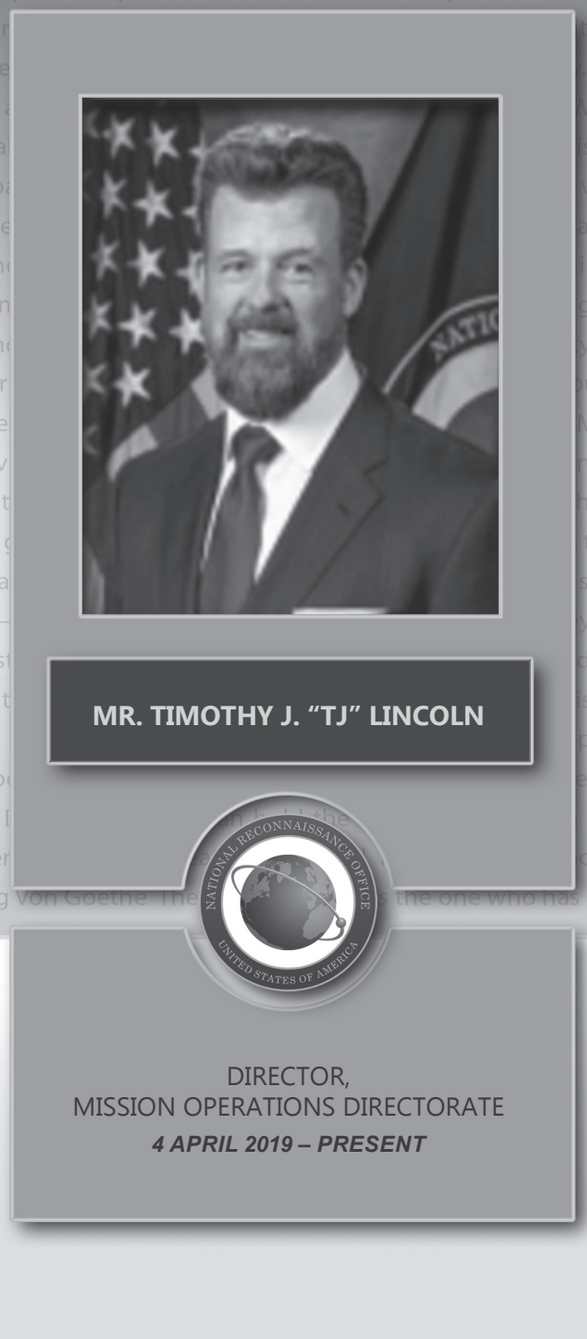
From June 1987 to July 1990, Lieutenant Colonel Latiff served as the Deputy Director of Technology Applications within the Office of the Secretary of the Air Force. In June 1991, he was named Program Manager of the Space Defense Operations Center at Hanscom Air Force Base. From August 1993 to March 1995, Colonel Latiff served as the Deputy Program Manager and then Director of Test Operations for Cheyenne Mountain upgrade. For his next assignment, from March 1995 to October 1995, Colonel Latiff served as the Program Director of the Communications and Airspace Management Systems Program Office, Electronic Systems Center, at Hanscom Air Force Base. In October 1995, Colonel Latiff was named Program Director of the Cheyenne Mountain Complex Systems Program Office.

From November 1996 to June 1999, continuing his service with the Electronic Systems Center, Colonel Latiff was the program director for the Joint Surveillance Target Attack Radar System. In this position, his responsibilities included all aspects of development, acquisition, and sustainment of the high-priority E-8C Joint STARS system. From June 1999 to September 2000, Colonel Latiff then commanded the Cheyenne Mountain Operations Center in Colorado, and he was responsible for the execution of the North American Aerospace Defense Command's integrated tactical warning and attack assessment mission and U.S. Space Command's space and missile warning support to NORAD and other warfighting combatant commanders. Prior to assuming his duties at the NRO, from September 2000 to June 2002, Brigadier General Latiff was the vice commander, Electronic Systems Center at Hanscom Air Force Base, Massachusetts, where he was the second in command of the Air Force's center of excellence for command and control systems with more than 150 service and joint programs and over 10,000 personnel.

In June 2002, Brigadier General Latiff was named Director of the Advanced Systems & Technology Directorate, National Reconnaissance Office. In this position, he led a team of scientists, engineers, and futurists engaged in advanced research, applied technology, and technology demonstration programs to further the state-of-the-art for the nation's space reconnaissance program. He served there until November 2003, at which point he was promoted to Major General.

Major General Latiff was then named Deputy Director for System Engineering, NRO. In this position, he managed the NRO acquisition process and was the functional manager for NRO-wide systems engineering. As the NRO's chief architect, he worked with senior program managers to define the Integrated NRO Architecture for space-based reconnaissance and intelligence systems, and ensure its interoperability, compatibility, and integration with civil and commercial space architectures where appropriate. He retired in October 2006.

Major General Latiff's awards and decorations include the Defense Superior Service Medal with one oak leaf cluster, the Legion of Merit, the Defense Meritorious Service Medal, the Meritorious Service Medal with three oak leaf clusters, the Army Commendation Medal, and the Air Force Achievement Medal.



MR. TIMOTHY J. "TJ" LINCOLN

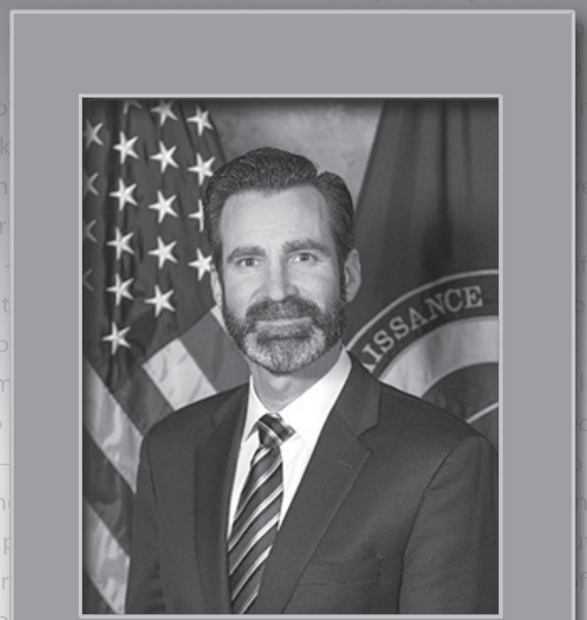
DIRECTOR,
MISSION OPERATIONS DIRECTORATE
4 APRIL 2019 – PRESENT

Timothy J. (TJ) Lincoln entered into service as a distinguished graduate of the Air Force Reserve Officer Training Corps in 1989 and retired in November 2019. He earned his bachelor's degree in telecommunications from Michigan State University in 1989, a Master of Aeronautical Science Technology from Embry Riddle Aeronautical University in 1993, a Master of Military Arts and Science from the Army Command General Staff College in 2004, and a Master of Strategic Studies from the Air War College in 2008.

Mr. Lincoln performed space and missile operations duties in a variety of positions including Minuteman II and III launch operations and Milstar Satellite Command and Control. Mr. Lincoln was also assigned to Air Education and Training Command as a Milstar instructor and Operations Officer for a Missile Maintenance Training Squadron. From June 2004 to May 2005, Major Lincoln served at Headquarters Eighth Air Force as the Operations Officer for the 608th Combat Operations Squadron in the Space and Global Strike Air and Space Operations Center, Barksdale AFB, Louisiana, and from May 2005 to September 2005, as Operation Iraqi Freedom Strategy Plans Team Chief, Central Air Force Combined Air Operations Center, Al Udeid AB, Qatar. From June 2006 to June 2007, Lt Col Lincoln commanded the 12th Space Warning Squadron, Thule Air Base, Greenland, the NRO'S Network Operations Group and a NRO Space Operations Group.

Lt Col Lincoln first came to the NRO in December 2010 to serve as Commander of the Network Operations Group. He was promoted to Colonel on 1 May 2011. On his last deployment, from August 2012 to December 2012, he served as the NRO Country Lead in Afghanistan. In January 2013, Mr. Lincoln was named Chief of Staff within the Office of the Deputy Director, NRO. In June 2013, he became Commander of the Space Operations Group at ADF-E. Mr. Lincoln was named Director of Operations and Interagency Integration, Joint Functional Component Command for Space, USSTRATCOM, as well as Principal Deputy Director of MOD, in June 2015.

Mr. Lincoln was named the Director, Mission Operations Directorate at the NRO on 4 April 2019. In this role, he was responsible for assuring national space systems operations, guidance, support, and coordination between the NRO, the Intelligence Community, and the Department of Defense. He led a diverse team of professionals at multiple operating locations providing critical overhead reconnaissance, intelligence, communications, and situational awareness to U.S. and allied partners, military, and intelligence leaders.



MR. ERNEST "ERNIE" MALATO

DIRECTOR, MANAGEMENT SERVICES
AND OPERATIONS OFFICE
18 JANUARY 2022 – PRESENT

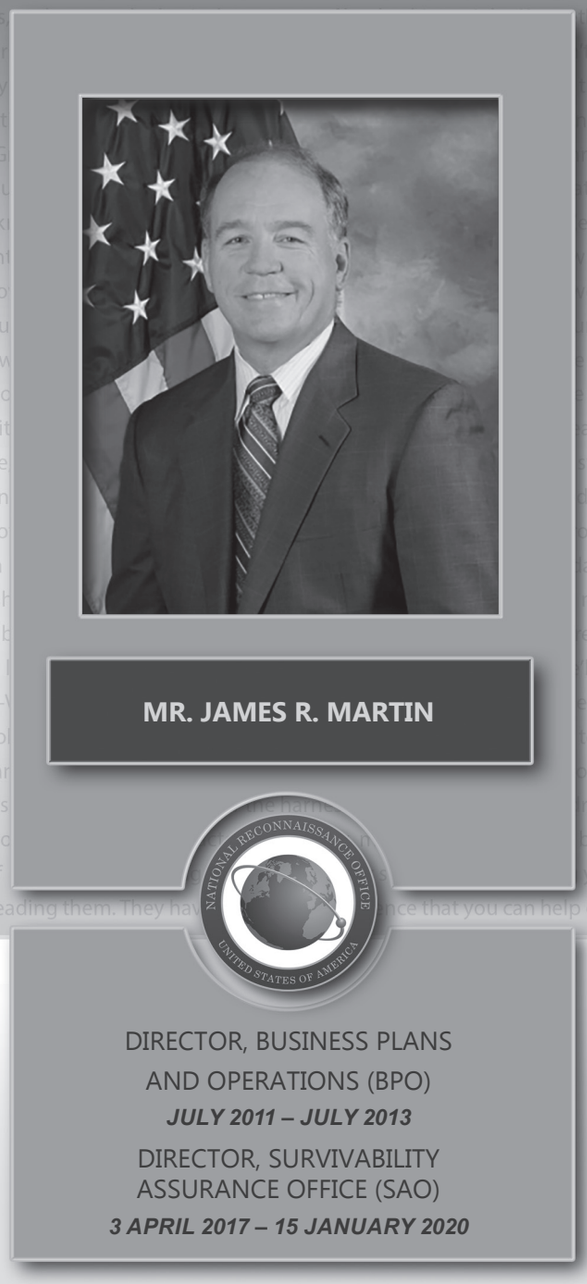
Ernest "Ernie" Malato earned a Bachelor of Science from Hyles-Anderson College in 1998 in general studies and a Bachelor of Science from Columbia Southern University in 2011 in occupational safety and health administration. He is a 2014 graduate of the National Defense University, Dwight D. Eisenhower School for National Security and Resource Strategy, where he earned a Master's of Science in National Resource Strategy, as well as a member of the cohort conducting an intensive study of the U.S. Shipbuilding Industry.

Mr. Malato began his career working for Ashland Specialty Chemical in the Chemical Distribution and Supply Chain Management sector, providing on-site customer solutions in the Semiconductor Manufacturing Industry. He entered on duty with the CIA in July 2002 into the Directorate of Support's Logistics Support Office.

Over the course of his career, Mr. Malato worked extensively internationally, serving as the Chief of the CIA's Near East South and Central Asia Mission Support Staff (NESCA MSS). He has also had the opportunity to serve in numerous overseas assignments, with postings in several foreign countries.

Prior to joining the NRO, Mr. Malato served as the Deputy Director of the Office of Enterprise Services (OES) in the Directorate of Support at CIA. While with OES, Mr. Malato led workforce development efforts for a dispersed workforce of OES – Enterprise Services Specialists (ESS) located in the WMA and the field, as well as leading the Enterprise Service Center activities that deliver foundational services through six of DS's service centers.

In January 2022, Mr. Malato was named Director of Management Services & Operations at the NRO. As D/MS&O, Mr. Malato was responsible for leading the successful execution of CONUS and OCONUS logistics, facilities acquisition and management, continuity and critical infrastructure protection, comprehensive emergency management program and shared administrative services across multiple disciplines for the NRO enterprise. Mr. Malato served as the Senior CIA/ Director of Support representative to the NRO. At the NRO, Mr. Malato was the Senior Champion for the Deaf, Disabilities and Diversity Network (3D) Employee Resource Group.



MR. JAMES R. MARTIN

DIRECTOR, BUSINESS PLANS
AND OPERATIONS (BPO)
JULY 2011 – JULY 2013

DIRECTOR, SURVIVABILITY
ASSURANCE OFFICE (SAO)
3 APRIL 2017 – 15 JANUARY 2020

James R. Martin graduated from the U.S. Air Force Academy in 1976 with a Bachelor of Science in military history. In 1985, he graduated with his Master of Science in space operations engineering from the Air Force Institute of Technology.

Mr. Martin retired from the United States Air Force in 1998, having served in a variety of assignments including navigator and electronic warfare officer in B-52 and RC-135 aircraft; and in staff positions at the NRO; Defense Intelligence Agency; and numerous headquarters positions at United States Space Command, Air Force Space Command and the Office of the Secretary of Defense.

From 2005, Mr. Martin served as Chief, Force Structure and Investment, with the National Security Division of the Office of Management and Budget. From there he provided oversight of nearly $200B in defense research, development, test and evaluation, procurement, and military construction programs, as well as the National Nuclear Security Agency of the Department of Energy.

In January 2007, Mr. Martin was appointed as Director, Intelligence, Surveillance and Reconnaissance Programs, Office of the Deputy Under Secretary of Defense (Portfolio, Programs and Resources), OUSD(I). He was responsible for oversight of numerous space, air, and ground programs with intelligence capabilities across the armed services and defense agencies.

From July 2011, Mr. Martin served as the Director, Business Plans and Operations for the National Reconnaissance Office. He was responsible for overseeing the NRO's budget, finance, cost estimating, external communications, business systems, and strategic operations. He led seven directorates that supported NRO Program Executive Officers and Program Managers, and was a key advocate for the 2014 NRO architecture changes that were considered the largest in twenty five years.

In July 2013, he was assigned to the Office of the Under Secretary of Defense for Intelligence (OUSD(I)) as Director for Defense Intelligence (DDI) for Strategy, Programs and Resources (ISP&R). Mr. Martin was the principal staff assistant to the USD(I) for all matters related to intelligence, surveillance, and reconnaissance system capabilities, overseeing a portfolio of nearly $25B spanning all the services and five defense agencies.

Mr. Martin was assigned as Director, Survivability Assurance Office (SAO) in April 2017. In that capacity, he was responsible for a wide variety of NRO survivability and resiliency programs designed to ensure space-based Intelligence, Surveillance, and Reconnaissance (ISR) programs can operate through contested space environments. In addition, Mr. Martin continued to serve as the NRO Defense Technical Director (DTE), a position he held since April 2016. In that role, he served as an advisor to the NRO Director and Deputy Director on NRO support to the Combatant Commands and military services for advanced warfighting concepts, missile defense, and air/space integration. He served as the lead NRO focal point to many Department of Defense and Joint Staff offices as Director, SAO and NRO DTE. Mr. Martin served in SAO until January 2020.

MAJOR GENERAL
SUSAN K. MASHIKO, USAF

DEPUTY DIRECTOR,
NATIONAL RECONNAISSANCE OFFICE
JANUARY 2010 – JUNE 2013

A native of California, Susan K. Mashiko graduated with a bachelor of science degree in aeronautical engineering from the U.S. Air Force Academy at Colorado Springs, Colorado in 1980. She also earned a master of science degree in electrical engineering from the Air Force Institute of Technology, Wright-Patterson Air Force Base, Ohio in 1986, as well as a master of science degree in national resource strategy from the Industrial College of the Armed Forces, Fort Lesley J. McNair, Washington, DC in 1998.

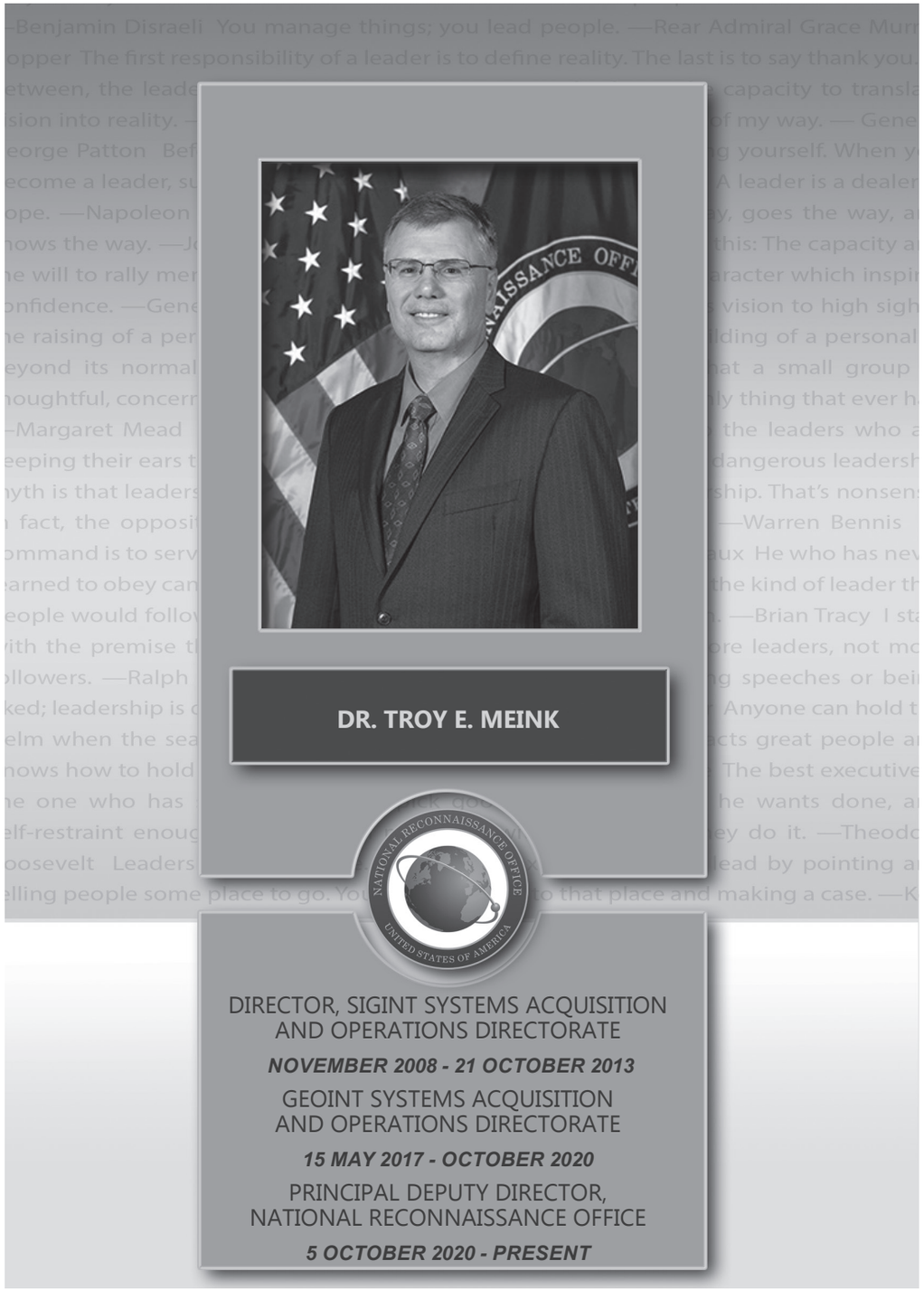
Second Lieutenant Mashiko entered the Air Force in 1980 after graduation from the Air Force Academy. Her more than 30-year career spanned a wide variety of space and acquisition assignments, including Chief of the Programs Division in the Office of Special Projects, Executive Officer to the Department of Defense Space Architect, and Director of the Evolved Expendable Launch Vehicle System Program.

In January 2004, under DNRO Peter Teets, Colonel Mashiko was named Chief, Director's Special Action Staff, Office of the Director, at the NRO. In February 2005, she was named Deputy Director of the National Polar-Orbiting Operational Environmental Satellite Systems Program, Air Force Element. From August 2005 to January 2006, Colonel Mashiko served as Vice Commander of the Air Armament Center at Eglin Air Force Base. In January 2006, Colonel Mashiko was named Program Executive officer for environmental satellites. She was promoted to Brigadier General in September 2006.

In July 2007, Brigadier General Mashiko was named Commander, Military Satellite Communications Systems Wing, Space and Missile Systems Center, Los Angeles Air Force Base. She next served as Vice Commander of the Space and Missile Systems Center before she was named Director of Space Acquisition, Office of the Under Secretary of the Air Force in July 2009.

In January 2010, Major General Mashiko became the Deputy Director of the NRO. Her responsibilities included assisting the Director and Principal Deputy Director with managing the strategic and tactical operations of the NRO. Also, as the Commander, Air Force Space Command Element, she managed all Air Force personnel and resources assigned to the NRO and served as the senior advisor to the DNRO on all military matters. She served there until June 2013.

Among the many awards and decorations received by Major General Mashiko during her Air Force career, she earned the Legion of Merit, Defense Meritorious Service Medal, Meritorious Service Medal, Joint Service Commendation Medal, and Air Force Commendation Medal. She also received the John J. Welch Award for Excellence in Acquisition Management, the Strategic Acquisition Reform Award for Contracting Excellence, the David W. Packard Award for Acquisition Excellence, the Air Force Association's Unit of the Year (Director) Award, and the NRO Medal of Distinguished Performance.



Troy E. Meink is from Lemmon, South Dakota and entered the Air Force in 1988 through the ROTC program at South Dakota State University after earning his bachelor's degree in mechanical engineering. He later earned both a master's and a doctoral degree in aeronautical and astronautical engineering from The Ohio State University. His assignments have included operations and training, systems engineering, research and development, and program management of major defense acquisition programs.

Dr. Meink began his career as a KC- 135 Tanker Navigator and Instructor and then a lead test engineer for the design and evaluation of ballistic missile test vehicles for the Missile Defense Agency. As an Air Force civilian, he managed multiple next generation joint research and development programs transitioning global space capabilities, optical sensors, and advanced structures. He subsequently led development for the Military Satellite Communications Joint Program Office and, from June 2003 to January 2006, he served as the program director for the Transformational Satellite Communications System. From January 2006 to November 2008, he served as Director, Communications Directorate, Office of the Assistant Secretary of Defense/Networks and Information Integration.

Dr. Meink was named the NRO's Director, Signal Intelligence Systems Acquisition in November 2008. In November 2013, Dr. Meink left the NRO, when he was assigned to the Department of the Air Force as the Undersecretary of the Air Force for Space and the Director, Executive Agent for Space Staff in Washington, DC. Dr. Meink then served as the Assistant Director of National Intelligence for Systems and Resource Analyses. In that capacity, he served as the DNI's principal staff advisor on matters pertaining to systems analyses, cost analyses, and program evaluation.

Beginning in April 2017, Dr. Meink served as Director, Geospatial Intelligence Systems Acquisition (GEOINT) at the NRO. In that capacity, Dr. Meink was responsible for the successful execution of all national geospatial intelligence satellite systems acquisitions within the NRO with a budget of more than $15 billion.

Dr. Troy E. Meink was appointed Principal Deputy Director, National Reconnaissance Office on 5 October 2020.

MS. DARLENE MINICK

DIRECTOR, IMAGERY INTELLIGENCE
SYSTEMS ACQUISITION DIRECTORATE
JULY 2008 – JANUARY 2017

DIRECTOR, GROUND
ENTERPRISE DIRECTORATE
JANUARY 2017 – JUNE 2022

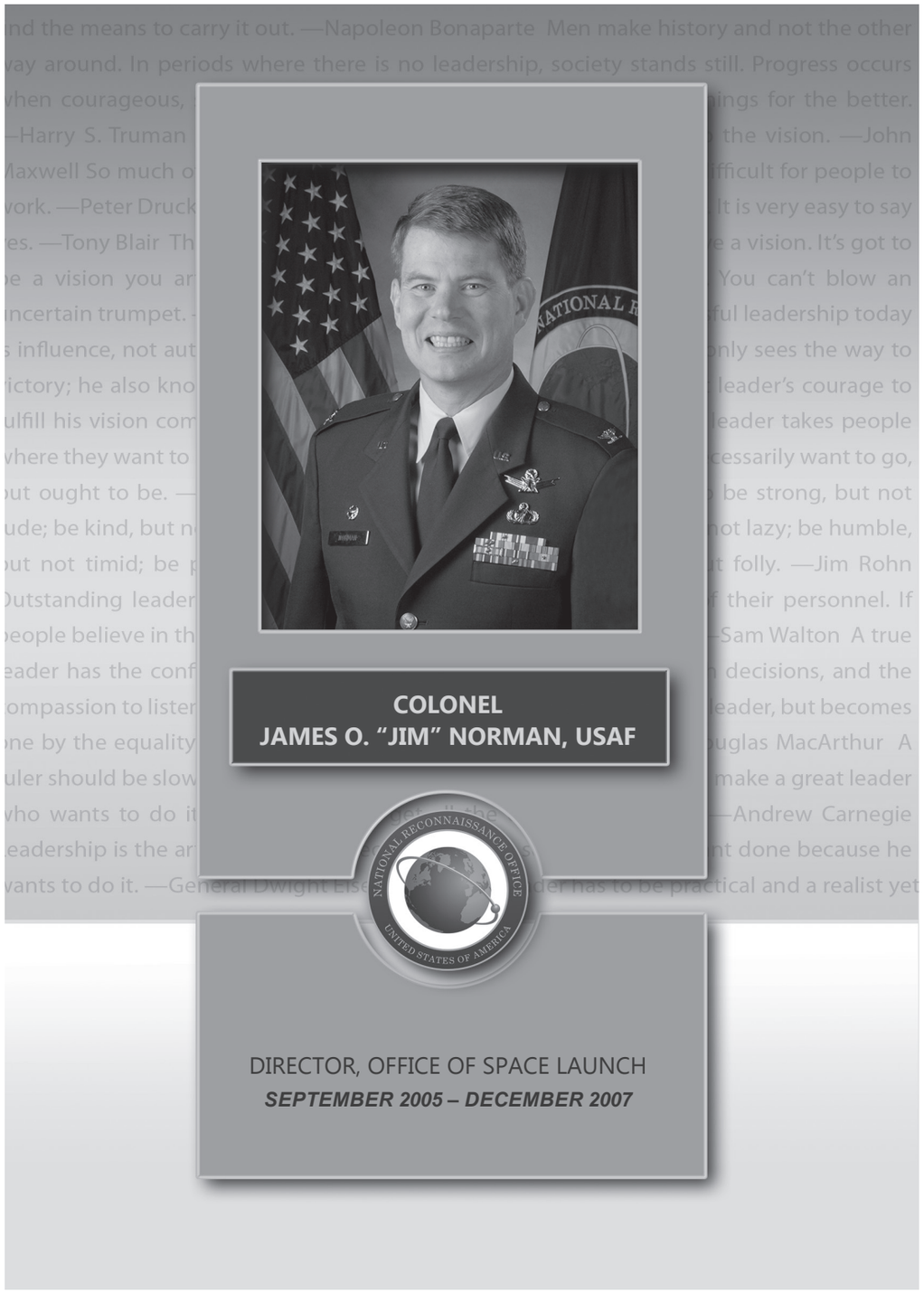
Darlene Minick graduated with a Bachelor of Science in Computer Science from Pennsylvania State University in 1981.

Ms. Minick's career spanned over 30 years of government service, including many years in the Geospatial Intelligence Systems Acquisition Directorate, formerly known as the Imagery Intelligence Systems Acquisition Directorate (IMINT). However, Ms. Minick began her NRO service in the Space Systems Program Office (SSPO), serving as the Chief of Operations and then Director of Systems Engineering and Operations from 1997 to 2001. From 2001 to 2003, Ms. Minick served as Director of Space & Launch, SSPO. Then from 2003 to 2005, Ms. Minick served as Deputy Director, SSPO.

Within the Signals Intelligence Systems Acquisition Directorate (SIGINT), Ms. Minick served as Director, Space Systems Program Office from March 2005 to July 2008. In this capacity, she was responsible for the acquisition of overhead systems. These systems include responsibility for design, acquisition, launch, deployment, and operations. Ms. Minick was also responsible for integration of adjunct payloads onto satellites. In support of the above efforts, Ms. Minick managed a government workforce of nearly one hundred and an industrial workforce of several thousand.

Ms. Minick was named Director of IMINT in July 2008. In that role, Ms. Minick was responsible for the successful execution of all national imagery intelligence satellite systems acquisitions within the NRO. Her responsibilities spanned the design, acquisition, launch, deployment, and operations support for current and future IMINT constellations. In support of these efforts, Ms. Minick managed a government workforce of over 200, and a support contractor and industrial workforce of several thousand. She also led sustained mission partner relationships between federal agencies and represented NRO programs to Congress, the Director of National Intelligence, the Department of Defense, and the Office of Management and Budget.

Ms. Minick was appointed Director, Ground Enterprise Directorate (GED) in January 2017. As the Director of GED, she led a multi-agency team of acquisition and intelligence professionals to plan, acquire, and deliver state-of-the-art ground systems that connected space systems to space operators, mission partners, and end-users to fulfill the requirements of the Intelligence Community, the Department of Defense, and allied partners. She served there until June 2022.



James O. "Jim" Norman earned his Bachelor of Science in Human Factors Engineering from the Air Force Academy in Colorado Springs, Colorado in 1983 and a Master of Science in Business Administration and Management in 1988 from Central Michigan University in Mt. Pleasant, Michigan. He also graduated from the Space and Missile Training Staff Course and the Defense Acquisition University Program Management Office Course.

Following graduation, Col Norman entered active duty, gaining a broad background in systems engineering and program management of complex air and space-based reconnaissance and communication systems. Col Norman began his career at Wright Patterson AFB, Ohio, working in the SR-71/U-2 Program Office, from 1983 to 1987, as the Reconnaissance Systems Project Manager. In 1987, Col Norman was a Distinguished Graduate of the Squadron Office School at Maxwell AFB, Alabama. Next he was assigned to the Secretary of the Air Force Special Projects (SAFSP) at Los Angeles AFB in California, from 1987 to 1992, where he gained additional systems engineering and program management experience integrating highly classified airborne and space-based systems. In this assignment, he finished off as the Executive Officer to the Director of SAFSP, Major General Nathan J. Lindsay.

Col Norman was then assigned to staff tours of duty with the NRO Military Support staff in the Pentagon from 1992 to 1994, and on the Central Intelligence Agency Community Management Support staff from 1994 to 1995. From 1995 to 1996, he attended the in-resident Air Command and Staff College at Maxwell AFB, Alabama. From 1996 to 2000, Col Norman served in several positions at the DoD Aerospace Data Facility at Buckley AFB, Colorado. There he gained valuable space operations experience and finished this tour as the Director for Reengineering.

In the 2000-2001 timeframe, Col Norman was sent to in-resident Senior Service School, Air Force/National Defense Fellowship at the prestigious Mershon Center, Ohio State University, Columbus, Ohio. He then served on the Under Secretary of the Air Force Space Acquisition Staff in Washington, DC, from 2001 to 2003 as Chief, Plans and Policy Division. In that position, he led the space acquisition streamlining efforts resulting from the Space Commission implementation. The Assistant Secretary of the Air Force for Acquisition presented his team the SAF/AQ "2001 Team Innovation Award" in recognition of their efforts in the acquisition arena.

In August 2003, Colonel Norman was named Deputy Director of the Office of Space Launch at the NRO. There he was responsible for eleven high-value spacecraft programs of the highest operational priority. He oversaw the acquisition and integration of Titan, Atlas, and the Evolved Expendable Launch Vehicle boosters. He also represented the NRO Mission Director for all Titan and Atlas launches, and he was responsible for the success of each mission.

Colonel Norman was named Director, Office of Space Launch in September 2005. He conducted launch-related systems engineering, booster selection, booster procurement, launch mission integration, satellite transport, satellite launch base processing, and booster mission assurance activities. He led the NRO's efforts to transition from the Titan IV heritage booster system to the new Evolved Expendable Launch Vehicle rocket family. He served there until December 2007.

Michael L. Orr, originally from Florida, received a Bachelor of Science from the U.S. Military Academy in 1982 and a Master of Science in nuclear engineering from Texas A&M University in 1993.

Mr. Orr served as an officer in the U.S. Army, commissioned in May 1982 and retired in May 2002. During his 20-year military career, he held positions as a platoon leader, company commander, and battalion operations officer with duty stations in both the United States and Germany. He also served as a nuclear weapons officer.

Mr. Orr supported the Intelligence Community (IC) extensively during his military career. In one assignment, he was responsible for delivering an updated imagery ground processing system for all NRO GEOINT. In another assignment, he worked an extended tether program for the DoD and the IC. His final assignment was as an acquisition officer responsible for the development of systems for the IC.

Mr. Orr became a civilian employee of the NRO in March 2002. Since then, he has been assigned a variety of positions ranging from project manager for the development of both ground and satellite systems; Chief of Staff, Office of the Director, NRO; and as Deputy Director for the Electro-Optical System Program Office.

Mr. Orr was assigned Director, Systems Engineering Directorate for the National Reconnaissance Office, in August 2014. In that position, he serves as the agency executive responsible for mission assurance, independent programmatic assessments, quality, reliability, corporate technical standards, supply chain, and joint oversight of industrial base challenges impacting multiple agencies' space system acquisitions.

MAJOR GENERAL
ELLEN M. PAWLIKOWSKI, USAF

DEPUTY DIRECTOR,
NATIONAL RECONNAISSANCE OFFICE
AND CHIEF OPERATING OFFICER
JUNE 2008 – JANUARY 2010

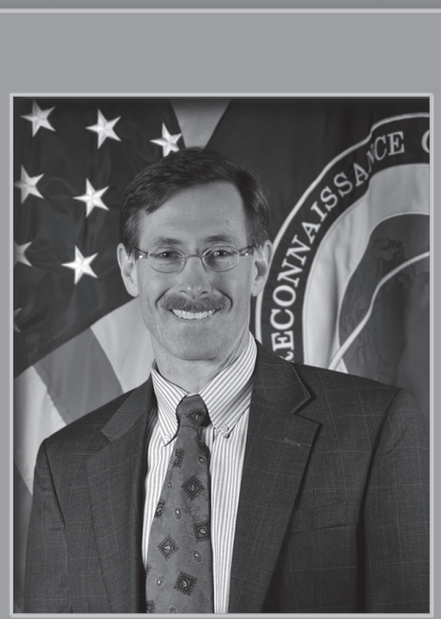
Originally from New Jersey, Ellen M. Pawlikowski earned a Bachelor of Science in Chemical Engineering in 1978 from the New Jersey Institute of Technology, Newark. She then attended the University of California at Berkeley and received a doctorate in chemical engineering in December 1981. General Pawlikowski entered the Air Force in 1978 through the ROTC program at the New Jersey Institute of Technology and entered active duty at McClellan Air Force Base, California, in April 1982.

During her 40-year career in the Air Force, Maj Gen Pawlikowski served in a variety of technical management, leadership, and staff positions. Early in her career, she was Chief, Mass Spectrometry and Micro-beam Instruments Branch, McClellan AFB, Director, Acquisition Management Office, Chief of Plans and Programs Division at Patrick AFB, and Senior Executive Officer, Rome Laboratory at Griffiss AFB. Her expertise were also utilized in the Pentagon where she was Assistant to the Secretary of Defense for Atomic Energy and Deputy Assistant to the Secretary of Defense for Counterproliferation.

In June 1997, Colonel Pawlikowski was named Chief, Revolutionizing Training Division, Aeronautical Systems Center, Wright-Patterson AFB. She then served as Deputy Director, Global Power Programs, Assistant Secretary of the Air Force for Acquisition at the U.S. Air Force Headquarters. In April 2000, Colonel Pawlikowski was named Director, Airborne Laser System Program Office, Kirtland AFB. Beginning in March 2005, she served as Commander, Military Satellite Communications Systems Wing, Los Angeles AFB. She was promoted to Brigadier General in June 2005. In July 2007, Brigadier General Pawlikowski was named Vice Commander of the Space and Missile Systems Center, Los Angeles AFB, California.

In June 2008, Brigadier General Pawlikowski became the first female Deputy Director of the National Reconnaissance Office . She was promoted to Major General in July 2008. As DDNRO, General Pawlikowski managed all Air Force personnel and resources assigned to the NRO and served as the senior adviser to the DNRO on all military matters. As the Chief Operating Officer, she was responsible for all mission-related acquisition and operations of overhead reconnaissance systems to meet the needs of the Intelligence Community and the Department of Defense. She served there until January 2010.

Among her many awards and decorations she was the recipient of the Defense Superior Service Medal, Legion of Merit, Defense Meritorious Service Medal Meritorious Service Medal with two oak leaf clusters, the Air Force Commendation Medal with oak leaf cluster, the Air Force Achievement Medal, and the Air Force Individual Recognition Ribbon. She was also honored with the Defense Acquisition Research Award, the Stewart Award for Top Senior Program Manager, ASC, and the Air Force Association Management Award (Executive). She also received the 2012 Women in Aerospace Lifetime Achievement Award.



MR. TODD B. PECKINS

DIRECTOR,
BUSINESS PLANS AND OPERATIONS
DIRECTORATE

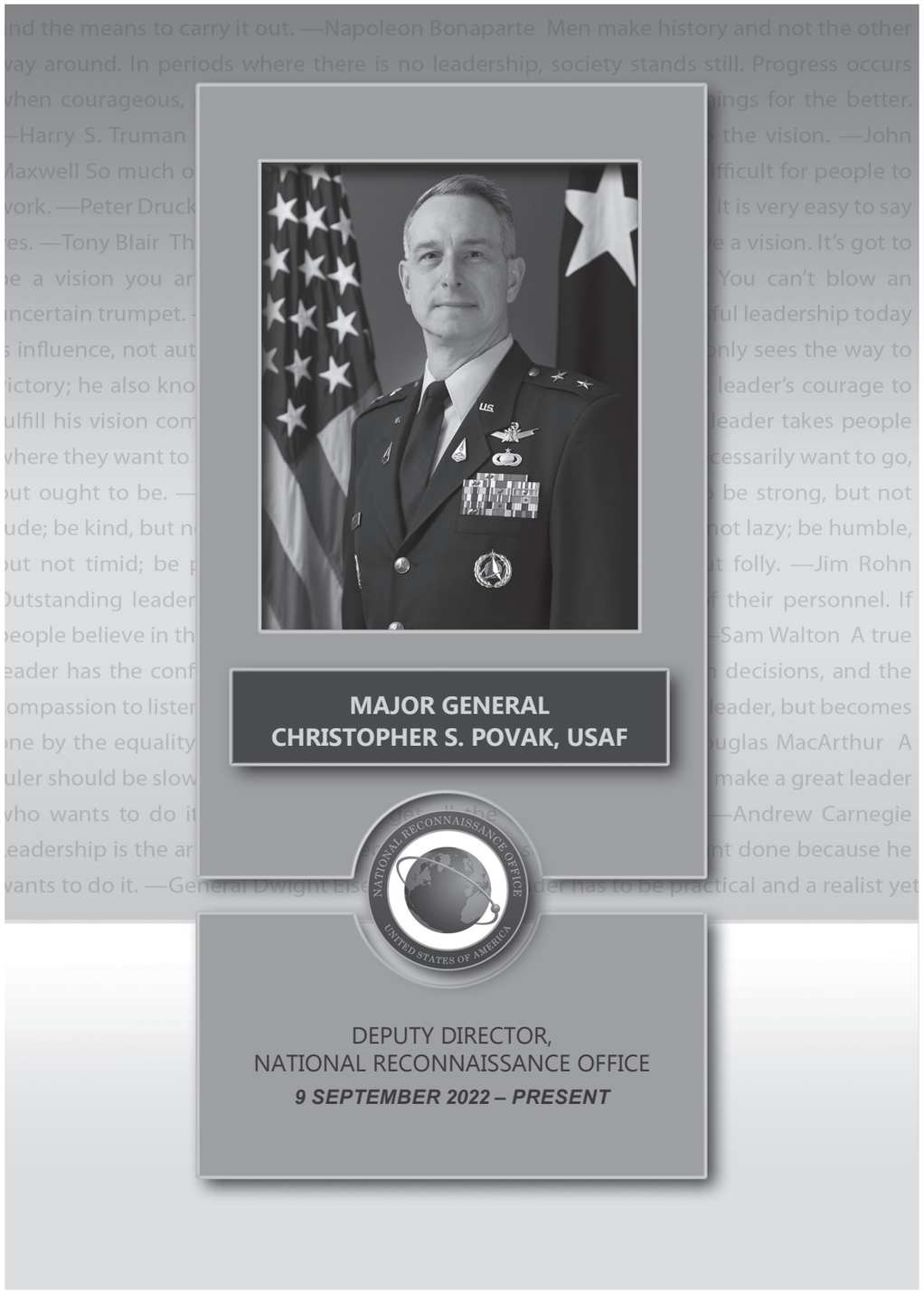
15 JANUARY 2014 – DECEMBER 2016

Mr. Todd B. Peckins graduated from Virginia Polytechnic Institute in 1980, with a double major in finance and management. In 1982, he completed work on his Masters of Business Administration at James Madison University.

Mr. Peckins started his career with the CIA in 1981, holding a variety of positions of increasing responsibility. He spent his first year on board working several broadening assignments within the Office of Finance. He spent the next six years within the Directorate of Operations (DO), handling financial operations for three different division and serving a tour overseas. From there, he assumed a position within the CIA's Office of the Comptroller, handling budget matters for both the DO and Directorate of Science & Technology accounts, as well as managing the personal services budget and serving an additional overseas tour. From 1995 to 1997, he served as the Chief, Finance and Logistics Branch, for a different overseas division.

Mr. Peckins began a series of assignments at the NRO beginning in 1997. In June 2003, Mr. Peckins was appointed BPO's Director, Resource Management. In that capacity, he functioned as the Comptroller and Performance Improvement Officer for the NRO, responsible for resource management and performance improvement at the corporate level. He managed the financial execution of the NRO and led the formulation of the NRP budget. He also functioned as the NRO's primary interface to the Office of the Secretary of Defens, the Under Secretary of Defense (Intelligence), the Community Management Staff, and the Office of Management and Budget on resource-related issues. In addition, he led the NRO in the management and allocation of Advisory and Assistance to include both Federally Funded Research Development Centers and Contracted Advisory and Assistance, the management of resource decisions associated with construction, and was responsible for managing the personal service budget for the NRO.

Mr. Peckins was appointed the Director, Business Plans and Operations Directorate-Chief Financial Officer, for the National Reconnaissance Office in January 2014, with principal responsibility for the management and oversight of NRO financial operations. He served there until 2016.



Christopher S. Povak graduated from Clarkson University with his bachelor's degree in electrical engineering in 1992. He then earned a Master of Science in Electrical Engineering from Colorado Technical University in 1998, a Master of Arts in Military Operational Art and Science from Air University at Maxwell Air Force Base in 2005, and a Master of Science in National Security Strategy from the National War College in 2012.

Second Lieutenant Povak received his commission from Clarkson University in 1992. Throughout his career, he gained extensive hands-on satellite operations, engineering, and acquisitions experience working with Air Force Space Command and in several positions with the NRO. He commanded space operations units at the squadron, group, and wing levels. He also served on the Headquarters Air Force Staff, through which he gained broad insight into defense policy and the Department of Defense's requirements, programming, and budgeting processes. He was also selected for a congressional fellowship and served as a military legislative advisor to United States Senator Joseph I. Lieberman of Connecticut.

From June 2005 to June 2008, Major Povak served in the Pentagon, before serving as Commander of the Operations Division 7 and Deputy Chief of the Overhead Collection Management Center at Fort George Meade, Maryland. From July 2010 to July 2011, Lieutenant Colonel Povak served at the NRO as an Executive Officer to Deputy Director Susan Mashiko.

In July 2012, Colonel Povak became Commander of the Air Force Element at RAF Menwith Hill in the United Kingdom before he returned to the NRO in August 2015 to serve as Deputy Director of the Mission Operations Directorate. Colonel Povak was named Commander of Aerospace Data Facility Colorado in June 2016, where he concurrently served as the Commander of the Air Force Element Space Operations Wing and, from December 2018 to June 2019, as Acting Commander of the Air Force Element of the NRO.

In September 2019, following his promotion to Brigadier General, Brigadier General Povak became Deputy Commander of the Joint Task Force Space Defense out of Schriever AFB. In July 2021, he was named Deputy Director of the Space Warfighting Analysis Center in Washington, DC.

On 9 September 9 2022, General Povak became the Deputy Director of the NRO. He was promoted to Major General on 29 September 2022. In his new role, he assisted the Director in managing the strategic and tactical priorities of the NRO including the design, acquisition, launch and operations of the nation's satellite reconnaissance capabilities. As the Commander, Space Force Element, General Povak led the military personnel assigned to NRO, managed the associated service resources, and served as senior advisor to the Director on all military matters.

Over the course of his career, Major General Povak has received the Defense Superior Service Medal with two oak leaf clusters, the Defense Meritorious Service Medal with two oak leaf clusters, the Meritorious Service Medal, the Joint Service Commendation Medal, the Air and Space Commendation Medal, and the Joint Service Achievement Medal with oak leaf cluster.

Katherine Roberts entered the Air Force in 1977 through the ROTC program at Indiana University, where she was a distinguished graduate, earning her bachelor's degree in physics. She earned her master's degree in space technology from Johns Hopkins University in 1981.

Her assignments include space operations, acquisition of space systems, and staff work. After beginning her career as an orbital analyst at the Space Defense Center at Cheyenne Mountain Operations Center in Colorado in January 1977, Second Lieutenant Roberts served as a trajectory orbital research analyst and Chief at the Tracking Analysis Work Center, National Security Agency, where she was promoted to Captain on 15 January 1981. In January 1982, she was named Chief, Data Recorder Division at the Office of Special Projects in Los Angeles. From May 1983 to April 1986, Capt Roberts served as a manned spaceflight engineer within Space Division, Air Force Systems Command.

In April 1986, Captain Roberts began serving as Chief of the Spacecraft Integration and Flight Operations Division, Office of Special Projects, Office of the Secretary of the Air Force. In October 1987, Capt Roberts began serving as Director of Spacecraft Division, Space and Missile Systems Division at Buckley Air National Guard Base in Colorado. While there, she was promoted to Major on 1 April 1988.

In September 1988, Maj Roberts was named Deputy Director, Space Systems Integration, Office of Special Projects, Office of the Secretary of the Air Force within the Pentagon. She was promoted to Lieutenant Colonel on 1 April 1992, just before accepting her new role as Chief of Space System Division, Defense Landsat Program Office, Office of Special Projects in May 1992.

From February 1994 to August 1994, Lt Col Roberts served as military assistant to the Assistant Secretary of the Air Force for Space, Office of the Secretary of the Air Force. She studied at the Air War College from August 1994 to June 1995, then she served as an operations officer, Operations Division, Deputy Directorate for Information Systems (J-3). In November 1997, Lieutenant Colonel Roberts was named Program Manager, Space Based Infrared System – Low Component, Space Based Infrared System Program Office, Space and Missile Systems Center. She was promoted to Colonel on 1 December 1997.

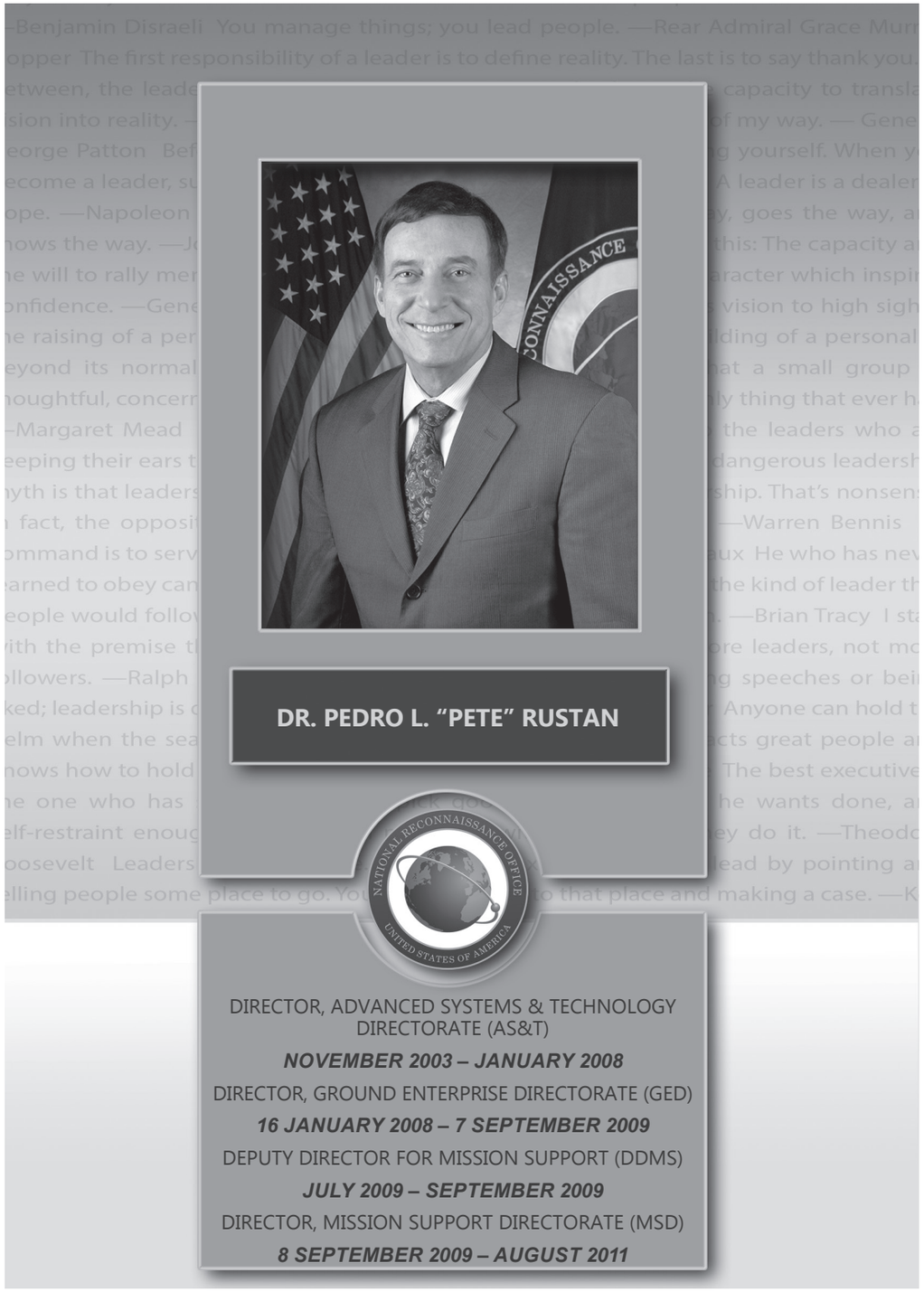
In May 2000, Col Roberts began serving as Chief, Space Control Division, Directorate of Requirements, Headquarters Air Force Space Command. From October 2001 to September 2002, she served as Deputy Director of Requirements, Headquarters Air Force Space Command.

In October 2002, Col Roberts was named the Vice Director of Operations at U.S. Space Command and the Vice Director for Space Operations at the new U.S. Strategic Command for the run-up and execution of Operation Iraqi Freedom. From July 2003 to August 2004, Col Roberts served as the Commander, Command and Control, Intelligence, Surveillance and Reconnaissance Systems Wing at Hanscom AFB, Massachusetts. She was promoted to Brigadier General 1 July 2004. Remaining at Hanscom AFB, Brigadier General Roberts served as Director and then Commander, Command and Control, Intelligence, Surveillance and Reconnaissance Systems Wing from August 2004 to January 2005.

From January 2005 to December 2006, Brigadier General Roberts served as Principal Director for Forces Policy at the Office of the Deputy Assistant Secretary of Defense for Forces Policy. Beginning in December 2006, she was the special assistant to the Deputy Director, National Reconnaissance Office.

On 21 May 2007, Brigadier General Roberts was named Director of the Signals Intelligence Systems Acquisition and Operations Directorate. She served there until her retirement in November 2008.

Brigadier General Roberts' earned the Defense Superior Service Medal with three oak leaf clusters, Defense Meritorious Service Medal with three oak leaf clusters, Meritorious Service Medal with oak leaf cluster, Joint Service Commendation Medal with oak leaf cluster, Air Force Commendation Medal, Air Force Organizational Excellence Award with oak leaf cluster, National Defense Service Medal with bronze star, and the Global War on Terrorism Service Medal.



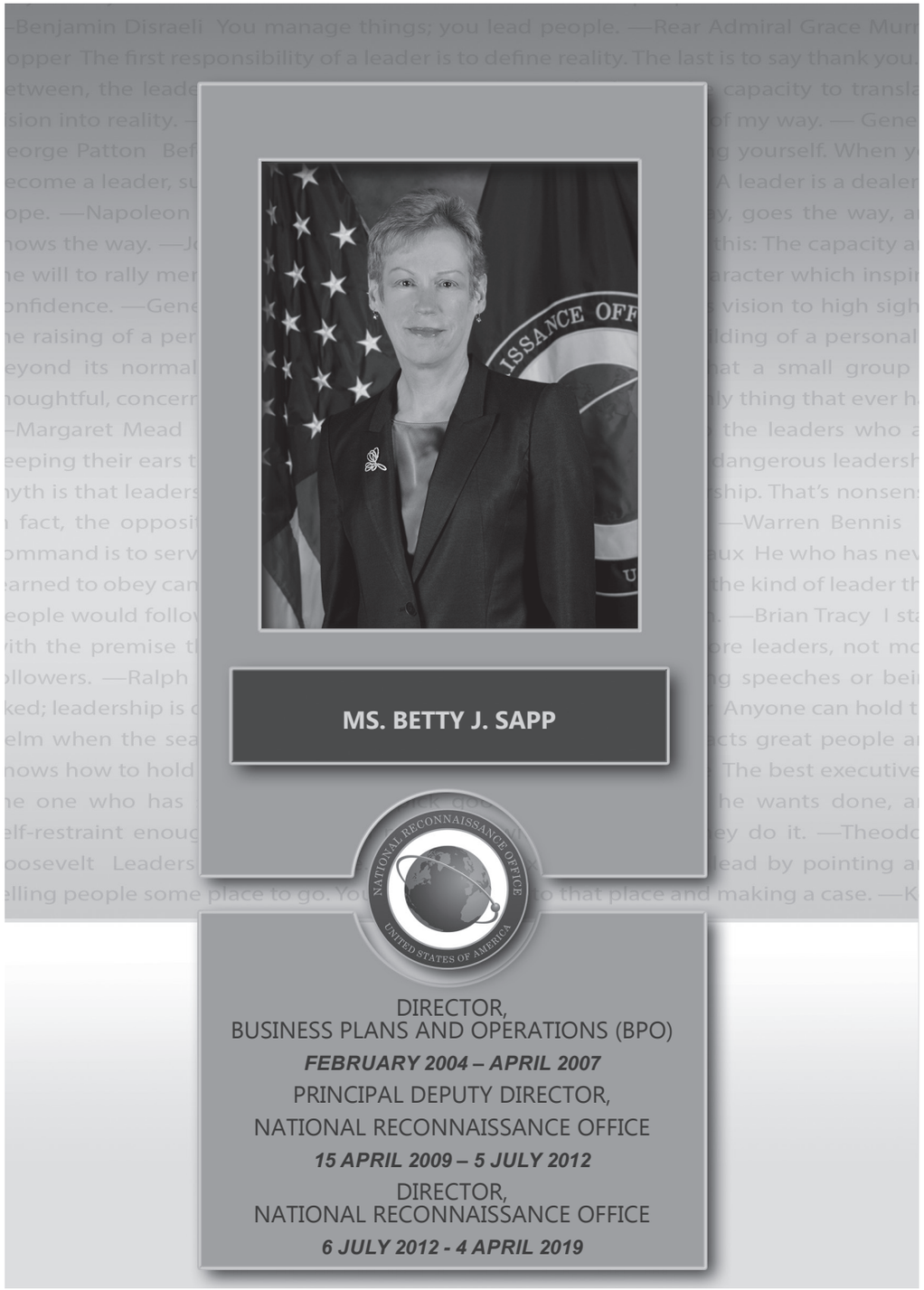
Dr. Pedro Luis "Pete" Rustan was born in Guantanamo, Cuba on 29 December 1946. He received B.S.E.E and M.S.E.E. degrees from the Illinois Institute of Technology in Chicago in 1969 and 1970, respectively. He was awarded a Ph.D. in Electrical Engineering from the University of Florida in 1979.

Dr. Rustan served a 26-year career in the United States Air Force, where he managed several spacecraft programs that used advanced technologies and implemented a shorter concept-to-end-product development philosophy. He was the mission manager for the Clementine spacecraft, which mapped the surface of the Moon and obtained more than 1.8 million images using 11 spectral bands. The construction and testing of the Clementine mission took just over 22 months from concept to launch and cost only $80M. The Clementine mission demonstrated, for the first time, that a fairly sophisticated spacecraft with specialized cameras could be built on a shortened time schedule. Of scientific note, Clementine's radar returns suggested the presence of ice at the Moon's South Pole.

In November 2003, Dr. Rustan was named Director of the NRO's Advanced Systems & Technology Directorate. He served there until January 2008, when he was named the NRO's first Director of the newly-created Ground Enterprise Directorate. In July 2009, he was named the NRO's Deputy Director for Mission Support, a role that was subsumed when Dr. Rustan was named the first Director of the new Mission Support Directorate, National Reconnaissance Office, on 8 September 2009. He served there until his retirement in August 2011.

Dr. Rustan published more than 60 scientific papers regarding such varied subjects as spacecraft design, digital signal processing, control system design, biomedical engineering, lightning physics, and streamlined program management. He was a dedicated advocate for intelligence community integration, rapid prototyping, and selecting the best value proposition to address intelligence needs.

Dr. Rustan was an AIAA Fellow and received many national and international awards, including the Aviation Week and Space Technology Hall of Fame Laureate, the Disney Discovery Award for Technological Innovation, the National Space Club Astronautics Engineer Award, and the NASA Outstanding Leadership Medal. He was featured by Space News in that periodical's "Top 100 in Space 1989 - 2004" listing. He died on 28 June 2012.



Betty Jean Sapp was born in St. Louis, Missouri. She holds a Bachelor of Arts, and an MBA, Management (1979), both from the University of Missouri, Columbia. She is also Level III certified in Government Acquisition and was certified as a Defense Financial Manager.

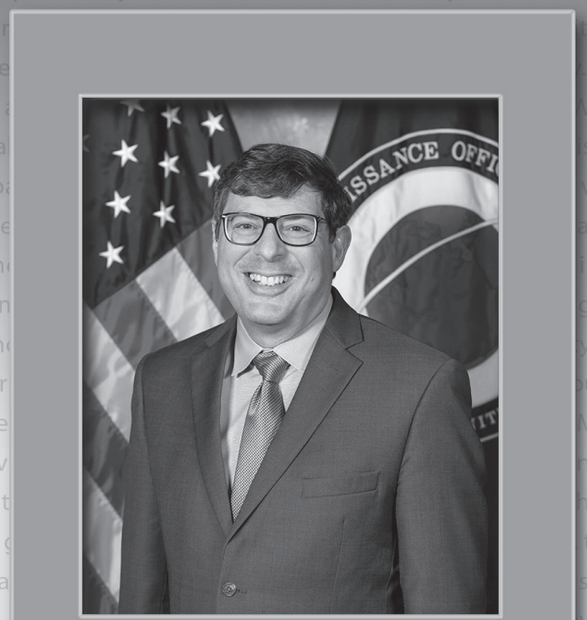
Ms. Sapp began her government career in 1978 as a United States Air Force officer in a variety of acquisition and financial management positions, including: business management positions in the NRO; Program Element Monitor at the Pentagon for the MILSTAR system; Program Manager for the FLTSATCOM program at the Space and Missile Systems Center in Los Angeles; and manager of a joint-service development effort for the A-10 engine at Wright-Patterson Air Force Base in Dayton, Ohio.

In 1997, Ms. Sapp joined the Central Intelligence Agency. She was assigned to the NRO where she served in a variety of senior management positions. In 2005, she was appointed the Deputy Director, NRO for Business Plans and Operations. As such, she was responsible for all NRO business functions, including current-year financial operations, preparation of auditable financial statements, business systems development, budget planning, cost estimating, and contracting, as well as all executive and legislative liaison activities.

In May 2007, Ms. Sapp was appointed the Deputy Under Secretary of Defense (Portfolio, Programs and Resources), Office of the Under Secretary of Defense for Intelligence. In that position, she was responsible for: executive oversight of the multibillion-dollar portfolio of defense intelligence-related acquisition programs; the planning, programming, budgeting and execution of the multibillion dollar Military Intelligence Program; and the technology efforts critical to satisfying both current and future warfighter needs.

In April 2009, Ms. Sapp was appointed the Principal Deputy Director, National Reconnaissance Office. As PDDNRO, she provided overall day-to-day management of the NRO, with decision responsibility as delegated by the DNRO.

Ms. Sapp was appointed the 18th Director of the National Reconnaissance Office, and first female DNRO, on 6 July 2012. She served as DNRO for seven years, leaving the Agency in April 2019.



HONORABLE
DR. CHRISTOPHER J. SCOLESE

DIRECTOR,
NATIONAL RECONNAISSANCE OFFICE
5 AUGUST 2019 - PRESENT

Originally from Buffalo, New York, Christopher J. Scolese holds a Bachelor of Sciences degree in electrical and computer engineering from the State University of New York at Buffalo, New York (1978); a Master's degree in electrical and computer engineering from George Washington University, Washington, D.C. (1982); and a Ph.D. in systems engineering, also from George Washington University (2016).

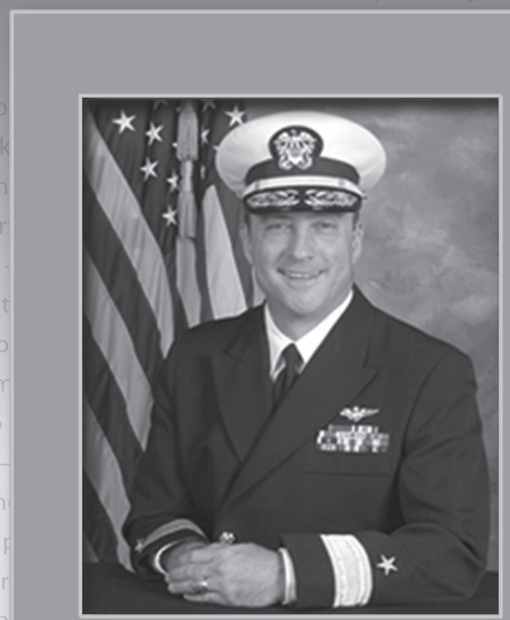
He began his government career as a United States Naval Officer in 1978, supporting a variety of Naval Nuclear Propulsion Programs for the U.S. Navy and the Department of Energy. In 1987, following a brief period of service working in government and industry, Dr. Scolese joined the National Aeronautics and Space Administration (NASA) where he was assigned to the Goddard Space Flight Center, located in Greenbelt, Maryland. During this period, he served in a variety of senior management positions including Earth Observing System (EOS) systems manager, EOS Terra project manager, EOS program manager, and deputy director of Flight Programs and Projects for Earth Science.

In 2001, Dr. Scolese was assigned to NASA Headquarters in Washington, D.C., where he served as the deputy associate administrator in the Office of Space Science. In this position, he was responsible for the management, direction, and oversight of NASA's Space Science Flight Program, mission studies, technology development, and overall contract management of the Jet Propulsion Laboratory.

In 2004, Dr. Scolese went on to become the deputy director, Goddard Space Flight Center, where he assisted the director in overseeing all activities, before returning to Washington, D.C. to become NASA's chief engineer in 2005. As chief engineer, he was responsible for ensuring all development and mission operations were planned and conducted on a sound engineering basis. In 2007, he was appointed the associate administrator, responsible for the oversight and integration of NASA's programmatic and technical efforts. And from January to July 2009, Dr. Scolese served as NASA's acting administrator, responsible for leading the development, design, and implementation of the nation's civil space program.

In 2012, Dr. Scolese went on to serve as the director, Goddard Space Flight Center, where he led the nation's largest organization of scientists, engineers, and technologists responsible for building spacecraft, instruments and new technology to study Earth, the sun, our solar system, and the universe. On 31 July 2019, Dr. Scolese retired from NASA.

Dr. Christopher J. Scolese was sworn-in as Director, NRO on 5 August 2019. He was the 19th Director, and the first to be Presidentially Appointed and Senate Confirmed. Dr. Scolese provided direction, guidance, and supervision on matters pertaining to the NRO and executed other authorities specifically delegated by the Secretary of Defense and the Director of National Intelligence.



REAR ADMIRAL
VICTOR C. SEE, JR, USN

DIRECTOR,
COMMUNICATIONS SYSTEMS ACQUISITION
AND OPERATIONS DIRECTORATE
AUGUST 2004 – DECEMBER 2008

Rear Admiral Victor C. See graduated from the United States Naval Academy in 1980 with a bachelor's of science degree in oceanography and physics. He received his Naval Aviator Wings in October 1981 and was assigned to Helicopter, Anti-Submarine Light Squadron 32 (HSL-32) in Norfolk, Virginia.

In 1985 he reported to the Naval Air Systems Command Washington, D.C., as an Avionics System Project Officer. He was selected as an Aerospace Engineering Duty Officer (AEDO) and sent to the Naval Postgraduate School, Monterey, California. He graduated in September 1989 with a master's of science degree in aeronautical engineering and avionics and became the Community Manager for AEDO.

In June 1992, See reported to the Naval Research Laboratory, Washington, D.C. as the System Engineering Division Head for the Special Systems Program and subsequently became Deputy Program Manager then Program Manager in January 1995.

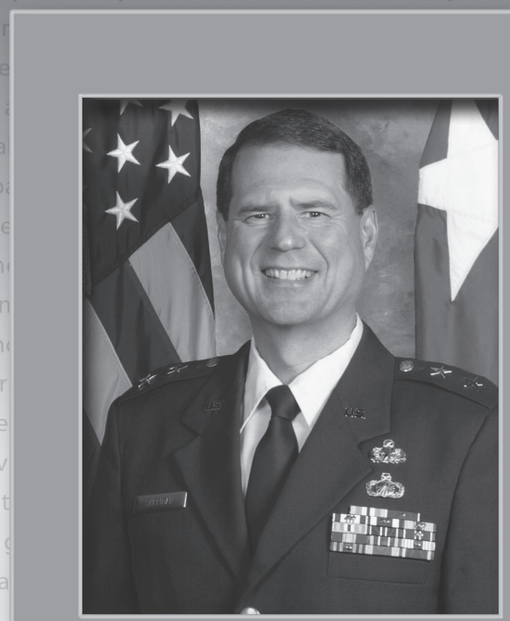
In July 1995, he assumed Command of the Defense Contract Management Command (DCMC) Lockheed Martin Federal Systems, Owego, New York, overseeing management of 660 DoD contracts, including delivery of the Navy's SH-60B and MH-60R helicopter programs.

In August 1998, See reported to the SPAWAR Space Field Activity (SSFA) at the National Reconnaissance Office. He later held positions as the Chief of Systems Engineering for the Integrated Overhead SIGINT Architecture - Phase 2 (IOSA-2) Program and Program Manager for Advanced SIGINT Architectures & Technology.

In 2000, See reported to the NRO's Communications Systems Acquisition and Operations Directorate to serve as the Director of the Acquisition and Engineering Group. He led seven divisions involved in the pre-building, acquiring and deploying of communications satellites, terrestrial systems and computer systems worldwide.

See was promoted to Rear Admiral in June 2004, just before being named Director of the Communications Systems Acquisition and Operations Directorate in August 2004. RADM See was also the Commander, Space and Naval Warfare Systems Command's Space Field Activity and Program Executive Officer for Space Systems. He served there until December 2008.

RADM See's military decorations include the Legion of Merit, the Defense Meritorious Service Medal with 2 Oak Leaf clusters, and the Navy Commendation Medal, in addition to numerous unit and service awards.



MAJOR GENERAL
JOHN T. SHERIDAN, USAF

DEPUTY DIRECTOR,
NATIONAL RECONNAISSANCE OFFICE
31 JULY 2006 - 16 MAY 2008

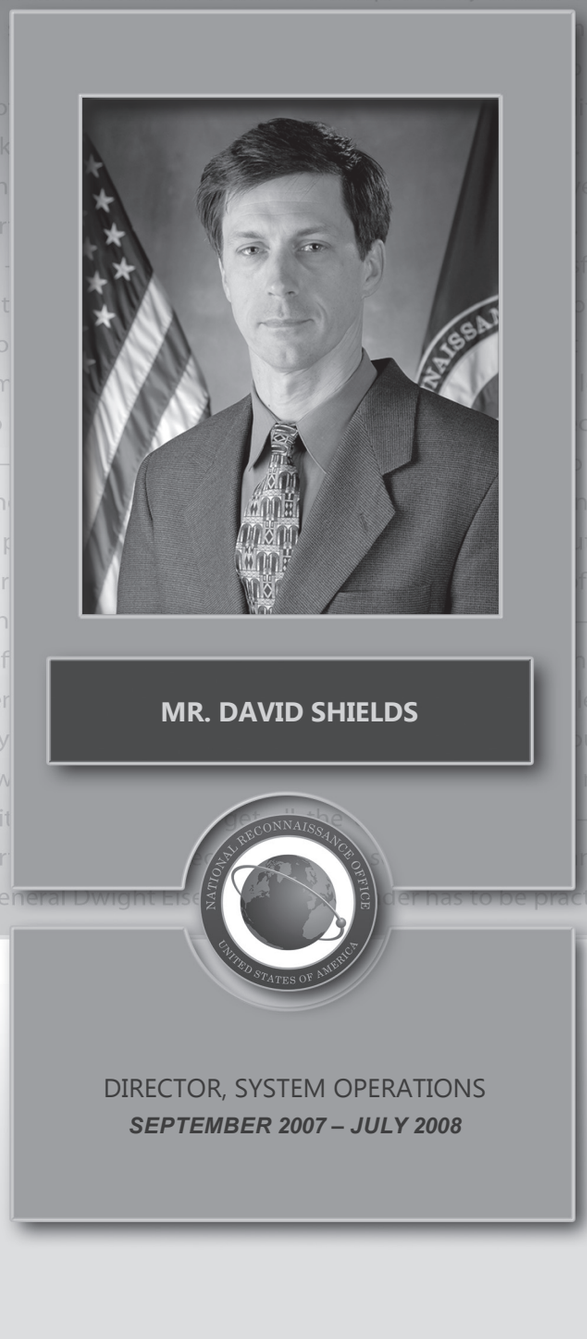
John T. "Tom" Sheridan graduated from the University of Connecticut in 1973 with a Bachelor of Science in mechanical engineering. He completed the university's Air Force ROTC program as a distinguished graduate. Following an educational delay to earn a Master of Business Administration degree from Bryant College in Rhode Island, he entered active duty in August 1975. He later earned a second Master of Science in resource strategy from the Industrial College of the Armed Forces, National Defense University in 1996.

General Sheridan's experience included acquisition leadership of aircraft, simulator and classified space programs; requirements development across all Air Force space programs; and operational leadership in four different national space programs. Early in his career, from October 1982 to July 1987, Captain and then Major Sheridan served as the Chief of Satellite Operations and later Chief of the Ground Systems Division, Operating Division 4 within the Office of the Secretary of the Air Force at Sunnyvale Air Station. From February 1988 to June 1991, he served as the Director of Operations for Space Systems Division, Detachment 1. For the following year, he served as Program Manager, Advanced Systems Program Office, Space and Missile Systems Center.

In July 1992, Lieutenant Colonel Sheridan was named Deputy Chief of Space Command, Control, Communications, and Intelligence Division at the U.S. Air Force Headquarters. From July 1994 to June 1995, he served as military assistant to the Assistant Secretary of the Air Force for Space, and from May 2000 to June 2002, as the Commandant of Air Command and Staff College at Maxwell Air Force Base, Alabama. From June 2002 to May 2005, Brigadier General Sheridan was the Director of Requirements, Headquarters Air Force Space Command, Peterson Air Force Base, Colorado. The following year, he served as Program Executive officer and System Program Director for Space Radar.

In July 2006, Major General Sheridan was appointed Deputy Director, National Reconnaissance Office, and Program Executive Officer and System Program Director for Space Radar. As Deputy Director, he assisted the Director and Principal Deputy Director in the day-to-day direction of the NRO, and also served as the senior Air Force officer for Air Force civilian and uniformed personnel assigned to the organization. For Space Radar, he directed a program designed to satisfy both Department of Defense and Intelligence Community needs as part of a system of systems integrated approach toward persistent surveillance and reconnaissance capability for the nation. He served in these capacities until May 2008.

Lieutenant General Sheridan's awards and decorations include the Distinguished Service Medal, the Defense Superior Service Medal with oak leaf cluster, the Legion of Merit with oak leaf cluster, the Defense Meritorious Service Medal with two oak leaf clusters, the Meritorious Service Medal with two oak leaf clusters, the Air Force Commendation Medal with two oak leaf clusters, the National Defense Service Medal with one service star, and the Global War on Terrorism Service Medal.



MR. DAVID SHIELDS

DIRECTOR, SYSTEM OPERATIONS
SEPTEMBER 2007 – JULY 2008

David R. Shields entered on duty in 1984 upon completion of his studies in electrical engineering and applied physics at Case Western Reserve University in Cleveland, Ohio.

Mr. Shields began his CIA career working on research for the Office of Development and Engineering, primarily in the areas of antennas and radio frequency propagation. In 1987, Mr. Shields joined a SIGINT satellite collection program, employed in the mission support area.

From 1988 to 1990, Mr. Shields served at an NRO Mission Ground Station where he helped optimize system collection as Chief of the Systems Engineering lab. Between 1991 and 1995, Mr. Shields led the acquisition of several multimillion-dollar signal processing systems. In 1995, he became Deputy Director of the Assessments and Engineering Group in the NRO's Office of Plans and Analysis. The group had responsibility for NRO-wide systems engineering.

In 1996, Mr. Shields became a division chief in Systems Development Group (SDG), Office of Technical Collection. In 1998, he was appointed Chief of SDG's Systems Engineering Division and had end-to-end responsibility for ensuring the newest collection system deployed successfully. He received the Directorate of Science & Technology's McCone Award in 2004 in recognition of his contribution to the team.

In late 2000, Mr. Shields was appointed Director of the Engineering Technology Group in the Advanced Technology Program. The Emerging Technology Group was responsible for execution of CIA's research and development program. From July 2002 through July 2005, Mr. Shields served as the Chief of Facility at an NRO Mission Ground Station. Upon completion of that assignment, he was appointed Director of Systems Operations in the NRO's IMINT Directorate. In that role, he also served as Chief of Facility at ADF-E until November 2007. Mr. Shields was named Deputy Director, OD&E effective 1 March 2006. He served in this role concurrently with the IMINT responsibilities assigned to him in 2005.

Mr. Shields was named Director of the CIA's Office of Development and Engineering effective 8 May 2007. He was named Director of the NRO's newly-formed System Operations Directorate in November 2007. He served there until July 2008.

MAJOR GENERAL
DONNA D. SHIPTON, USAF

DEPUTY DIRECTOR,
NATIONAL RECONNAISSANCE OFFICE
9 AUGUST 2021 – 19 AUGUST 2022

Donna D. Shipton graduated with her Bachelor of Science in Electrical Engineering from Clemson University in 1991. She then earned a Master of Business Administration from Chapman University in 1995, a Master of Arts in Organizational Management from George Washington University in 2000, a Master of Space Systems from the Air Force Institute of Technology in 2005, and a Master of National Security Strategy from the National War College in 2010.

Second Lieutenant Shipton received her commission in May 1992 as a distinguished graduate of Air Force ROTC after graduating from Clemson University. During her career, she served in a variety of positions including Program Manager, Satellite Engineer, Squadron and Group Commander, Senior Materiel Leader, Assistant Secretary of the Air Force for Acquisition Senior Military Assistant, and Air Force Program Executive Officer. She served at the NRO a number of times throughout her career, including as a Flight Commander at Onizuka Air Station from July 1996 to July 1998, Chief of the Satellite Engineering and Operations Branch out of Aerospace Data Facility-Colorado from May 2000 to June 2002, and Commander of the Network Operations Group for the Mission Operations and Communications Directorates from July 2012 to April 2014.

In June 2019, Brigadier General Shipton was named Vice Commander of the Space and Missile Systems Center, Los Angeles AFB, California, with duty as the Air Force Deputy Program Executive Officer (PEO) for Space, and PEO for Space Enterprise. She was responsible for assisting the commander in managing the research, design, development, acquisition, and sustainment of space and missile systems, launch, command and control, and operational satellite systems.

In July 2020, Major General Shipton became Director of Strategic Plans, Programs, Requirements, and Analyses, Headquarters Air Force Material Command (AFMC), Wright-Patterson Air Force Base, Ohio. She was responsible for command-wide strategic planning, programming, enterprise analyses, wargaming, and operational requirements. She governed the Program Objective Memorandum process for AFMC.

Major General Shipton became Deputy Director of the NRO in August 2021. Her responsibilities included assisting the director in managing the strategic and tactical operations of the NRO. Additionally, as the Commander, Space Force Command Element, she managed all Air Force & Space Force Personnel and resources assigned to the NRO and served as the senior advisor to the director on all military matters. She served there until August 2022.

During her career, Lieutenant General Shipton earned the Distinguished Service Medal, the Defense Superior Service Medal, the Legion of Merit with oak leaf cluster, the Defense Meritorious Service Medal with two oak leaf clusters, the Meritorious Service Medal with oak leaf cluster, the Joint Service Commendation Medal with oak leaf cluster, the Air and Space Commendation Medal with two oak leaf clusters, the Joint Service Achievement Medal with oak leaf cluster, and the Air and Space Achievement Medal.

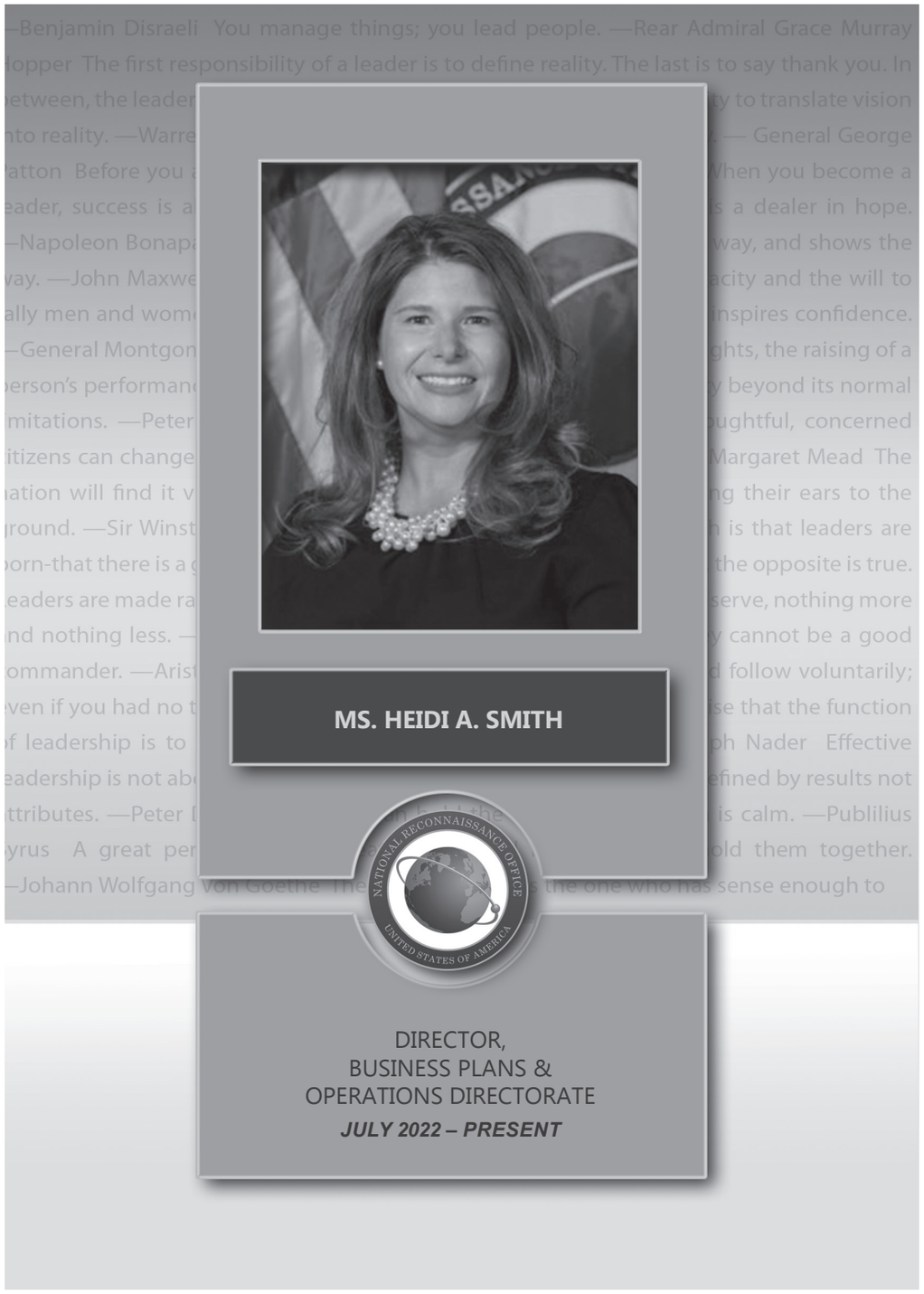
Colonel Matthew E. Skeen earned his Bachelor of Science in Astronautical Engineering in 1990 from the United States Air Force Academy, Colorado, and a Master of Science in Aeronautics and Astronautics in 1992 from the Massachusetts Institute of Technology, Cambridge. Later in his career, Col Skeen earned master's degrees in military operational art and science/studies from the Air Force Air Command and Staff College in 2003 as well as a master's from the National War College in national security policy studies in 2008.

Col Skeen entered the Air Force in 1990 after graduating from the Air Force Academy. In his first assignment, he served as a payload manager, participating in 13 Global Positioning System satellite launches and one MILSTAR satellite launch at Cape Canaveral Air Force Station (CCAFS), Florida. He then attended the Air Force Test Pilot School at Edwards Air Force Base, California. Upon graduation, he served as an F-16 flight test engineer and later as a flight commander, assistant operations officer, and test squadron commander.

Following these assignments, Col Skeen attended Air Command and Staff College at Maxwell Air Force Base, Alabama. From July 2004 to July 2007, he worked as the Director of Systems Engineering and as Deputy Program Manager for a satellite acquisition program at the NRO before attending the National War College at Fort McNair, Washington, D.C. From July 2008 to July 2011, Col Skeen served as the Deputy Director of Manned Airborne Intelligence Surveillance and Reconnaissance (ISR) Programs in the Office of the Under Secretary of Defense for Intelligence, providing oversight to Army, Navy, Air Force, and Marine Corps ISR programs. From July 2011 to July 2014, he served as commander of the 45th Launch Group at CCAFS, Florida. In July 2014, Col Skeen returned to the NRO as the Senior Program Manager, Space Systems Program Office, Signals Intelligence Acquisition Directorate, NRO.

In July 2016, Col Skeen was named the NRO's Director of the Office of Space Launch. In that role, he had total launch responsibility for 11 critical satellite reconnaissance programs, led a 700-member government and contractor organization with three squadrons. Col Skeen orchestrated booster acquisition, system integration, mission transport, and processing for launch missions with values exceeding $3 billion. He also served as the Mission Director for all NRO launches—the single authority for NRO launch mission success. He served there until July 2019.

Col Skeen was awarded the Legion of Merit; Defense Meritorious Service Medal with oak leaf cluster; Meritorious Service Medal; Aerial Achievement Medal; and Air Force Commendation Medal with oak leaf cluster. In April 2019, Col Skeen was named the 2019 Jimmie D. Hill Award recipient.



Ms. Heidi A. Smith earned a Bachelor of Arts in Journalism and Political Science from the University of North Carolina at Chapel Hill in 1999. She joined the Intelligence Community that year as an imagery analyst at the National Imagery and Mapping Agency and subsequently served in a variety of high visibility roles to include shaping then-NGA Director Clapper's strategic engagements related to the 2005 Intelligence Reform and Terrorism Prevention Act, which established the Office of Director of National Intelligence. In 2006, she was detailed to the ODNI responsible for establishing the Geospatial-Intelligence Committee.

From August 2007 to April 2014, Ms. Smith served in the Office of the Under Secretary of Defense for Intelligence (OUSD(I)). During her tenure, Ms. Smith served as the Director, Intelligence Sharing & Partner Engagement responsible for managing foreign partnerships, developing Defense Intelligence Enterprise intelligence sharing policy and foreign engagement strategy, and overseeing intelligence interactions with NATO. From August 2008 to July 2012, she served as the Senior Advisor to the Principal Deputy, USD(I) advising him and the USD(I) on Military Intelligence Program (MIP) budget decisions, national security and intelligence policy, and foreign partner engagement. She also served as an OUSD(I) Congressional Liaison responsible for managing Congressional interactions on defense intelligence initiatives to include warfighter support, human capital management, cyber security, and human intelligence.

Prior to joining the NRO, Ms. Smith served as the Deputy Director for Plans and Programs at the National Geospatial-Intelligence Agency where she was responsible for developing NGA's annual budget request and providing oversight of strategy, policy, and resource management. She also served as the Business Services Portfolio Manager, ensuring the Agency's National Intelligence Program and MIP resources and operations were maximized to meet NGA's strategic goals and objectives. From April 2014 to November 2015, Ms. Smith served as the Director, Financial Systems and Business Process Solutions, where she led the effort to acquire and implement the Organization Requirements & Budgeting Information Tool and served as the NGA/NRO Application Service Provider Program Manager.

Ms. Smith joined the NRO in 2017 as the Director, NRO Office of Congressional and Public Affairs, where she led an office of congressional liaisons and public affairs specialists responsible for representing NRO's equities to Congress and shaping NRO's strategic messages—ranging from national news organizations to social media outreach. She then served as the Deputy Director, BPO and Deputy, CFO.

In July 2022, Ms. Smith was named the Director, BPO at the National Reconnaissance Office. As a member of the NRO's senior leadership team, she was responsible for budget management and financial control for the agency. She led BPO's workforce of over 400 professionals to deliver comprehensive resource management and communication solutions through the integration of cost analysis, earned-value, accounting and finance, audit, travel, legislative and public affairs, resource prioritization, as well as the history of the NRO.

Ms. Smith also served as NRO's CFO, responsible for corporate-level programmatic planning, budget formulation, budget justification, and budget execution. She was the principal NRO interlocutor for resource-related issues with the ODNI, DoD, and OMB. She also ensured NRO compliance with applicable ODNI, DoD, and OMB policies, directives and guidelines pertaining to financial management.

Ms. Smith was the recipient of the Office of the Secretary of Defense Exceptional Civilian Service Award, the NGA Superior Civilian Service Award, and multiple National Intelligence Meritorious Unit Citations.

COLONEL
JOHN G. STIZZA, USAF

DIRECTOR, OFFICE SPACE LAUNCH
OCTOBER 2007 – 2009

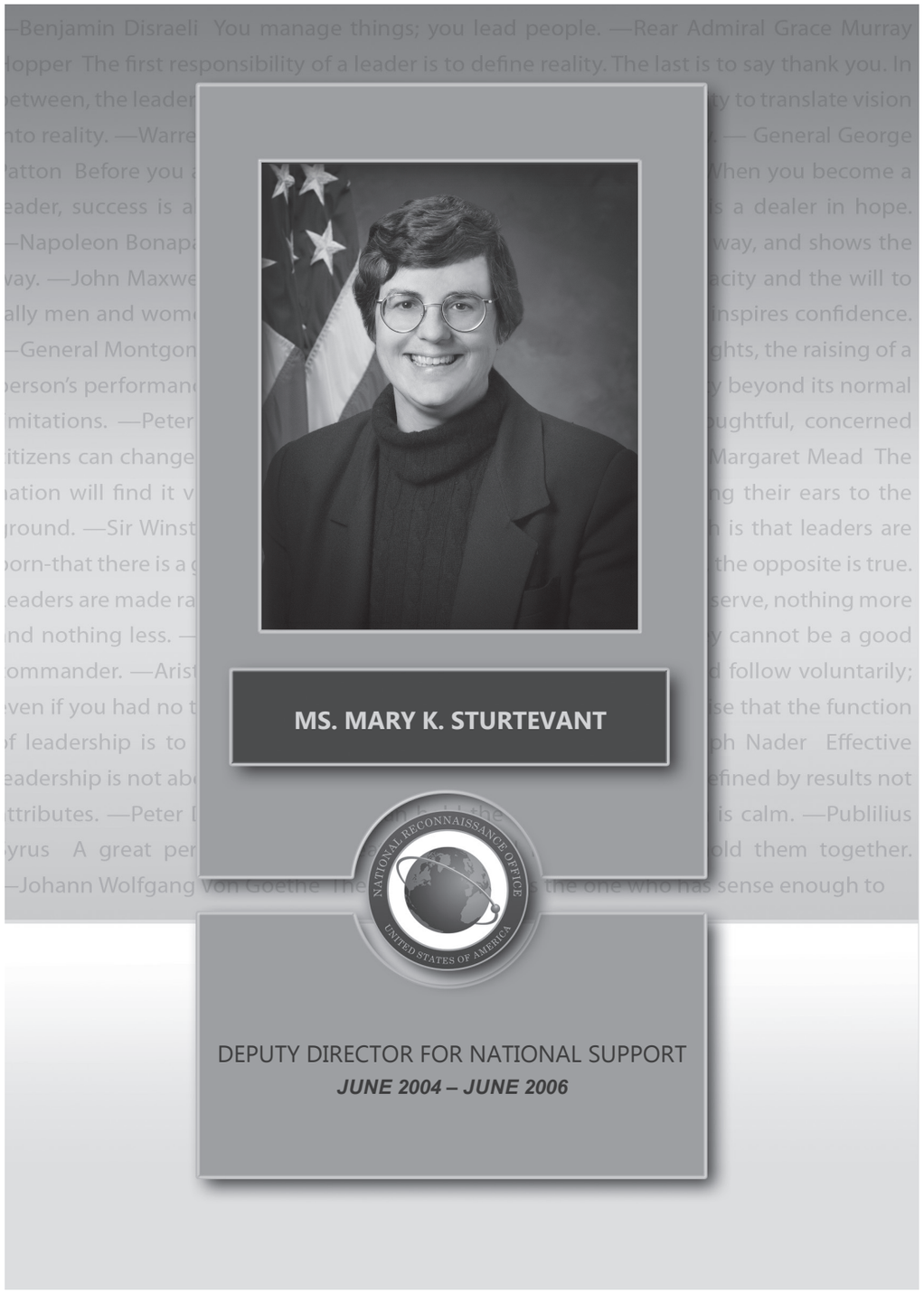
John G. Stizza graduated with his bachelor's degree from the U.S. Air Force Academy in 1983. He later earned a master's degree in systems management from Golden Gate University in 1991 and a second master's degree in military strategic studies from the Air War College in 2005.

His first assignment after graduation from the Air Force Academy was at Wright-Patterson Air Force Base (AFB), Ohio as an F-16 Flight Simulator Systems Engineer. His responsibilities included designing, testing and delivering flight trainers to U.S. and allied Air Forces around the globe. In 1988, he was assigned to the Western Space and Missile Center, Vandenberg AFB, California, supporting classified payload integration to ground support launch facilities. In 1991, he became the lead systems engineer for Space Launch Complex 40, overseeing the demolition and rebuild of the $450M launch complex to accommodate the nation's largest expendable booster, the Titan IV. In 1993, he transferred to the 45th Space Wing, Cape Canaveral Air Station, Florida, where he completed tours as a Titan IV Launch Controller, Delta II Maintenance Officer, and 45th Space Wing Chief of Standardization and Evaluation. During this time, he was a certified crew member on four Titan IV launches and nine Delta II launches acquisition.

Col Stizza came to the NRO Chantilly Headquarters in 1997 where he worked in the Office of Space Launch (OSL), acquiring launch services for NRO systems. His next assignment at the NRO was in the Office of Legislative Liaison where he provided the interface between the U.S. Congress and NRO programs and eventually became the Deputy Director, Legislative Liaison.

In December 2000, Col Stizza assumed command of the NRO Operations Squadron (NOPS), Schriever AFB, Colorado. His unit provided telemetry acquisition and relay for all NRO launches and all Evolved Expendable Launch Vehicle (EELV) launches for Air Force Space Command. After this assignment, Col Stizza then moved to the staff at Headquarters Air Force Space Command where he managed efforts to maintain the nation's launch ranges and satellite control networks while also managing procurement of the next-generation launch vehicle, EELV. Next, Col Stizza served as Deputy Director of OSL at the NRO, Los Angeles AFB, California.

Colonel Stizza assumed the duty of Director, OSL in October 2007. In that role, he was responsible for the successful delivery of every NRO satellite on orbit, on time. He served there until 2009



A California native, Mary K. Sturtevant graduated summa cum laude from the University of California at Santa Barbara in 1978 with a double bachelor's degree in history and Russian area studies. As part of her university experience, she studied overseas in France and the Soviet Union. The year following graduation, she worked as a courier for a law firm. Ms. Sturtevant received a Master's in Soviet Studies and International Economics from the School for Advanced International Studies of the Johns Hopkins University in 1981.

Prior to government service, Ms. Sturtevant worked at the BDM Corporation. She conducted research and analysis on a wide range of defense and arms control issues. As Associate Manager, she was assigned full-time on-site at the State Department's Office of Foreign Missions, a component charged with ensuring that reciprocity and national security interests were maintained in the Department's dealings with foreign embassies.

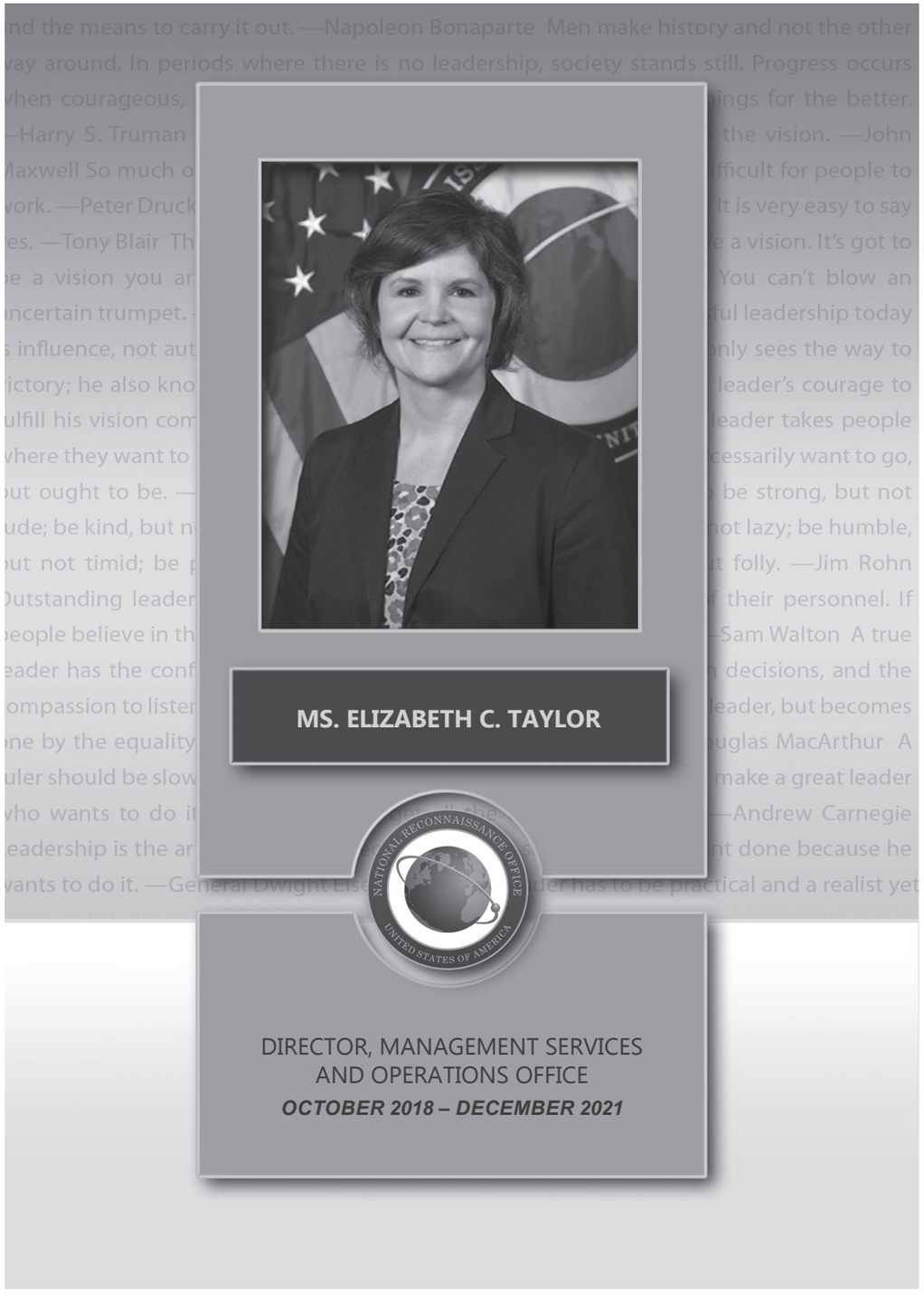
Ms. Sturtevant's CIA career began in 1985 in the DI's Technology Transfer Assessment Center as an analyst focused on the role of Soviet intelligence in the acquisition of western dual-use technology. She was sponsored by the Directorate for the first annual running of the Women's Executive Leadership Program, which allowed her to conduct fellowship tours with the DCI's Arms Control Intelligence Staff, the National Security Staff, the Office of Management and Budget, and the office of United States Senator William Cohen. Returning to the Agency for a new assignment with the Counterintelligence Center, Ms. Sturtevant was recruited to the Senate Select Committee on Intelligence, where she served for eight years. While there, she evaluated tactical military programs, provided advice on CIA programs, and served as Budget Director, responsible for all the staff support for the annual authorization of the intelligence budget.

In 1997, Ms. Sturtevant was asked to return to the Agency as the Comptroller. There she worked closely with the Community Management Staff, Office of Management and Budget, and congressional oversight committees to ensure understanding of and support for Agency resource requirements. Ms. Sturtevant also worked to support the development and implementation of the DCI's Strategic Direction. She oversaw the reengineering of decades-old Comptroller processes and introduced information technology to office functions.

In November 1999, Ms. Sturtevant was named Deputy Director, Clandestine Information Technology Office at the CIA, an office formed as a joint venture between the DS&T and DO. As Deputy Director, Ms. Sturtevant assisted the Director in leading the Agency's efforts to conduct computer network exploitation and attack activities, cryptographic procurement efforts, and multiple technical collection activities.

On 9 July 2001, Ms. Sturtevant was appointed Special Assistant to the President and Senior Director for Intelligence Programs, National Security Council staff under President George W. Bush.

In June 2004, Ms. Sturtevant was named the NRO's Deputy Director for National Support. She served there until June 2006.



Elizabeth C. Taylor grew up in the Washington, DC area, and she began her service with the CIA in September 1990, upon graduating from high school. She entered on duty as an intelligence secretary on the Management Planning and Services Staff, Directorate of Intelligence. She then graduated with her Bachelor of Science in accounting in 1994.

Ms. Taylor served in a variety of leadership positions across the CIA. From February 2009 to August 2011, she served as Deputy Chief, Resource Management Group, Operations and Resource Management Staff, National Clandestine Service (NCS) where she oversaw NCS finance, budget, and the administrative process for proprietaries.

From August 2011 to December 2012, she served as the Chief Financial Officer, Diplomatic Telecommunications Services Program Office, Chief Information Officer. In this joint duty assignment, she led resource and acquisition management by providing communications services to the Intelligence and Foreign Affairs Communities.

Ms. Taylor served as Chief of the Transportation Support Center, Logistics Office, Office of Global Services from December 2012 to November 2014. Then from November 2014 to September 2016, she served as Deputy Chief, Mission Support, Office of Global Services. In this assignment, she was the deputy of the Special Assistant and Mission Support Administrator.

From August 2016 to October 2018, Ms. Taylor served as Deputy Director for the Office of Facilities and Mission Delivery (OFMD) where she shared oversight of all facility management services for Agency facilities and infrastructures worldwide, while also leading the OFMD workforce across three separate sites.

In October 2018, Ms. Taylor was named the Director of Management Services and Operations for the NRO. As the senior support officer at the NRO, Ms. Taylor was responsible for leading the provision of key support services including facilities, logistics, warehousing, and transportation support; employee assistance, media, medical, fitness, and continuity of operations and emergency management support. She served there until December 2021.

MS. MISTY TULLAR

DIRECTOR, BUSINESS PLANS
AND OPERATIONS DIRECTORATE
6 FEBRUARY 2017 – JULY 2022

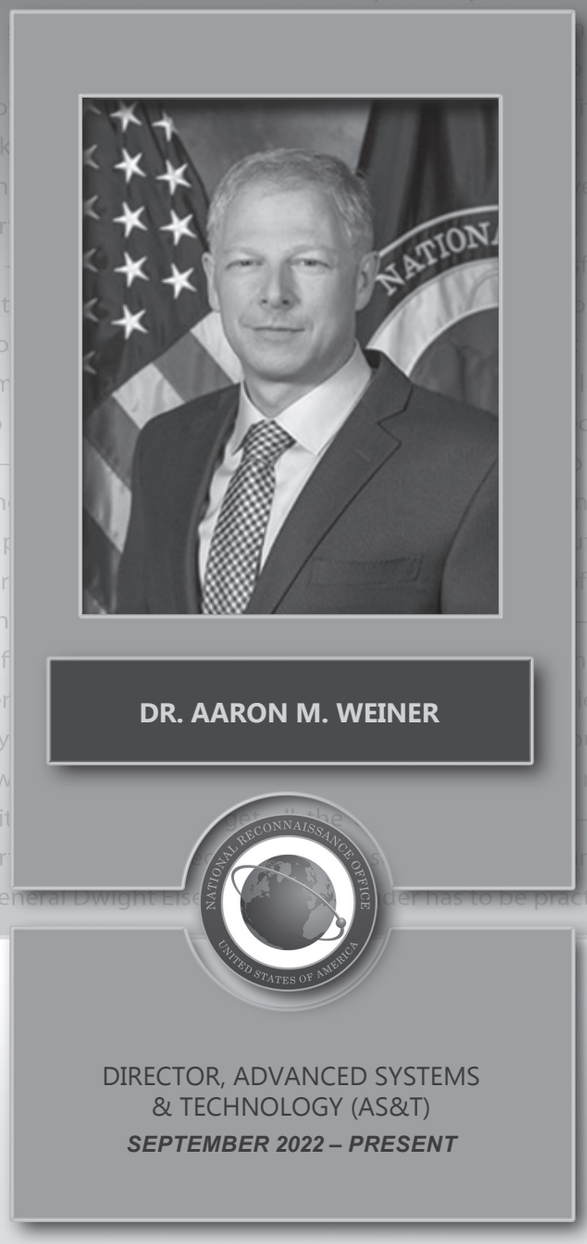
Ms. Misty Tullar was a national intelligence resource manager for more than 30 years. She grew up in the suburbs of the Washington, DC area. After graduating from high school, she began her career as a clerk typist with the federal government in 1984. She briefly worked for Raytheon, before returning to the federal workforce in 1988. Meanwhile she attended Northern Virginia Community College, earning her associate's degree in accounting, before earning her bachelor's degree in finance from George Mason University.

She began working for the Department of the Navy in 1988 on highly classified financial security activities. In 1997, she left the Department of the Navy for the Defense Intelligence Agency, where she held a variety of positions and served in a rotational assignment at OMB. In 2004, Tullar joined the Community Management Staff (now OD&I). In 2009, Tullar began serving in the Office of the Under Secretary of Defense for Intelligence as Director, Military Intelligence Program Resources.

In 2011, Ms. Tullar moved to the NGA where she first served as Deputy CFO, and later as Director of Plans and Programs, providing oversight for the development and execution of strategic planning, programming, acquisition and contracts, budgeting, corporate governance, and partner engagement. She also served as NGA's CFO, responsible for overseeing the day-to-day operations of the Financial Management Directorate, to include planning, organizing, directing, and implementing program evaluation, budgeting, financial management, cost analysis, manpower, management analysis, and financial reporting activities.

In February 2017, Ms. Tullar was named the Director, Business Plans and Operations Directorate, at the NRO. As a member of NRO's senior leadership team, Ms. Tullar was responsible for NRO budget management and financial control, independent cost estimating, and the study of national reconnaissance. She was also responsible for NRO strategic communications, including legislative liaison and public affairs.

Ms. Tullar was dual-hatted as the NRO's CFO, responsible for corporate-level programmatic planning, budget formulation, budget justification, and budget execution. As the CFO, she was the primary NRO interface on resource-related issues with the ODNI, the DoD, and the OMB, and was responsible for ensuring NRO's compliance with all applicable ODNI, DoD, and OMB policies, directives, and guidelines. In 2021, Ms. Tullar received the Lifetime Achievement for Senior Executive Service award. She served as the Director of BPO until July 2022.



Dr. Aaron M. Weiner holds a Bachelor of Science in Chemistry from the U.S. Air Force Academy, a Master of Science in Chemistry from Wright State University, a Master of Science in National Resource Strategy from the Eisenhower School at the National Defense University, and a Doctorate in Imaging Science from the Rochester Institute of Technology.

Prior to joining the NRO Cadre in 2022, Dr. Weiner served over 23 years in the U.S. Air Force, retiring as a Colonel. He served in multiple space related intelligence and acquisition assignments throughout his career. These included assignments at the National Air and Space Intelligence Center as an Overhead Persistent Infrared analyst, the Air Force Research Laboratory as a hyperspectral research scientist, and conducting acquisition oversight in the Office of the Assistant Secretary of the Air Force for Acquisition, and in the Office of the Under Secretary of Defense for Intelligence and Security as Deputy Director, Space Programs and Operations, at the Pentagon. From July 2003 to August 2007, he also taught in the chemistry and physics departments at the Air Force Academy. He was course director for the physics of space/remote sensing course and the course director for the physical chemistry laboratory. In addition, he taught in the Laser and Optics Research Center and co-developed a course on remote sensing in the space environment in collaboration with the Space Atmospheric Research Center. He received the earliest promotion to Assistant Professor in chemistry department history.

Dr. Weiner has held multiple leadership positions across the NRO. From July 2012 to June 2015 he was the Director, Payload Division in the Electro-Optical Satellite System Program office in the Imagery Intelligence Systems Acquisition Directorate, responsible for over 2 billion dollars in sensors and optical system flight hardware development. From July 2019 to July 2020, Dr. Weiner served as the Deputy Director of the Integrated Intelligence System Program Office in the Ground Enterprise Directorate, delivering collection orchestration systems, cloud-based frameworks, and situational awareness programs driven by multi-INT fusion. From July 2020 until September 2022, he was the Principal Deputy Director of the Geospatial Intelligence Directorate, where he developed program and acquisition strategies, directorate roadmaps, and guided the execution and enterprise integration for seven major system acquisitions, a pathfinder satellite, and engineering and research demonstration systems.

In September 2022, Dr. Weiner was selected as the Director, Advanced Systems and Technology Directorate, at the NRO. In this role, he led AS&T and the NRO Technical Enterprise by identifying, developing and demonstrating technologies that maintain the nation's intelligence advantage from space. He also served as the NRO Chief Technology Officer and, as of 29 September 2023, Director of the NRO Federal Laboratory.

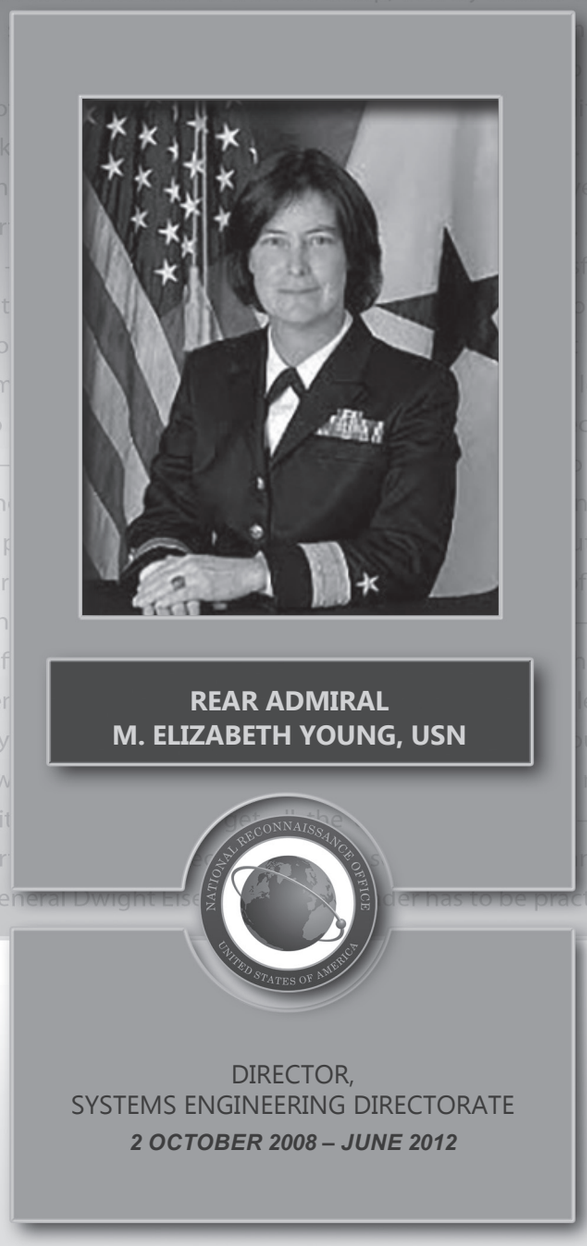
Ms. Tonya Wilkerson earned a bachelor of science degree in electrical engineering from Virginia Tech and a Master's in engineering management from George Washington University.

Ms. Wilkerson held a variety of NRO positions spanning a range of activities encompassing research and development, satellite acquisition, and satellite operations to include the Chief, Operations Division at Aerospace Data Facility - East (ADF-E). In this role, she successfully led an organization focused on transitioning complex collection system capabilities to mission partners, as well as delivering timely and responsive imagery data to Intelligence Community customers.

Additionally, Ms. Wilkerson served as the Director of the Systems and Architectures Group in the Office of Integrated Missions, Directorate of Science and Technology, where she was responsible for developing end-to-end technical collection strategies against hard target intelligence issues.

From April 2012 to June 2015, Ms. Wilkerson served as the Commander, ADF-E. As an NRO mission ground station, ADF-E is responsible for the day-to-day operations of constellations in the National Space Program.

Ms. Wilkerson was named the Director of Mission Operations, NRO in September 2015. As Director, she led operations for all NRO overhead reconnaissance systems, ground stations, and the operations center used to conduct intelligence activities essential for maintaining national security for the United States and its allies. She concurrently served as CIA's Director for the Directorate for Space and Technology, Office of Space Reconnaissance. She served there until April 2019.



REAR ADMIRAL
M. ELIZABETH YOUNG, USN

DIRECTOR,
SYSTEMS ENGINEERING DIRECTORATE
2 OCTOBER 2008 – JUNE 2012

Maude Elizabeth Young grew up in New Mexico and graduated in 1984 from the United States Naval Academy with a Bachelor of Science degree in chemistry. Her initial tour was at the Naval Space Surveillance Systems Command, Dahlgren, Virginia. In 1987 she attended the Naval Postgraduate School in Monterey, California, where she graduated in 1990 with a master's degree in physics.

After graduation, she reported to the Naval Research Laboratory in Washington, D.C. Her team developed biological warfare sensors which were deployed to the fighting forces during the first Gulf War and serve as the basis of many of today's detectors. While at the Naval Research Laboratory, she served additional duty to the Naval Space Technology Program.

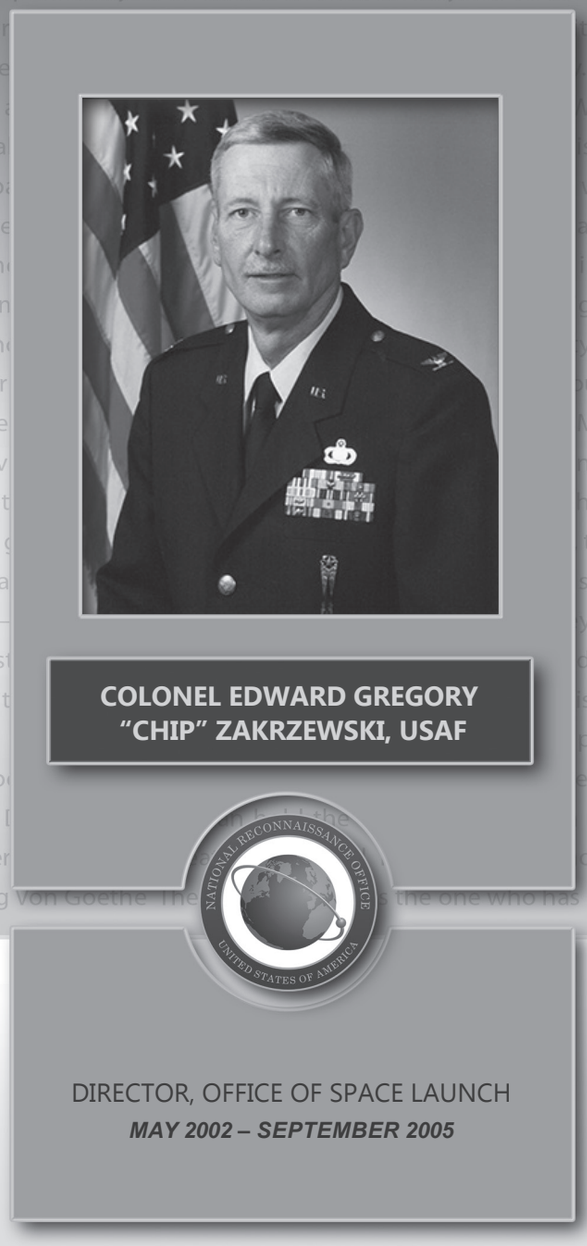
In 1992, Lieutenant Young reported as the Officer in Charge, Naval Space Command Detachment at the Defense Support System Ground Station at Buckley Air National Guard Base in Aurora, Colorado. During this tour she qualified as Crew Commander and was promoted to Lieutenant Commander.

In 1994, Lieutenant Commander Young reported to the Aerospace Data Facility at Buckley Air National Guard Base in Aurora. During this tour she developed and fielded a new ground processing upgrade at the Aerospace Data Facility and other facilities. Upon completing her tour, she attended and graduated from the Program Manager's Course at the Defense Systems Management College at Fort Belvoir, Virginia.

From 1997 to 1999 Lieutenant Commander Young served as the Assistant Program Manager for Systems & Engineering (Class Desk) on the Naval Tactical Unmanned Air Vehicle Program at the Naval Air Systems Command in Patuxent River, Maryland.

In 1999, Lieutenant Commander Young reported to the Space and Naval Warfare Systems Command (SPAWAR) Space Field Activity (SSFA) at the NRO where she served as the Deputy Chief Systems Engineer of the Future Imagery Architecture Program in the Imagery Intelligence (IMINT) Directorate and was promoted to Commander. In 2001, Commander Young was reassigned as the Deputy Program Manager and Chief Systems Engineer of the Advanced Concepts Staff in the IMINT Directorate. During this tour she led a three-year Technology Readiness Assessment of advanced, special technologies. While in this tour she was promoted to Captain.

RADM Young was named the Director, Systems Engineering Directorate in October 2008. In this role, she oversaw the reorganization from the DSI&E/Systems Engineering Director to the Systems Engineering Directorate in October 2009. She served concurrently as the Commander, SPAWAR SSFA, and Program Executive Officer for Space Systems, U.S. Navy. She served there until June 2012.



Edward Gregory "Chip" Zakrzewski grew up in Massachusetts, graduating from Holyoke High School. He entered the U.S. Air Force, where he would serve for 33 years, and graduated with his bachelor's degree in mechanical engineering from Purdue University in 1971. Upon graduation, Col Zakrzewski entered the Air Force's Enlisted Corps in June 1971 and commissioned through Officer Training School in November 1977. He later earned his master's degree in human resource management from Chapman University in 1987.

Col Zakrzewski's enlisted assignments as an Electronics Specialist included duty at Lowery Air Force Base (AFB), Colorado; Griffiss AFB, New York; RAF Bentwaters, England; and an Electronics Instructor position back at Lowery AFB, Colorado. His commissioned assignments included Technical Engineering at Minot AFB, North Dakota; Chief Engineering, GLCM, Dugway Proving Ground, Utah; Peacekeeper and Small ICBM programs, Norton AFB, California; Acquisition Inspector with the Air Force Inspection Agency, Kirtland AFB, New Mexico; and design, development and test of various systems in air, ground and space applications at Los Angeles AFB, California.

Col Zakrzewski was assigned to the NRO in August 1996. He was the Deputy Director, Office of Space Launch from 1996 to 2002 and performed dual duties as the NRO Deputy to the Evolved Expendable Launch Vehicle System Program Office at Los Angeles AFB, California.

In May 2002, Colonel Zakrzewski was named Director, Office of Space Launch. During his tenure, he was responsible for eleven satellite reconnaissance programs of the highest national priority. He served there until September 2005.

Colonel Zakrzewski passed away on 2 August 2022.

DR. DARRELL F. ZIMBELMAN

DIRECTOR, IMINT SYSTEMS ACQUISITION
AND OPERATIONS DIRECTORATE

DECEMBER 2020 - PRESENT

Darrell F. Zimbelman attended the University of Colorado at Boulder, earning his bachelor's (1986), master's (1987), and doctoral (1990) degrees in aerospace engineering.

Dr. Zimbelman began his career in the private sector in 1989, working first for the Fairchild Space & Defense Corporation and then for ITHACO Space Systems Incorporated. In 1994, he began his civil service career with the National Aeronautics and Space Administration (NASA) working on several scientific missions including the Fast Auroral SnapshoT Explorer (FAST), the Transition Region and Coronal Explorer (TRACE), and the Hubble Space Telescope Servicing Missions 3A and 3B. In 2002, he was assigned as the Deputy Project Manager for the Geostationary Operational Environmental Satellite (GOES) N Series weather satellite program.

In 2004, Dr. Zimbelman joined the National Reconnaissance Office (NRO) and in September 2006 was selected to lead the Electro-Optical System Program Office (ESPO) and deliver a critical acquisition in record time to maintain continuity in support of military operations and national security needs. In May 2011, he became a member of the Defense Intelligence Senior Executive Service and continued to lead ESPO in the acquisition of the next generation satellite system. In February 2015, Dr. Zimbelman was named Director of the NRO's Radar System Program Office and was charged to overcome a catastrophic on-orbit anomaly to get the program back on track. He also led several innovative acquisitions and changed the way that the NRO acquires satellites.

In December 2020, Dr. Zimbelman was named the Director, Geospatial Intelligence Systems Acquisition (GEOINT) Directorate. As the D/GEOINT, he led a joint team responsible for the planning, cross-coordination, and acquisition of systems that provide critical intelligence to national decision makers and warfighters worldwide.

Over the years, Dr. Zimbelman acquired significant experience in program management, large-scale system acquisition, and spacecraft design and development, relevant to both civil and national security space programs. Dr. Zimbelman holds one patent and has authored or co-authored 23 articles in professional journals and conference publications.

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