



PIONEERS OF NATIONAL RECONNAISSANCE

FREEDOM'S SENTINEL IN SPACE

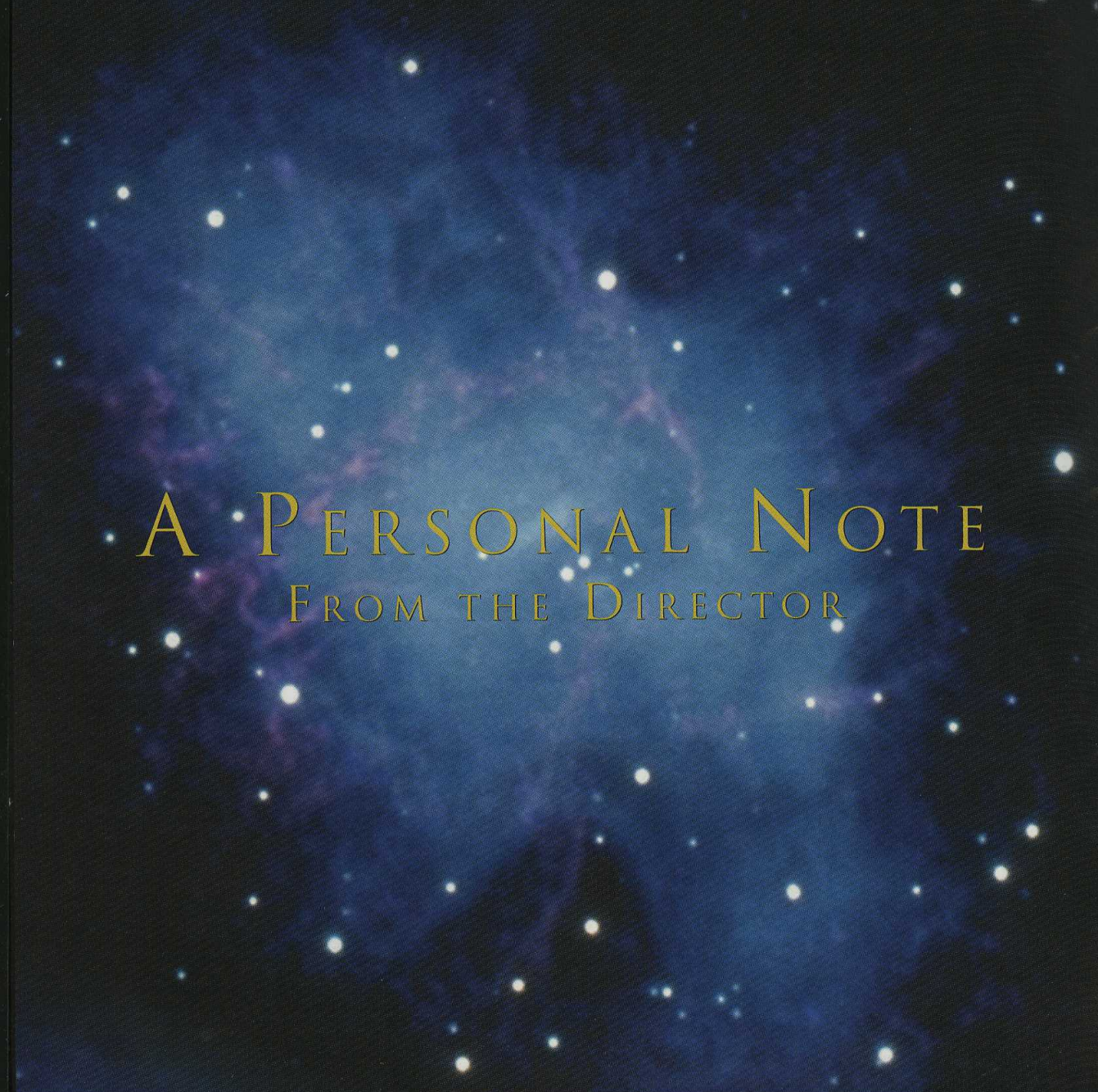
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A starry night sky with a blue and purple nebula in the background. The stars are scattered across the dark blue and black space, with some appearing as bright white dots and others as smaller, fainter points of light. The nebula is a soft, glowing cloud of gas and dust, primarily in shades of blue and purple, with some darker, more intricate patterns within it.

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.

Paul R. Heel

The background of the image is a deep, dark blue night sky filled with numerous bright, white stars of varying sizes. In the center, there is a prominent nebula with a mix of blue and purple hues, creating a soft, ethereal glow. The overall composition is centered and balanced, with the text overlaid on the nebula.

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.

Career in National Reconnaissance: 1958–1963

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.

Career in National Reconnaissance: 1965–1982

JOHN W. BROWNING, COLONEL, USAF

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

Career in National Reconnaissance: 1967–1975

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.

Career in National Reconnaissance: 1966–1992



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.

Career in National Reconnaissance: 1965–1995

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.

Career in National Reconnaissance: 1960–1972

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.

Career in National Reconnaissance: 1962–1994

JOHN O. COPLEY, 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.

Career in National Reconnaissance: 1958–1975

ROBERT H. CROTSER

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.

Career in National Reconnaissance: 1960–1989

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.

Career in National Reconnaissance: 1966-1999

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.

Career in National Reconnaissance: 1961-1965

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.

Career in National Reconnaissance: 1964-1991

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.

Career in National Reconnaissance: 1967-1985



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.

Career in National Reconnaissance: 1962–1967

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.

Career in National Reconnaissance: 1963–1984

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 Itek Corporation that produced lenses and cameras for CORONA and other programs.

Career in National Reconnaissance: 1946–1962

WALTER J. LEVISON

Mr. Walter Levison, with the Itek Corporation, designed the camera for the GENETRIX overflight program, the camera for the WS-461L 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.

Career in National Reconnaissance: 1957–1973



FRANCIS J. MADDEN

As chief engineer of the Itek 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.

Career in National Reconnaissance: 1971-1993

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.

Career in National Reconnaissance: 1964-1992

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.

Career in National Reconnaissance: 1957-1981

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.

Career in National Reconnaissance: 1966-1992



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.

Career in National Reconnaissance: 1958-1970

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.

Career in National Reconnaissance: 1967-1994

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.

Career in National Reconnaissance: 1958-1977

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.

Career in National Reconnaissance: 1956-1984

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. PELINE, PH.D.

Dr. Val Peline served as Lockheed's system test director and program manager for a key imagery intelligence satellite program.

Career in National Reconnaissance: 1960–1988

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.

Career in National Reconnaissance: 1959–1975

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.

Career in National Reconnaissance: 1971–1977



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.

Career in National Reconnaissance: 1966–1988

ROBERT W. "ROB" ROY, COLONEL, USAF

Colonel Robert Roy directed NRO launch operations at Vandenberg AFB at a time when these activities increased dramatically.

Career in National Reconnaissance: 1958–1964

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.

Career in National Reconnaissance: 1954–1985

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.

Career in National Reconnaissance: 1968–1988

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.

Career in National Reconnaissance: 1960-1995

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.

Career in National Reconnaissance: 1962-1966

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.

Career in National Reconnaissance: 1962-1968

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.

Career in National Reconnaissance: 1960-1966



A photograph of a starry night sky. In the center, there is a large, diffuse nebula with a blue and purple hue. The sky is filled with numerous stars of varying brightness. The text "FREEDOM'S SENTINEL IN SPACE" is overlaid in the center in a gold, serif font.

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