Pioneers of National Reconnaissance

Freedom’s Sentinel in Space

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A Personal Note
From the Director
It is with great pride that we dedicate the National Reconnaissance Office Pioneer Hall by enshrining these 46 distinguished individuals whose contributions had such a significant impact on the field of national reconnaissance.

It is especially fitting that we commemorate the induction of this first group of Pioneers at the same time that we begin a year-long series of events celebrating the 40th anniversary of the founding of the NRO.

Each of these individuals left a lasting mark on national reconnaissance, and in one way or another, profoundly influenced all those who followed in their footsteps. This brief compilation of their contributions merely hints at the depth of their achievements. Indeed, it is upon the shoulders of these Pioneers that the modern-day NRO was built.
Pioneers of National Reconnaissance
JAMES G. BAKER, PH.D.
As a young Harvard astronomer, Dr. James G. Baker designed most of the lenses and many of the cameras used in aerial overflights of "denied territory," enabling the success of the U.S. peacetime strategic reconnaissance policy.

Career in National Reconnaissance: 1940–1972

C. LEE BATTLE, JR., COLONEL, USAF
Colonel Lee Battle directed the government-contractor team that produced, launched, and operated the world's first satellite film recovery system.


JOHN T. BENNETT
TRW's chief engineer in support of Program B, Mr. John Bennett conceived the spacecraft design, including the reflectors, used in signals intelligence satellite systems.


JOHN W. BROWNING, COLONEL, USAF
Colonel John Browning directed a key signals intelligence satellite project for Program A, managing its first launch and operations.


JON H. BRYSON, COLONEL, USAF
Colonel Jon Bryson directed the development, acquisition, and operation of a Program A signals intelligence satellite system that handled rapidly increasing data rates.

A. ROY BURKS
Mr. Roy Burks served as CIA Technical Director of Program B CORONA Program, successfully integrating Air Force, CIA, and contractor development teams.

FRANK S. BUZARD, COLONEL, USAF
Colonel Frank Buzard was the Director of a Program A imaging satellite program, described then as “the most complex electro-mechanical device ever placed in orbit,” yielding a record number of consecutive successes.

CORNELIUS W. “CONNIE” CHAMBERS
Mr. Cornelius Chambers, as a contractor with Lockheed, contributed flight “protective measures” adopted for use on most NRO satellites, thus developing a novel approach to on-board fault detection.

JOHN O. COPLEYS, COLONEL, USAF
Colonel John Copley guided the development of Program A signals intelligence satellites from the earliest experiments to the later constellations that provided broader coverage.

ROBERT H. CROTSEY
As Lockheed’s business manager for the Program B electro-optical imaging satellite, Mr. Robert Crotser wrote the handbook on cost and schedule management that remains a standard reference in spacecraft acquisition.
JOHN J. CROWLEY
Mr. John Crowley served as CIA Chief of Program B's Office of Special Projects, and he is credited with establishing a true partnership between the CIA and Defense Department elements of the NRO.
Career in National Reconnaissance: 1965–1975

JAMES C. DE BROEKERT
Mr. James de Broekert, a contractor with Advent Systems, Inc., contributed key payload designs for several of Program A's first-generation signals intelligence satellites.
Career in National Reconnaissance: 1960–

GARY S. GEYER, COLONEL, USAF
Colonel Gary Geyer's work resulted in notable improvements in signals intelligence collection, data processing, and dissemination that permitted the product to reach military and civil users in near real time.

THOMAS O. HAIG, COLONEL, USAF
In 1961, Colonel Thomas Haig led a team that developed the operational polar-orbiting meteorological satellite, its launch vehicle, and associated ground command and control stations.

FREDERICK H. KAUFMAN
Mr. Frederick Kaufman directed the TRW team that produced two important Program B signals intelligence satellites, including the first communications cross-link system in space.

ROBERT J. KOHLER
A CIA photographic specialist, Mr. Robert Kohler introduced photographic edge measurement and edge sharpening tools used to evaluate and enhance overhead imagery.

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Ellis E. Lapin

Mr. Ellis Lapin managed the Aerospace Corporation’s system design and engineering efforts for Program A imaging satellites, improving flight operations by nearly doubling functional on-orbit time.


Lloyd K. Lauderdale, Ph.D.

Dr. Lloyd Lauderdale was Program Manager for the CIA Program B team that developed an advanced signals intelligence satellite from concept through first launch.


Richard S. Leghorn, Colonel, USAF

Colonel Richard Leghorn articulated the concept of peacetime strategic reconnaissance as a means to warn of military and strategic surprise, and founded the Itak Corporation that produced lenses and cameras for CORONA and other programs.


Walter J. Levison

Mr. Walter Levison, with the Itak Corporation, designed the camera for the GENETRIX overflight program, the camera for the WS-46IL overflight program, and its panoramic variant for CORONA satellites.

Career in National Reconnaissance: 1942–1975

Howard O. Lorenzen

An early advocate of signals intelligence satellites, Mr. Howard Lorenzen directed the development of GRAB, the nation’s first such program, at the Naval Research Laboratory.


Francis B. Gassaway

As chief of conventional intelligence, directed the development of the Corona mission.


James T. Weis

As director of the Defense Intelligence Agency, improved the nation’s signals intelligence.


Paul W. Henningsen

Dr. Paul Henningsen was instrumental in developing the early concept for signals intelligence.


Reid D. Porter

Mr. Reid Porter was a key figure in the history of signals intelligence.


James E. Sorensen

An early advocate of space-borne signals intelligence systems, Mr. James Sorensen was instrumental in developing early space-based reconnaissance assets.

Career in National Reconnaissance: 1957–1963
FRANCIS J. MADDEN
As chief engineer of the Itrek Corporation’s camera systems development program, Mr. Francis Madden directed the design, test, and production of the CORONA cameras and its improved versions.
Career in National Reconnaissance: 1956–1975

JAMES T. MANNEN, COLONEL, USAF
As director of a vital imagery satellite program, Colonel James Mannen introduced procedures that improved target tasking and significantly increased ground resolution and on-orbit system reliability.

PAUL W. MAYHEW, PH.D.
Dr. Paul Mayhew served as TRW’s payload project manager and system engineer for two unprecedented signals intelligence satellite systems.

REID D. MAYO
Mr. Reid Mayo, at the Naval Research Laboratory, conceived and designed the first Navy signals intelligence satellite, GRAB/DYNO, and later served as project engineer and technical director of Program C.

JAMES E. MORGAN
An early Navy champion of electronic intelligence satellite tactical support to military operations, Mr. James Morgan developed the target tasking and data dissemination architectures for key Program C systems.
MARK MORTON
Mr. Mark Morton directed General Electric’s Reentry Systems Division that designed, fabricated, and tested the reentry capsules used in the CORONA film-return satellite and in subsequent satellite reconnaissance programs.


ALDEN V. MUNSON, JR.
Mr. Alden Munson, a contractor with the Aerospace Corporation and TRW, conceived and developed a fully automatic electronic intelligence system that directly supported U.S. military forces in the field.


CHARLES L. MURPHY, COLONEL, USAF
Colonel Charles Murphy served as the first field technical director of the CORONA Advanced Projects Integration Facility, the main link to the Intelligence Community.


FREDERIC C.E. "FRITZ" ODER, COLONEL, USAF
In the late 1950s, Colonel Frederic Oder directed the nation’s first reconnaissance satellite enterprise, the USAF WS-117L (later SAMOS) Program, continuing his career with Lockheed and Eastman Kodak.


JOHN PARANGOSKY
Mr. John Parangosky, a key contributor to the U-2 and A-12 Programs, served as Chief of the CIA Development Staff on the CORONA Program.

Career in National Reconnaissance: 1954–1965

VAL P. FOOSE
Dr. Val Foose was a key figure in intelligence satellite programs.

Career in National Reconnaissance:

ROBERT P. NORTH, JR.
Mr. Robert North was instrumental in orbiting satellites.

Career in National Reconnaissance:

EDWARD G. OSMOND
Mr. Edward Osmund was a key figure in data systems.

Career in National Reconnaissance:

LEE W. SIMMS
Colonel Lee Simms played a key role in the development of CORONA.

Career in National Reconnaissance:
Val P. Peline, Ph.D.
Dr. Val Peline served as Lockheed's system test director and program manager for a key imagery intelligence satellite program.

Robert M. Powell
Mr. Robert Powell, Lockheed's program manager for a key high-resolution satellite reconnaissance program, devised a novel payload pointing mechanism that greatly extended the lifetimes of satellites in orbit.

Edward H. Reese
Mr. Edward Reese, General Electric's program technical director, led the development of the ground data system that integrated hardware and software to process digital imagery from electro-optical imaging satellites.
Career in National Reconnaissance: 1965–

Osmond J. "Ozzie" Ritland, Major General, USAF
As the Air Force manager of the U-2 Program, General Osmond Ritland developed the service infrastructure that made early overflights of the USSR possible.
Career in National Reconnaissance: 1954–1965

Lee W. Roberts, Colonel, USAF
Colonel Lee Roberts directed improvements in an important Program A satellite reconnaissance effort that produced high-resolution imagery of the earth's surface.
CHARLES R. “CHARLIE” ROTH
Mr. Charles Roth served as the CIA manager in Program B for the government-industry team that produced the first electro-optical imaging reconnaissance satellite system.

ROBERT W. “ROB” ROY, COLONEL, USAF
Colonel Robert Roy directed NRO launch operations at Vandenberg AFB at a time when these activities increased dramatically.

CHARLES P. SPOELHOF
Mr. Charles Spoelhof, an Eastman Kodak official, collaborated on the design of the U-2, A-12, and SAMOS cameras, and directed efforts that led to the application of thin-based Mylar film in NRO reconnaissance satellites.

FORREST H. STIEG
Mr. Forrest Stieg, a CIA engineer and spacecraft operations specialist in Program B, devised a process for selecting an optimum orbit that balanced signals collection with vehicle longevity.
Career in National Reconnaissance: 1971–

MARVIN S. STONE, PH.D.
Dr. Marvin Stone served as a TRW payload systems engineer and project manager on Program B electronic intelligence satellite programs.
DON F. TANG
Mr. Don Tang, as a Lockheed spacecraft engineer in Program A, established a "collection scale" for determining what signals could be technically collected at affordable costs.

ALBERT D. "BUD" WHEELON, PH.D.
The first director of the CIA's Directorate of Science and Technology, Dr. Albert Wheelon was responsible for U-2 overflights and development of OXCART and three major satellite reconnaissance systems.

PETER G. WILHELM
As the chief spacecraft engineer at the Naval Research Laboratory, Mr. Peter Wilhelm invented new techniques and devices that added capabilities and improved performance of signals intelligence satellites.
Career in National Reconnaissance: 1959–

ROY H. WORTHINGTON, COLONEL, USAF
Colonel Roy Worthington, Deputy Commander of the 6594th Aerospace Test Wing, directed the integration and launch of some 200 satellites from the Western Test Range.

ROBERT W. YUNDT, COLONEL, USAF
Colonel Robert Yundt directed the Signals Intelligence Project Office in Program A, introducing a new, long-lived, multi-purpose signals intelligence satellite.
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