CHAPTER SIX

FACILITIES AND INSTALLATIONS

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Introduction

By 1979, NASA's facilities and installations were no longer increasing in number or size. Although the agency added to and upgraded its equipment and increased the number of buildings and other structures, the number of NASA installations remained the same throughout the decade. The only change was the consolidation of two centers with two others. In an October 1981 agency reorganization, Dryden Flight Research Center was consolidated with Ames Research Center and renamed Dryden Flight Research Facility, and Wallops Flight Center became part of Goddard Space Flight Center and was renamed Wallops Flight Facility.

In addition to NASA Headquarters, in 1979, NASA consisted of ten field installations and the contractor-operated Jet Propulsion Laboratory. Five of the installations—Ames Research Center, Dryden Flight Research Center, Langley Research Center, Lewis Research Center, and Wallops Flight Center—had been facilities of the National Advisory Committee for Aeronautics (NACA). These installations were transferred to NASA in 1958 when the agency was established. Within the next few years, Goddard Space Flight Center, Kennedy Space Center, Marshall Space Flight Center, and the Jet Propulsion Laboratory were transferred to NASA from the U.S. military space program. NASA established the National Space Technology Laboratories as a NASA center in 1974 and renamed it the Stennis Space Center in 1988. Figure 6–1 diagrams the locations of the NASA installations, and Figure 6–2 chronicles the establishment of these installations.

Each NASA installation focused its resources on particular major programs and mission areas. Table 6–1 lists these areas of concentration.

The first part of this chapter reviews NASA's aggregate facilities: the value and size of its total holdings and the installations' holdings grouped together for easy comparison. The second part of the chapter describes NASA Headquarters and the individual NASA installations that existed during all or part of the years from 1979 through 1988. It briefly describes their history and mission and also provides tables that characterize the property, personnel, funding, and procurement activity of each installation during this period.

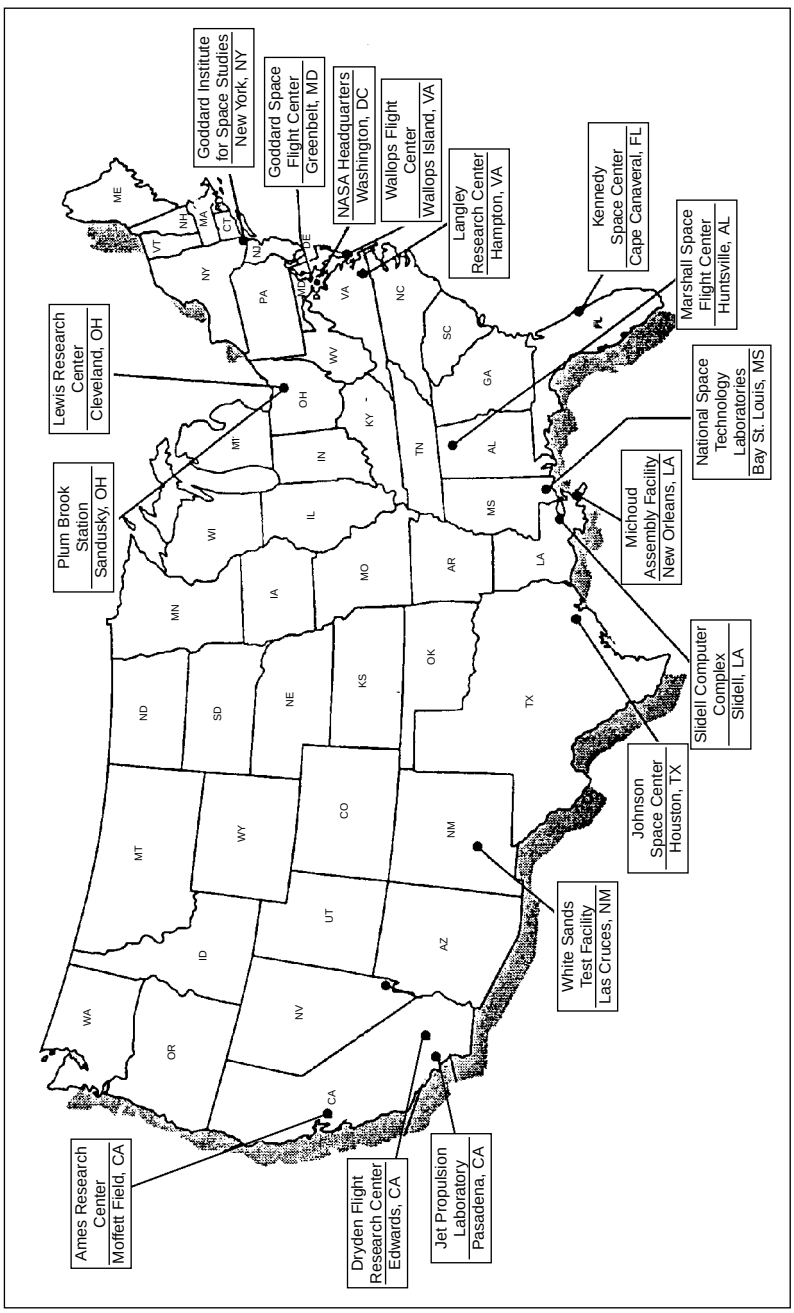

Figure 6–1. NASA Facilities (1980)

Installation	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Ames Research Center	Authorized 1939; dedicated June 1940									
Dryden Flight Research Center	Authorized 1952; named NACA High Speed Flight Station and made autonomous July 1954; designated Flight Research Center September 1959; renamed Dryden Flight Research Facility March 1976; consolidated with Ames Research Center October 1981 as Dryden Flight Research Facility									
Goddard Space Flight Center	Authorized 1958; dedicated March 1961									
Jet Propulsion laboratory	Organized 1944									
Johnson Space Center	Established January 1961 as Space Task Group; major occupancy of Clear Lake site February 1964; renamed Johnson Space Center February 1973									
Kennedy Space Center	Established March 1962; effective July 1962 as Launch operations Center; redesignated Kennedy Space Center December 1963									
Langley Research Center	Authorized 1917; dedicated June 1920									
Lewis Research Center	Authorized 1940; groundbreaking 1942									
Marshall Space Flight Center	Established March 1960; transfer of personnel from U.S. Army effective July 1960; dedicated September 1960									
Stennis Space Center	Established as an independent NASA field installation June 1974; redesignated Stennis Space Center May 1988									
Wallops Flight Center	Established under Langley Research Center 1945; became autonomous May 1959; renamed Wallops Flight Center 1974; consolidated with Goddard Space Flight Center October 1981									

Figure 6–2. NASA Installations (1979–1988)

Facilities

Definition of Terms

The discussion of facilities and installations uses several terms with which the reader may not be familiar. The following definitions come from NASA Management Instructions and NASA Management Handbooks:

Buildings: Facilities with the basic function of enclosing usable space.

Capital Equipment: An item of equipment with an acquisition cost of $5,000 or more that has an estimated service life of two years or more, that will not be consumed in an experiment, and that most generally will be identified as an independently operable item (identified as "capitalized equipment" in this chapter).

Collateral Equipment: Building-type equipment, built-in equipment, and large, substantially affixed equipment that are normally acquired and installed as a part of a facility project.

Component Installation: An installation, office, or other NASA organizational element that is located geographically apart from a NASA installation and that, pursuant to delegations from the Administrator, is assigned for management purposes to the official-in-charge of a Headquarters office, the director of a field installation, or an immediate subordinate of these officials.

Equipment: An item of real or personal property generally in the configuration of a mechanical, electrical, or electronic apparatus or tool, normally costing in excess of $100, that may perform a function independently or in conjunction with other equipment or components.

Facility: A generic term used to encompass real property and related integral and collateral equipment of a capital nature. The term does not encompass operating materials, supplies, and noncapitalized equipment. The term is used in connection with land, buildings, structures, and other real property improvements.

Field Installation: A NASA organizational element located geographically apart from NASA Headquarters and headed by a director.

Fixed Assets: Assets of a permanent character having a continuing value, such as land, buildings, and other structures and facilities, including collateral and noncollateral equipment meeting the criteria for capitalization.

Installation: A NASA organizational element, including both Headquarters and field installations.

Integral Equipment: Equipment that is normally required to make a facility useful and operable as a facility and that is built in or permanently affixed to it in such a manner that removal would impair the usefulness, safety, or comfort of the facility.

Investment Value: A figure representing the total of real property value (including land, buildings, and other structures and facilities),

leasehold improvements value, capitalized equipment value, and assets-in-progress value.

Land: A category of real property that includes all acquired interests in land (for example, owned, leased, or acquired by permit) but excludes NASA-controlled easements and rights-of-way that are under leasehold improvements.

Leased Property: Property under the control of NASA through lease, administrative agreement, temporary permit, license, or other arrangements.

Leasehold Improvements: NASA-funded long-term capital improvements to leases, rights, interests, and privileges relating to land not owned by NASA, such as easements, rights-of-way, permits, use agreements, water rights, air rights, and mineral rights.

Noncollateral Equipment: Equipment that imparts to the facility or test apparatus its particular character at the time—for example, furniture in an office building, laboratory equipment in a laboratory, and so forth. Such equipment, when acquired and used in a facility or a test apparatus, can be severed and removed after erection or installation without substantial loss of value or damage thereto or to the premises where installed.

Other Structures and Facilities: A category of real property that includes facilities having the basic function of research or operational tools or activities as distinct from buildings (includes items such as airfield pavements, power production facilities and distribution systems, flood control and navigation aids, storage, industrial service, and research and development facilities other than buildings, and communications systems).

Personal Property: Property of any kind, including equipment, materials, and supplies, but excluding real property.

Real Property: Land, buildings, structures, utilities systems, and improvements and appurtenances thereto, permanently annexed to land.

NASA Facility Property Statistics

Tables 6–2 through 6–18 include statistics for 1979 through 1988 on NASA property, real property, investment values, land, buildings, other structures, capitalized equipment, and tracking and data acquisition stations.

Installations

The following pages list the directors and deputy directors of each NASA installation and provide a brief center history and description of each installation's mission. Table 6–19 details the 1988 budget plan by installation and program office. The tables for each installation list the property holdings and their value, personnel levels and characteristics, funding levels, and procurement activity of each installation (see Tables 6–21 through 6–78).

NASA Headquarters

Location

From 1979 to 1988, NASA Headquarters was housed in two federal buildings in Washington, D.C. One location was on Independence Avenue, SW; the second was on Maryland Avenue, SW.

Administrator

James C. Fletcher (May 1986–April 1989)
William R. Graham, Acting (December 1985–May 1986)
James Beggs (July 1981–December 1985)[1]
Alan M. Lovelace, Acting (January 1981–July 1981)
Robert A. Frosch (June 1977–January 1981)
James C. Fletcher (April 1971–May 1977)
George M. Low, Acting (September 1970–April 1971)
Thomas O. Paine (March 1969–September 1970)
James E. Webb (February 1961–October 1968)
T. Keith Glennan (August 1958–January 1961)

Deputy Administrator

Dale D. Myers (October 1986–May 1989)
William R. Graham (November 1985–October 1986)
Hans Mark (July 1981–September 1984)
Alan Lovelace (July 1976–December 1980)
George M. Low (December 1969–June 1976)
Thomas O. Paine (March 1968–March 1969)
Robert C. Seamans, Jr. (December 1965–January 1968)
Hugh L. Dryden (September 1959–December 1965)

History

The development of NASA Headquarters before 1979 is detailed in Volumes I and IV of the *NASA Historical Data Book*. During the decade from 1979 through 1988, several changes occurred in Headquarters-level organizations that reflected the changing priorities of the agency. A detailed description is given in the appropriate chapters of this book and of Volume V. The following paragraphs provide a brief overview.

In 1979, NASA established the Office of Space Transportation Systems Operations, and the former Office of Space Transportation

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[1]James Beggs went on an indefinite leave of absence beginning December 4, 1985, while he was answering charges of fraud alleged to have occurred while he was executive vice president of General Dynamics Corporation. He was later cleared of all charges.

Systems was renamed Office of Space Transportation Systems Acquisition. This office focused on completing the Space Shuttle's production. The Office of Space Transportation Systems Operations focused on preparing for the Shuttle system once it was fully tested, scheduling flights, developing pricing policies and launch service agreements, and managing the Spacelab and expendable launch vehicle programs.

The only major Headquarters-level reorganization of the decade occurred in November 1981. Since 1978, the field installations had been under the direct control of the NASA Administrator. The 1981 reorganization placed each field installation under the administrative control of the associate administrator of a NASA program office that corresponded to the installation's major mission areas. The Office of Space Science and Applications took over management of Goddard Space Flight Center and the Jet Propulsion Laboratory. The Office of Aeronautics and Space Technology administered Ames Research Center, Langley Research Center, and Lewis Research Center. The Office of Space Flight managed Johnson Space Center, Kennedy Space Center, Marshall Space Flight Center, and the National Space Technology Laboratories/Stennis Space Center. Each Headquarters associate administrator was responsible for program content and execution and program and institutional resources for their respective centers.

This reorganization also merged the Office of Space Science and the Office of Space and Terrestrial Applications into the Office of Space Science and Applications. In addition, NASA established the Office of Management as a new organization to handle part of the functions performed by the Office of Management Operations as well as some of the duties performed by the comptroller.

The associate deputy administrator moved outside the Office of the Administrator to the staff office level. The offices of the chief engineer and chief scientist remained as staff positions in the Office of the Administrator.

In 1982, at the end of the Shuttle's developmental flights and the beginning of initial operations, the Office of Space Transportation Systems Operations and the Office of Space Transportation Systems Acquisitions merged into the Office of Space Flight. In 1984, the agency established the Office of Space Station, reflecting NASA's and the nation's commitment to the program. Also that year, NASA created the Office of Commercial Programs in response to federal legislation and the recommendation of an agency task force on the commercialization of space.

Following the *Challenger* accident in 1986 and at the recommendation of the Rogers Commission, NASA established an independent Office of Safety, Reliability, Maintainability, and Quality Assurance. The agency also established an Office of Exploration in 1987 as a focus for long-term goals.

Mission

NASA Headquarters was responsible for the overall planning, coordination, and control of NASA programs. Headquarters was composed of program offices, which planned and directed agency-wide research and development programs and management and administrative processes; staff offices, which provided agency-wide leadership in certain administrative and specialized areas; and the Office of the Associate Deputy Administrator. In addition, other offices with specific functions, such as the Office of the Chief Engineer, the Office of the Chief Scientist, and the Office of Policy, were established and disestablished over time. Each of these offices reported directly to the Administrator. Table 6–20 lists the Headquarters major organizations in 1979 and 1988.

Ames Research Center

Location

Ames Research Center is located at the south end of San Francisco Bay, approximately fifty-six kilometers southeast of San Francisco, California. It is adjacent to the U.S Naval Air Station at Moffett Field, California.

Director

Dale L. Compton, Acting (July 1989–December 1990)
William F. Ballhaus, Jr. (January 1984–February 1988; February 1989–July 1989)
Clarence A. Syvertson (April 1978–January 1984)
Clarence A. Syvertson, Acting (August 1977–April 1978)
Hans Mark (February 1969–August 1977)
H. Julian Allen (October 1965–February 1969)
Smith J. De France (October 1958–October 1965)

Deputy Director

Dale Compton (January 1985–July 1989)
Angelo Guastaferro (October 1980–January 1985)
A. Thomas Young (February 1979–February 1980)
Clarence A. Syvertson (February 1969–April 1978)

History

The National Advisory Committee for Aeronautics (NACA) founded what would become Ames Research Center as an aircraft research laboratory in 1940. The original name was the Moffett Field Laboratory. In

1944, the center was renamed the Ames Aeronautical Laboratory in honor of Joseph S. Ames, chair of NACA from 1927 to 1939, former president of the Johns Hopkins University, and a leading authority on aerodynamics. In 1958, Ames became part of NASA and was renamed Ames Research Center. In 1981, NASA merged Ames with the Dryden Flight Research Center. The two installations were then referred to as Ames-Moffett and Ames-Dryden.

Mission

Ames-Moffett's major program areas were computer science and applications, computational and experimental aerodynamics, flight simulation, flight research, hypersonic aircraft, rotorcraft and powered-lift technology, aeronautical and space human factors, life sciences, space sciences, solar system exploration, airborne science and applications, and infrared astronomy. The center also supported military programs, the Space Shuttle, and various civil aviation projects. In addition, it emphasized meeting the needs of the U.S. aerospace industry.

Dryden Flight Research Center

Location

Dryden Flight Research Center is located at Edwards, California, in the Mojave Desert, approximately 130 kilometers north of the Los Angeles metropolitan area. It was adjacent to Edwards Air Force Base and Rogers Dry Lake, a 168-square-kilometer natural surface for landing.

Director

Isaac T. Gillam IV (June 1978–September 1981)
Isaac T. Gillam IV, Acting (October 1977–June 1978)
David R. Scott (August 1977–October 1977)
David R. Scott, Acting (April 1975–August 1977)
Lee R. Scherer (October 1971–January 1975)
Paul F. Bikle (September 1959–May 1971)
Walter C. Williams (October 1958–August 1959)

Deputy Director

~~Angelo Guastaferro (October 1980–October 1981)~~ *
Robert P. Johannes (December 1979–October 1980)
John Boyd (January 1979–December 1979)
Isaac T. Gillam IV (August 1977–June 1978)
David R. Scott (August 1973–August 1977)
D.E. Beeler (April 1961–August 1973)

* Note from the History Division: Guastaferro was never a Dryden Deputy Director. Johannes served as Dryden Deputy Director until September 1981. William H. Rock was Deputy from November 1975 to January 1976. Scott was Deputy only until 1975. Beeler became Deputy in 1958.

History

The U.S. Army originally used the Dryden area as a bombing and gunnery range before World War II. In July 1942, the Army established a formal air base near the town of Muroc, California. The first NACA contingent of engineers, technicians, and support staff arrived at Muroc from Langley Research Center in 1946 on temporary assignment. In early 1947, the contingent was made a permanent facility, known as the NACA Muroc Flight Test Unit, under Langley management. The group used Muroc as a test site when it designed and built a research aircraft to break the sound barrier.

In 1949, Muroc was renamed Edwards Air Force Base. Also that year, the name of the NACA facility was changed to the NACA High Speed Flight Research Station. It became an autonomous facility in 1954, reporting directly to NACA headquarters. In March 1976, the center became the Hugh L. Dryden Flight Research Center, in honor of Hugh L. Dryden, the internationally renowned aerodynamicist who had been the NACA's director from 1947 to 1957. In October 1981, the center's independent status was removed, and it was redesignated as Dryden Flight Research Facility under the administration of the Ames Research Center.

Mission

Ames-Dryden's mission was to research, develop, verify, and transfer advanced aeronautics, space, and related technologies. It was NASA's prime installation for aeronautical flight research. The facility was also actively involved in supporting the Space Shuttle program as a backup landing site and as a facility to test and validate design concepts and systems used in the development and operation of the orbiters. It participated in the approach and landing tests of the Space Shuttle orbiter *Enterprise* and supported Shuttle orbiter landings from space as well as processing for ferry flights to the launch site.

Goddard Space Flight Center

Location

Goddard Space Flight Center is located in Greenbelt, Maryland, sixteen kilometers northeast of Washington, D.C. In addition to its main site, until FY 1981, Goddard leased 620 acres of nearby land from the Department of Agriculture, where the Goddard Antenna Test Range, the Magnetic Test Facility, the Optical Tracking and Ground Plane Test Facility, the Bi-Propellant Test Facility, and the Network Test and Training Facility were located. In 1981, 544 acres were transferred to Goddard. The remaining land stayed with the Department of Agriculture.

Goddard also managed the Goddard Institute for Space Studies in New York City. Established in 1961, the institute conducted basic research in space and Earth sciences in support of Goddard programs by working coop-

eratively with New York area universities and research organizations. The program focused particularly on the study of global change, in particular long-range climate, biogeochemical cycles, and planetary atmospheres. Since October 1981, Goddard Space Flight Center's facilities included the Wallops Flight Facility on Wallops Island on the Eastern Shore of Virginia.

Director

John W. Townsend, Jr. (June 1987–June 30, 1990)
Noel W. Hinners (June 1982–June 1987)
Leslie H. Meredith, Acting (March 1982–June 1982)
A. Thomas Young (February 1980–March 1982)
Robert E. Smylie, Acting (June 1979–February 1980)
Robert Cooper (August 1976–June 1979)
John F. Clark (May 1966–August 1976)
Harry J. Goett (September 1959–July 1965)

Deputy Director

John J. Quann (September 1982–January 1988)
John McElroy (September 1980–September 1982)
Robert E. Smylie (December 1976–February 1980)
Donald P. Hearth (April 1970–September 1975)
Vacant (July 1968–April 1970)
John W. Townsend (July 1965–July 1968)

History

Goddard Space Flight Center was created on January 15, 1959, and was the first facility built for NASA. It was named in commemoration of Robert H. Goddard, the American pioneer in rocket research. The first 157 employees were from the Vanguard project, transferred from the Naval Research Laboratory in Washington, D.C.

From early in NASA's history, Goddard also managed the facilities of the Space Tracking and Data Network (STDN). Located around the world, the number of tracking stations first increased, decreased during the early days of the Shuttle program, and then decreased as the Tracking and Data Relay Satellite System (TDRSS) became operational. However, the STDN continued to support missions that could not be tracked by the TDRSS and provided additional Shuttle tracking support. See Chapter 4 for a description of the STDN.

Mission

Goddard Space Flight Center's mission was to expand knowledge of Earth and its environment, the solar system, and the universe through the development and use of near-Earth-orbiting spacecraft. It was responsible

for supporting NASA's role in space and Earth sciences, conducting research and applying technology for sensors, instruments, and information systems, planning and executing spaceflight projects for scientific research, and tracking Earth satellites through a worldwide communications system.

Jet Propulsion Laboratory

Location

The Jet Propulsion Laboratory is located in Pasadena, California, approximately thirty-two kilometers northeast of Los Angeles.

Director

Lew Allen, Jr. (July 1982–December 31, 1990)
Bruce C. Murray (April 1976–June 1982)
William H. Pickering (October 1958–March 1976)

Deputy Director

Peter T. Lyman (September 1987–July 1992)
Robert J. Parks (January 1984–September 1987)
Charles H. Terhune, Jr. (1969–December 1983)

History

The Jet Propulsion Laboratory (JPL) was transferred from Army jurisdiction to NASA's control in December 1958. NASA's contractual arrangement with the California Institute of Technology for the performance of research and development at JPL dates from 1962. The NASA Management Office in Pasadena administered the contract. JPL is a government-owned facility.

Mission

JPL's primary mission was to explore the solar system with automated spacecraft. Its major programs involved exploring Earth and the solar system, managing the Deep Space Network for communications, data acquisition, mission control, and radio-science space study, and performing basic and applied scientific and engineering research.

Johnson Space Center

Location

Johnson Space Center is located at Clear Lake, near Houston, Texas. Additional facilities are located at Ellington Air Force Base, approximately eleven kilometers north of the main facility.

Director

Aaron Cohen (October 1986–August 20, 1993)
Jesse Moore (January 1986–October 1986)
Robert Goetz, Acting (January 1986—two weeks' duration)
Gerald Griffin (August 1982–January 1986)
Christopher C. Kraft, Jr. (January 1972–August 1982)
Robert R. Gilruth (November 1961–January 1972)

Deputy Director

Paul J. Weitz (December 1986–April 1994)
Robert C. Goetz (July 1983–October 1986)
Charles E. Charlesworth (August 1979–May 1983)
Sigurd A. Sjoberg (January 1972–May 1979)
Christopher C. Kraft, Jr. (November 1969–January 1972)
George S. Trimble (October 1967–September 1969)
George M. Low (February 1964–April 1967)
James C. Elms (November 1963–February 1964)

History

Johnson Space Center was established in September 1961 as NASA's Manned Spacecraft Center. It was NASA's primary center for the design, development, and testing of spacecraft and associated systems for human spaceflight, the selection and training of astronauts, the planning for conducting human spaceflight missions, and extensive participation in the medical, engineering, and scientific experiments carried aboard spaceflights. It was renamed Lyndon B. Johnson Space Center in February 1973.

The White Sands Test Facility, a component installation of Johnson Space Center, was established in 1962 at Las Cruces, New Mexico, for testing Apollo propulsion and power systems. It became the primary ground terminal for the Tracking and Data Relay Satellite System in 1983.

Mission

Johnson Space Center had program management responsibility for the Space Shuttle program. It also had a major responsibility for the development of the space station.

Kennedy Space Center

Location

John F. Kennedy Space Center is located on the east coast of Florida, immediately north and west of Cape Canaveral. It is approximately 241 kilometers south of Jacksonville and eighty kilometers east of Orlando.

Director

Forrest McCartney (October 1986–December 1991)
Thomas E. Utsman, Acting (July 1986–October 1986)
Richard G. Smith (September 1979–July 1986)
Lee R. Scherer (January 1975–September 1979)
Kurt H. Debus (March 1962–October 1964)

Deputy Director

Thomas E. Utsman (August 1985–January 1990)
Horace Lamberth (Acting) November 1984–August 1985)
George F. Page (July 1982–October 1984)
Gerald D. Griffin (July 1977–August 1981; on Headquarters assignment July 1980–May 1981)
Miles Ross (June 1970–May 1977)

History

The site of Kennedy Space Center, halfway between Miami and Jacksonville, Florida, had been used as a missile launching ground since the late 1940s. In 1951, it was used for test flights of the U.S. Army's Redstone intermediate-range ballistic missile. In January 1953, its name was changed from the Long-Range Proving Ground to the Missile Firing Laboratory. In July 1960, it became part of NASA's Marshall Space Flight Center's Launch Operations Directorate. The directorate was disbanded in March 1962.

The U.S. Congress approved the development of the strip of land on Florida's east coast called Cape Canaveral in 1961, shortly after President John F. Kennedy announced plans to fly American astronauts to the Moon. In July 1962, the site was established as a separate NASA installation and renamed the Launch Operations Center. NASA built the Atlantic Missile Range at Cape Canaveral, adjacent to the northern part of Merritt Island, where Kennedy Space Center was eventually located. Later, the Cape Canaveral peninsula became the Eastern Test Range, site of the Mercury and Gemini launches. NASA began acquiring land across the Banana River from Cape Canaveral in 1962.

President Lyndon Johnson renamed the facility the John F. Kennedy Space Center in November 1963, less than a week after the death of President Kennedy.

By 1967, Kennedy Space Center's Complex 39 was operational. The complex was strategically located next to a barge site and consisted of a variety of structures including a vehicle assembly building, processing facilities, press site, crawlerways to Complex 39 launch pads, and the Launch Control Center.

Twelve Saturn V/Apollo missions were launched from Kennedy between 1967 and 1972, and in 1973, the Skylab space station was

placed into a high circular orbit, followed by three-member crews aboard Saturns later that year. The Saturn/Apollo era ended in 1975 with the launch of a Saturn IV/Apollo crew on a joint mission with the Soviet Union.

In 1979, a three-mile-long Shuttle Landing Facility and an Orbiter Processing Facility were built, and the Orbital Flight Test Program began at Kennedy Space Center. NASA launched the first Shuttle mission from Kennedy on April 12, 1981.

Mission

Kennedy Space Center had primary responsibility for ground turnaround and support operations, prelaunch checkout, and launch of the Space Shuttle and its payloads, including NASA's eventual space station. The center's responsibility also extended to the facilities and ground operations at Vandenberg Air Force Base in California and designated landing sites.

Langley Research Center

Location

Langley Research Center is located at Langley Field in Hampton, Virginia, approximately 241 kilometers southeast of Washington, D.C.

Director

Richard H. Petersen (November 1984–December 2, 1991)
Donald P. Hearth (September 1975–November 1984)
Edgar M. Cortright (May 1968–September 1975)
Floyd L. Thompson (May 1960–May 1968)
Henry J.E. Reid (October 1958–May 1960)

Deputy Director

Paul F. Holloway (February 1985–October 14, 1991)
Richard H. Petersen (July 1980–November 1984)
Oran W. Nicks (November 1970–July 1980)
Charles J. Donlan (November 1967–May 1968)

History

In 1916, the NACA selected a site near Hampton, Virginia, for Langley Field, its experimental air station. It was named after Samuel Pierpont Langley, the third secretary of the Smithsonian Institution and an aeronautical pioneer. Construction of the Langley Memorial Aeronautical Laboratory, the first national civil aeronautics laboratory began in 1917.

Until 1940, Langley was the only NACA laboratory. In 1948, the NACA changed the laboratory's name to the Langley Aeronautical Laboratory. When NASA was formed in 1958, it was renamed Langley Research Center.

In 1958, NASA selected Langley to manage Project Mercury, the first U.S. human spaceflight project. Heading the project was Langley's Space Task Group, a group of NASA employees that led the original seven astronauts through the initial phases of their spaceflight training. The group later expanded and moved on to become the Manned Spacecraft Center (later Johnson Space Center). Since 1959, Langley managed the Scout launch vehicle program, a four-stage solid fuel satellite system capable of launching a 175-kilogram satellite into an 800-kilometer orbit. The first Scout launch took place in 1960.

The center was also responsible for NASA's Lunar Orbiter project in the 1960s and the Viking project that orbited and landed spacecraft on Mars in 1976. In the late 1960s, environmental space science became a major research thrust at Langley. Its goal was to preserve Earth's ecological balance and prevent undesirable environmental conditions.

In the early stages of the Space Shuttle program, Langley conducted thousands of hours of wind tunnel testing on the orbiter. The center also was responsible for optimizing the design of the Shuttle's thermal protection system.

Langley also investigated technologies necessary for the design and operation of the space station. The Long Duration Exposure Facility, launched from the Shuttle in 1984, was conceived, designed, and developed at Langley (see Chapter 3, "Aeronautics and Space Research and Technology," for a description of this project).

In 1985, the U.S. Department of the Interior designated five Langley facilities as National Historic Landmarks: Variable-Density Tunnel (built in 1921), Full-Scale Tunnel (1930), Eight-Foot High-Speed Tunnel (1935), Rendezvous Docking Simulator (1963), and Lunar Landing Research Facility (1965). Langley has also received five Robert J. Collier Trophies: in 1929 for the low-drag engine cowling, in 1946 for de-icing research, in 1947 for supersonic flight research, in 1951 for the slotted throat transonic wind tunnel, and in 1954 for the transonic area rule.

Mission

Langley Research Center's primary mission was the research and development of advanced concepts and technology for future aircraft and spacecraft systems, with particular emphasis on environmental effects, performance, range, safety, and economy. Langley also had responsibility for systems analysis and independent evaluation and assessment of NASA programs prior to the commitment of major development funding. The center was the NASA expert for airborne systems, aerodynamics, mission and systems analysis, and hypersonic technologies.

Lewis Research Center

Location

Lewis Research Center is located approximately thirty-two kilometers southwest of Cleveland, Ohio, adjacent to the Cleveland Hopkins International Airport. Additional facilities were located at Plum Brook Station, about five kilometers south of Sandusky, Ohio.

Director

John M. Klineberg (May 1987–July 1, 1990)
John M. Klineberg, Acting (June 1986–May 1987)
Andrew J. Stofan (July 1982–June 1986)
John F. McCarthy (October 1978–July 1982)
Bernard Lubarsky, Acting (August 1977–October 1978)
Bruce T. Lundin (November 1969–August 1977)
Abe Silverstein (November 1961–October 1969)
Eugene J. Manganiello, Acting (January 1961–October 1961)
Edward R. Sharp (October 1958–December 1960)

Deputy Director

Lawrence J. Ross (December 1987–July 1, 1990)
John M. Klineberg (July 1979–May 1987)
Bernard Lubarsky (1974–July 1979)
Eugene J. Manganiello (December 1961–1972)

History

In 1940, the NACA selected Cleveland as the site of the new NACA aircraft engine research laboratory. Groundbreaking took place in 1941, and the NACA Aircraft Research Laboratory was officially dedicated in 1943. During World War II, the laboratory concentrated on investigating the problems of aircraft reciprocating, or piston, engines. Lewis engineers also contributed to solving engine cooling problems on the Super Fortress (B-29) bomber. Before the end of the war, the turbojet engine began to revolutionize the field of aircraft propulsion. The Altitude Wind Tunnel, completed in 1944, contributed to the early testing of American-built jet engines and started the center on what would become its major focus: jet propulsion studies.

In 1948, the name of the laboratory was changed to NACA Lewis Flight Propulsion Laboratory, in memory of George W. Lewis, the NACA's director of research from 1924 to 1947. The center broadened its scope of research to include turbojet engines, ramjets, and rockets and constructed new facilities, including two supersonic wind tunnels and the Propulsion Systems Laboratory.

The center became one of the original NASA centers when the agency was established in 1958. The Centaur rocket was one of the most important contributions Lewis made to the space program.

During the energy crisis of the 1970s, Lewis worked with the U.S. Department of Energy to investigate wind and solar power and to improve the fuel efficiency of automobile engines. Engineers also began work on the advanced turboprop engine. In 1987, a government-contractor team won the Collier Trophy for its work on the advanced turboprop project.

Mission

Lewis Research Center defined and developed new propulsion, power, and communications technologies for aeronautical and space applications. It managed a launch vehicle program and cooperated with other NASA activities and other research organizations in managing and supporting research and programs of national interest. The center managed research and technology development programs relevant to advanced aeronautical engines and complete propulsion systems for both civilian and military applications. Lewis also had responsibility for developing the electrical space power system for the life support systems and research experiments on the space station.

Marshall Space Flight Center

Location

George C. Marshall Space Flight Center is located at the U.S. Army's Redstone Arsenal in Huntsville, Alabama. Marshall also manages the Michoud Assembly Facility in New Orleans, Louisiana, and the Slidell Computer Complex in Slidell, Louisiana.

Director

James R. Thompson, Jr. (September 1986–July 6, 1989)
William R. Lucas (June 1974–July 1986)
Rocco A. Petrone (January 1973–March 1974)
Eberhard F.M. Rees (March 1970–January 1973)
Wernher von Braun (July 1960–January 1970)

Deputy Director

Thomas J. (Jack) Lee (December 1980–July 6, 1989)
Richard G. Smith (November 1974–August 1978)

History

Marshall Space Flight Center was established in 1960 and named in honor of General George C. Marshall. The center became active on July

1, 1960, with the transfer of buildings, land, space projects, property, and personnel from the U.S. Army Ballistic Missile Agency. Dr. Wernher von Braun was the center's first director.

In 1961, Marshall's Mercury-Redstone launch vehicle boosted America's first astronaut, Alan B. Shepard, on a suborbital flight. The center's first major program was the development of the Saturn rockets, the largest of which boosted a NASA crew to the Moon in 1969. Saturns also lifted Skylab and the Apollo spacecraft into Earth orbit for the linkup with the Russian Soyuz spacecraft in 1975.

Other Marshall projects included Pegasus in 1965, the Lunar Roving Vehicle in 1971 for transporting astronauts on the lunar surface, Skylab in 1973 (the first U.S. crewed orbiting space station, the three High Energy Astronomy Observatories to study stars and star-like objects, and the Hubble Space Telescope. Marshall was the lead center for NASA's Spacelab missions. It also had responsibility for the definition and preliminary design of pressurized common modules, environmental control, life support, and propulsive systems, and other elements of the space station.

A Marshall-developed propulsion system launched the Space Shuttle. Marshall provided the Shuttle orbiter's engines, the external tank that carried liquid hydrogen and liquid oxygen for those engines, and the solid rocket boosters that assisted in lifting the orbiter from the launch pad.

Mission

Marshall Space Flight Center was a management, scientific, and engineering center and emphasized multiple projects involving scientific investigation and application of space technology to the solution of problems on Earth.

National Space Technology Laboratories/Stennis Space Center

Location

The National Space Technology Laboratories/Stennis Space Center is located approximately eighty-eight kilometers northeast of New Orleans in Bay St. Louis, Mississippi.

Director

Jerry I. Hlass (September 1, 1976–January 23, 1989)[2]
Jackson M. Balch (June 1974–August 1976)

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[2]Prior to the 1988 renaming of the National Space Technology Laboratories to Stennis Space Center, the director and deputy director held the titles of "manager" and "deputy manager," respectively. Therefore, Hlass was "manager" until May 20, 1988, when he became "director."

Deputy Director

Roy Estess (August 1980–January 23, 1989)
Harry Auter (1963–February 1979)

History

Stennis Space Center began as Mississippi Test Operations in October 1961 when the federal government selected the area in Hancock County, Mississippi, for the site of a static test facility for launch vehicles to be used in the Apollo lunar landing program. The center's name was changed to the Mississippi Test Facility in 1965. It received independent NASA installation status in 1974 and became the National Space Technology Laboratories. In May 1988, it was renamed the John C. Stennis Space Center in honor of U.S. Senator John C. Stennis, a staunch supporter of the space program.

The center has evolved into a multidisciplinary facility made up of NASA and twenty-two other resident agencies engaged in space and environmental programs and the national defense. The U.S. Navy was the center's largest resident agency. During the early years, the center flight-certified all first and second stages of the Saturn V rocket for the Apollo program. When the Space Shuttle program got under way, the center flight-certified all the engines used to boost the Shuttle into low-Earth orbit.

Mission

The primary mission of Stennis Space Center was to provide the capacity to test rocket propulsion engines, systems, and vehicles. Its major test program was the development and flight certification of the Space Shuttle Main Engine, which powered the Shuttle during its first minutes of flight.

Wallops Flight Center

Location

Wallops Flight Center is located on Wallops Island, off the Delmarva Peninsula in Virginia, and on additional nearby property on the Virginia mainland. It is approximately eighty kilometers southeast of Salisbury, Maryland.

Director

Abraham D. Spinak, Acting (August 1981–November 1981)
Robert Kreiger (June 1948–August 1981) (actually retired in February 1980 but stayed on at the request of the NASA Administrator to help with the consolidation with Goddard)

Associate Director

Abraham D. Spinak (August 1966–November 1981)

History

The NACA established Wallops Flight Center in 1945 when it authorized Langley Research Center to proceed with the development of Wallops Island as a site for research with rocket-propelled models and as a center for aerodynamic research. It is one of the oldest launch sites in the world. Before NASA's establishment, Wallops helped provide the foundation for aerodynamic and heat transfer research through the establishment of a high-speed aeronautics launch site that used rockets to propel aircraft models. The facility allowed researchers to overcome the limited capabilities offered by the wind tunnels of the day.

With the establishment of NASA in 1958, research conducted at Wallops included developing components for the human space program, including capsule escape techniques, maximum pressure tests, and recovery systems. Wallops provided range support for research in reentry and life support systems, Scout launch vehicles, and mobile research projects. It also expanded its scope to include Earth studies of ocean processes and used the Wallops Research Airport for runway surface and aircraft noise reduction studies.

Wallops met its requirements for propulsion with relatively small solid rockets staged in various ways to meet the needs of the research task. The largest and most sophisticated of the launch vehicles was the Scout four-stage solid-fuel vehicle that could launch small scientific satellites, space probes, and reentry missions.

The center was consolidated with Goddard Space Flight Center on October 19, 1981. At that time, it became Wallops Flight Facility, with the designation Suborbital Projects and Operations Directorate.

Mission

The Wallops mission included managing and implementing NASA's sounding rocket and balloon programs, conducting observational Earth sciences studies, providing flight services for scientific investigations, and operating the Wallops Test Range and Orbital Tracking Station.

Table 6–1. NASA Centers' Major Programs and Mission Areas

Installation	Major Programs	Mission Areas
Ames Research Center Moffett Field, California	Aeronautics/Space Science and Applications	Computational fluid dynamics Aircraft flight simulation testing Astrophysical and biological sciences Rotorcraft technology
Dryden Flight Research Center Edwards, California	Aeronautics/Space Transportation Systems	Aeronautics flight testing Shuttle landing site
Goddard Space Flight Center Greenbelt, Maryland	Space Science and Applications Space Tracking and Data Systems	Atmospheric and Earth science Physics astronomy Near-Earth space tracking
Jet Propulsion Laboratory (JPL) Pasadena, California	Space Science and Exploration Space Tracking and Data Systems	Planetary exploration Space sciences Deep Space Network
Johnson Space Center Houston, Texas	Space Transportation Systems	Shuttle program management Space station program management Integration and thermal systems Flight and mission operations Space medicine and crew systems
Kennedy Space Center Cape Canaveral, Florida	Space Transportation Systems	Cargo processing and checkout Launch operations Primary STS landing site
Langley Research Center Hampton, Virginia	Aeronautics/Space Technology	Aerodynamics Materials and structures Guidance and control Environmental quality
Lewis Research Center Cleveland, Ohio	Aeronautics/Space Technology	Power and propulsion technology Space station power systems Space data and communications
Marshall Space Flight Center Huntsville, Alabama	Space Transportation Systems	Propulsion systems development Space station propulsion/ common modules
Stennis Space Center Bay St. Louis, Mississippi	Space Transportation Systems Space Applications	Liquid rocket engine and system testing Remote sensing
Wallops Flight Facility Wallops Island, Virginia	Space Science	Scout expendable launch vehicle launches Space science research and development Space tracking

Table 6–2. Property: In-House and Contractor-Held (FY 1979–1988)
(at end of fiscal year; money amount in thousands)

Category	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
1. Total real property value	2,938,901	3,084,767	3,155,917	3,242,295	3,343,279	3,414,309	3,603,821	3,757,100	3,888,427	4,050,072
Percentage change	3.7	5.0	2.3	2.7	3.1	2.1	5.6	4.3	3.5	4.2
Land value	115,189	115,257	115,304	116,476	117,931	118,248	117,199	117,222	117,217	117,210
Percentage change	–1.2	0.06	*a*	1.0	1.2	0.3	–0.9	*a*	*a*	*a*
Building value	1,617,211	1,660,624	1,680,692	1,723,724	1,791,689	1,819,173	1,967,307	2,049,784	2,161,979	2,281,595
Percentage change	2.0	2.7	1.2	2.6	3.9	1.5	8.1	4.2	5.5	5.5
Other structures and facilities value	1,205,831	1,307,295	1,358,036	1,400,152	1,431,697	1,474,873	1,517,286	1,567,960	1,607,096	1,649,097
Percentage change	6.4	8.4	3.9	3.1	2.3	3.0	2.9	3.3	2.5	2.6
Leasehold improvements value	670	1,591	1,885	1,943	1,962	2,015	2,029	2,134	2,135	2,170
Percentage change	–7.2	137.4	18.4	3.1	1.0	2.7	0.7	5.2	0.05	1.6
2. Capitalized equipment value	3,210,678	3,431,887	3,496,070	4,111,986	4,291,371	2,969,391	3,201,147	3,537,506	3,167,448	3,187,004
Percentage change	8.6	6.9	1.9	17.6	4.4	–31.0	7.8	10.5	–10.5	0.6
3. Fixed assets-in-progress value	291,727	304,528	380,400	381,455	435,965	495,795	379,769	426,517	439,613	467,673
Percentage change	29.1	4.4	24.9	0.3	14.3	13.7	–23.4	12.3	3.1	6.4
4. Total investment value (1+2+3)	6,441,306	6,821,182	7,032,387	7,735,736	8,070,615	6,879,495	7,184,737	7,721,123	7,495,488	7,704,749
Percentage change	7.1	5.9	3.1	10.0	4.3	–14.8	4.4	7.5	–2.9	2.8

Table 6–2 continued

Category	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
5. Number of acres of land	133,892.4	133,754.6	134,300.7	136,680.4	136,738.0	136,491.5	134,939.7	134,939.9	134,820.5	134,827.8
Percentage change	–1.6	0.1	0.4	1.8	*	–0.2	–1.1	*	0.09	*
Number of buildings	2,429	2,464	2,499	2,550	2,600	2,760	2,644	2,660	2,679	2,653
Percentage change	0.2	1.4	1.4	2.0	2.0	6.2	–4.2	0.6	0.7	–0.1
Number of square feet of buildings	32,571,723	32,679,347	32,876,733	33,096,988	33,524,976	33,886,388	34,065,483	34,582,023	35,601,147	35,736,863
Percentage change	–0.2	0.3	0.6	0.7	1.3	1.1	0.5	1.5	2.9	0.4

a Less than 0.05 percent.

Source: NASA Budget Estimates, 1979–1988, Summary Tables, "Recorded Value of Capital Type Property In-House and Contractor-Held," and "NASA Locations by Accounting Installations," Annual Reports, 1979–1988, Office of Management Systems and Facilities, Facilities Engineering Division.

Table 6–3. Value of Real Property Components as a Percentage of Total Real Property: In-House and Contractor-Held (FY 1979–1988) (at end of fiscal year; total real property value in thousands)

Component	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Land	3.9	3.7	3.7	3.6	3.5	3.5	3.3	3.0	3.0	2.9
Buildings	55.0	53.8	53.2	53.1	53.6	53.3	54.6	55.0	55.6	56.3
Other structures and facilities	41.0	42.4	43.0	43.2	42.9	43.2	42.1	42.3	41.3	40.7
Total real property value	2,938,901	3,084,767	3,155,917	3,242,295	3,343,279	3,414,309	3,603,821	3,757,100	3,888,427	4,050,072

Note: Percentages may not add up to 100 percent due to rounding.

Source: Table 6–1.

Table 6–4. NASA Facilities Total Investment Value (FY 1979): In-House and Contractor-Held (at end of fiscal year; in thousands of dollars)

Facility	Total Real Property Value *a*	Capitalized Equipment	Fixed Assets-in-Progress	Total Investment	Percentage of NASA Total Investment
NASA Headquarters	0	17,877	6,644	25,451	3.8
Office of Space Flight					
Kennedy Space Center	751,095	967,416	117,914	1,836,425	28.5
Johnson Space Center	266,907	442,347	24,623	733,877	11.4
Marshall Space Flight Center	338,283	396,707	3,522	738,512	11.5
National Space Technology Laboratories	280,984	29,296	0	310,280	4.8
Total	1,637,269	1,835,766	146,059	3,619,094	56.1
Office of Aeronautics and Space Technology					
Ames Research Center	225,781	165,781	56,247	447,809	6.9
Dryden Flight Research Center	21,251	63,564	3,095	87,910	1.7
Langley Research Center	365,178	183,710	17,665	566,553	8.8
Lewis Research Center	287,781	143,194	17,971	449,036	6.9
Total	899,991	556,249	94,978	1,551,308	24.1
Office of Space Science and Applications					
Goddard Space Flight Center	161,591	511,020	19,555	692,166	10.7
Jet Propulsion Laboratory	159,171	233,821	19,408	412,400	6.4
Wallops Flight Center (Facility)	80,789	56,015	5,083	141,887	2.2
Total	401,551	800,856	44,046	1,246,453	19.4
NASA Total	2,938,901	3,210	291,727	6,441,306	100.0

a Total Real Property Value includes land, buildings, real property and other structures and facilities, and leasehold improvements.

Source: NASA Budget Estimates, 1979–1988, Summary Tables, "Recorded Value of Capital Type Property In-House and Contractor-Held."

Table 6–4A. NASA Facilities Total Investment Value (FY 1980–1982): In-House and Contractor-Held (at end of fiscal year; in thousands of dollars)

	Total Real Property Value			Capitalized Equipment		
Facility	**1980**	**1981**	**1982**	**1980**	**1981**	**1982**
NASA Headquarters	0	4	0	16,710	22,358	17,496
Office of Space Flight						
Kennedy Space Center	827,579	841,837	881,176	934,382	935,986	1,549,138
Johnson Space Center	270,671	271,917	275,858	608,577	614,839	602,774
Marshall Space Flight Center	354,983	355,526	363,635	421,361	430,850	418,113
National Space Technology Laboratories	282,618	281,554	280,956	24,134	25,475	28,680
Total	1,735,851	1,750,834	1,801,625	3,619,094	2,007,150	2,598,705
Office of Aeronautics and Space Technology						
Ames Research Center	227,961	251,698	235,144	198,403	300,338	253,841
Dryden Flight Research Center	22,348	*a*	22,723	57,914	*b*	69,779
Langley Research Center	394,545	425,093	437,162	184,587	189,088	193,620
Lewis Research Center	294,474	295,281	310,466	153,298	153,463	160,603
Total	939,328	972,072	1,005,495	594,202	642,889	677,843
Office of Space Science and Applications						
Goddard Space Flight Center *c*	165,944	267,030	265,852	528,745	565,964	556,690
Jet Propulsion Laboratory	161,265	165,977	169,323	246,751	257,709	261,252
Wallops Flight Center (Facility) *d*	82,379	—	—	57,025	—	—
Total	409,588	433,007	435,175	832,521	823,673	582,815
NASA Total	3,084,767	3,155,917	3,242,295	3,415,177	3,496,070	4,111,986

a Included in amounts for Ames Research Center.

b Included in amounts for Ames Research Center.

c Beginning in FY 1981, Goddard Space Flight Center includes Wallops Flight Center amounts.

d Beginning in FY 1981, amounts for Wallops Flight Center were included with Goddard Space Flight Center.

Table 6–4A continued

Facility	Fixed Assets-in-Progress			Total Investment			Percentage of NASA Total Investment *a*		
	1980	1981	1982	1980	1981	1982	1980	1981	1982
NASA Headquarters	6,644	6,640	0	23,354	29,002	17,496	0.3	0.4	0.2
Office of Space Flight									
Kennedy Space Center	72,612	88,983	72,092	1,834,573	1,866,806	2,502,406	26.9	26.5	32.3
Johnson Space Center	25,731	31,592	31,208	904,979	918,348	909,840	13.3	13.1	11.8
Marshall Space Flight Center	2,195	1,504	718	778,539	787,880	782,466	11.4	11.2	10.1
National Space Technology Laboratories	0	0	0	306,752	307,029	309,636	4.5	4.4	4.0
Total	100,538	122,079	104,018	3,824,843	3,880,063	4,504,348	56.1	55.2	58.2
Office of Aeronautics and Space Technology									
Ames Research Center	91,918	145,218	164,695	518,282	697,254	653,680	7.6	9.9	8.4
Dryden Flight Research Center	3,040	—	4,955	83,302	—	97,457	1.2	—	1.3
Langley Research Center	29,481	27,697	44,309	608,613	641,878	675,091	8.9	9.1	8.7
Lewis Research Center	15,487	16,080	14,545	463,259	465,605	485,614	6.8	6.7	6.3
Total	139,926	188,995	228,504	1,673,456	1,804,737	1,911,842	24.5	25.7	24.7
Office of Space Science and Applications									
Goddard Space Flight Center	29,529	31,977	26,624	724,218	864,971	849,166	10.6	12.3	11.0
Jet Propulsion Laboratory	21,933	29,929	22,309	429,949	453,615	452,884	6.3	6.4	5.9
Wallops Flight Center (Facility)	5,958	—	—	145,362	—	—	2.1	—	—
Total	57,420	61,906	48,933	1,299,529	1,318,586	1,302,050	19.1	18.8	16.8
NASA Total	304,528	380,400	381,455	6,821,182	7,032,387	7,737,736	99.7	100.0	99.7

a Percentage totals may not add up to 100 percent due to rounding.

Table 6–4B. NASA Facilities Total Investment Value (FY 1983–1985): In-House and Contractor-Held (at end of fiscal year; in thousands of dollars)

	Total Real Property Value			Capitalized Equipment		
Facility	**1983**	**1984**	**1985**	**1983**	**1984**	**1985**
NASA Headquarters	0	0	0	27,749	28,896	31,144
Office of Space Flight						
Kennedy Space Center	905,163	947,111	976,524	1,576,544	423,636	605,005
Johnson Space Center	289,235	292,163	293,822	649,879	551,269	525,849
Marshall Space Flight Center	390,082	395,769	406,201	416,751	397,902	430,488
National Space Technology Laboratories	282,239	294,104	291,698	30,306	31,252	33,356
Total	1,866,719	1,929,147	1,968,245	2,673,480	1,404,059	1,594,698
Office of Aeronautics and Space Technology						
Ames Research Center *a*	263,644	265,618	367,280	348,604	343,836	355,441
Langley Research Center	447,534	455,664	489,258	217,078	216,123	222,046
Lewis Research Center	312,487	315,445	218,181	171,350	159,139	182,380
Total	1,023,665	1,036,727	1,074,719	737,032	719,098	759,867
Office of Space Science and Applications						
Goddard Space Flight Center *b*	272,286	275,454	268,599	583,843	533,488	248,239
Jet Propulsion Laboratory	180,609	182,981	194,484	269,267	283,850	300,364
Total	452,895	458,435	463,083	853,110	817,338	548,603
NASA Total	3,343,279	3,414,309	3,603,821	4,291,371	2,969,391	3,201,147

a Includes Dryden.

b Includes Wallops.

Table 6–4B continued

Facility	Fixed Assets-in-Progress			Total Investment			Percentage of NASA Total Investment *a*		
	1983	1984	1985	1983	1984	1985	1983	1984	1985
NASA Headquarters	0	0	0	27,749	28,896	31,144	0.3	0.4	0.4
Office of Space Flight									
Kennedy Space Center	81,369	72,585	95,994	2,563,076	1,443,332	1,677,523	31.8	20.1	23.3
Johnson Space Center	42,687	47,142	69,208	981,801	890,574	828,157	12.2	12.9	11.5
Marshall Space Flight Center	837	0	0	807,670	793,671	836,689	10.0	11.5	11.6
National Space Technology Laboratories	0	0	0	312,545	315,356	325,054	3.9	4.6	4.5
Total	124,893	119,727	165,202	4,665,092	3,442,933	3,667,423	57.8	50.0	51.0
Office of Aeronautics and Space Technology									
Ames Research Center	184,611	206,711	132,730	796,859	816,165	855,451	9.9	11.9	11.9
Langley Research Center	43,879	61,073	53,946	708,491	732,060	765,250	8.8	10.6	10.7
Lewis Research Center	21,574	23,298	25,479	505,411	497,882	523,814	6.3	7.2	7.3
Total	250,064	291,082	212,155	2,010,761	2,046,107	2,144,515	24.9	29.7	29.8
Office of Space Science and Applications									
Goddard Space Flight Center	24,942	31,756	37,892	881,071	840,698	821,565	10.9	12.2	11.4
Jet Propulsion Laboratory	36,066	53,230	25,242	485,942	520,061	520,090	6.0	7.6	7.2
Total	61,008	84,986	63,134	1,367,013	1,360,759	1,341,655	16.9	19.8	18.7
NASA Total	435,965	495,795	379,769	8,070,615	6,879,495	7,184,737	99.6	99.5	99.5

a Percentage totals may not add up to 100 percent due to rounding.

Table 6–4C. NASA Facilities Total Investment Value (FY 1986–1988): In-House and Contractor-Held (at end of fiscal year; in thousands of dollars)

	Total Real Property Value			Capitalized Equipment		
Facility	**1986**	**1987**	**1988**	**1986**	**1987**	**1988**
NASA Headquarters	0	0	0	39,525	13,541	39,378
Office of Space Flight						
Kennedy Space Center	1,049,146	1,108,018	1,116,251	765,008	708,750	623,870
Johnson Space Center	298,145	311,809	316,545	470,726	449,727	316,545
Marshall Space Flight Center	427,014	447,152	459,030	484,959	465,347	459,030
National Space Technology Laboratories *a*	300,882	302,790	321,360	349,923	27,719	29,876
Total	2,075,187	2,169,769	2,213,186	1,755,616	1,651,543	1,429,321
Office of Aeronautics and Space Technology						
Ames Research Center	375,829	387,298	456,244	371,797	340,456	348,975
Langley Research Center	514,025	509,576	552,379	306,845	200,700	205,899
Lewis Research Center	320,337	325,196	326,670	189,082	150,367	163,617
Total	1,210,191	1,222,070	1,335,293	867,724	691,523	718,491
Office of Space Science and Applications						
Goddard Space Flight Center	270,473	282,047	286,517	533,178	427,030	458,185
Jet Propulsion Laboratory	201,249	214,541	215,076	339,463	383,811	376,271
Total	471,722	496,588	501,593	872,641	810,841	834,456
NASA Total	3,757,100	3,888,427	4,050,072	3,537,506	3,167,448	3,187,004

a Name changed to John C. Stennis Space Center in 1988.

Table 6–4C continued

Facility	Fixed Assets-in-Progress			Total Investment			Percentage of NASA Total Investment *a*		
	1986	1987	1988	1986	1987	1988	1986	1987	1988
NASA Headquarters	0	0	0	39,525	13,541	39,378	0.5	0.2	0.5
Office of Space Flight									
Kennedy Space Center	79,980	38,007	23,797	1,894,134	1,854,775	1,763,918	24.5	24.7	22.9
Johnson Space Center	7,530	4,824	16,706	776,401	766,360	780,400	10.1	10.2	10.1
Marshall Space Flight Center	0	973	2,690	911,973	913,472	955,504	11.9	12.2	12.4
National Space Technology Laboratories	0	0	0	337,805	330,509	351,234	4.4	4.1	4.6
Total	87,510	43,804	43,193	3,920,313	3,865,116	3,851,056	50.8	51.6	50.0
Office of Aeronautics and Space Technology									
Ames Research Center	179,610	187,008	120,039	927,244	914,762	975,258	12.0	12.2	12.7
Langley Research Center	40,230	53,600	27,780	861,100	763,876	786,058	11.2	10.2	10.2
Lewis Research Center	27,196	37,947	54,510	536,615	513,510	544,797	6.9	6.9	7.0
Total	247,036	278,555	202,329	2,324,959	2,192,148	2,306,113	30.1	29.2	29.9
Office of Space Science and Applications									
Goddard Space Flight Center	41,774	44,449	75,318	845,425	753,526	820,020	10.9	10.1	10.6
Jet Propulsion Laboratory	50,189	72,805	96,833	590,901	671,157	688,180	7.7	9.0	8.9
Total	91,963	117,254	172,151	1,436,326	1,424,683	1,508,200	18.5	19.1	19.6
NASA Total	426,517	439,613	467,673	7,721,123	7,495,488	7,704,749	99.4	99.9	99.5

a Percentage totals may not add up to 100 percent due to rounding.

Table 6–5. Land Owned by Installation and Fiscal Year in Acres: In-House and Contractor-Held (at end of fiscal year)

Installation	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Ames Research Center	429.9	429.9	432.0	432.0	432.0	432.0	432.0	432.0	432.0	432.0
Dryden Flight Research Center	—	—	—	—	—	—	—	—	—	—
Goddard Space Flight Center	12,002.7	11,864.9	12,408.9 *a*	12,636.5	12,660.6	12,410.6	12,410.6	12,410.6	12,410.6	12,410.6
Jet Propulsion Laboratory	155.8	155.8	155.8	155.8	155.8	155.8	155.8	155.8	155.8	155.8
Johnson Space Center	1,785.9	1,785.9	1,785.9	1,785.9	1,819.4	1,822.9	1,822.9	1,823.1	1,823.1	1,821.0
Kennedy Space Center	82,943.0	82,943.0	82,943.0	82,943.0	82,943.0	82,943.0	82,943.0	82,943.0	82,943.0	82,943.0
Langley Research Center	897.6	897.6	897.6	897.6	897.6	897.6	897.6	897.6	787.6 *b*	787.6
Lewis Research Center	6,204.6	6,204.6	6,204.6 *c*	8,356.7 *d*	8,356.7	8,356.7	6,804.8 *e*	6,804.8	6,804.8	6,804.8
Marshall Space Flight Center	409.5	409.5	409.5	409.5	409.5	409.5	409.5	409.5	409.5	409.5
National Space Technology Laboratories	20,642.2	20,642.2	20,642.2	20,642.2	20,642.2	20,642.2	20,642.2	20,642.2	20,642.2	20,642.2
Wallops Flight Center (Facility)	6,165.8	6,165.8	6,165.8	6,165.8	6,165.8	6,165.8	6,165.9	6,165.9	6,165.9	6,165.9
Total *f*	133,892.4	133,754.6	134,300.7	136,680.4	136,738.0	136,491.5	134,939.7	134,939.9	134,829.9	134,827.8

a Increase in acreage reflects the transfer of land held under permit from the Beltsville Agricultural Research Center to Goddard.

b Decrease in acreage reflects condemnation of property.

c This does not include 2,152.15 acres of land declared excess to the General Services Administration (GSA).

d Increase in acreage reflects the reinstatement of excess land to Lewis.

e Decrease in acreage reflects the transfer of excess land to GSA.

f Total includes Michoud Assembly Facility (New Orleans, Louisiana), Slidell Computer Complex (Slidell Louisiana), and White Sands Test Facility (Las Cruces, New Mexico).

Source: "NASA Locations by Accounting Installations," Annual Reports, 1979–1988, Office of Management Systems and Facilities, Facilities Engineering Division.

Table 6–6. Number of Buildings Owned by Installation and Fiscal Year: In-House and Contractor-Held (at end of fiscal year) a

Installation	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Ames Research Center	144	147	145	145	145	146	179	181	182	156
Dryden Flight Research Center	63	63	65	65	71	81	76	66	66	66
Goddard Space Flight Center *b*	260	261	264	242	255	263	247	228	214	210
Jet Propulsion Laboratory *c*	341	341	341	344	337	338	353	335	333	327
Johnson Space Center	182	182	190	190	202	204	204	204	217	212
Kennedy Space Center	350	353	442	500	532	678	514	556	572	566
Langley Research Center	151	151	153	159	159	159	165	166	171	170
Lewis Research Center	250	250	250	259	258	256	256	256	256	258
Marshall Space Flight Center	176	168	166	166	166	165	167	174	175	194
National Space Technology Laboratories	120	120	115	111	104	106	111	117	118	120
Wallops Flight Center (Facility)	282	284	258	257	258	261	259	259	256	253
Total *d*	2,429	2,426	2,499	2,550	2,600	2,760	2,644	2,660	2,679	2,653

a Changes in the number of buildings frequently reflect the erection or dismantling of trailers or other temporary buildings.

b This includes tracking stations.

c This includes tracking stations.

d Total includes Michoud Assembly Facility, Slidell Computer Complex, and White Sands Test Facility.

Source: "NASA Locations by Accounting Installations," Annual Reports, 1979–1988, Office of Management Systems and Facilities, Facilities Engineering Division.

Table 6–7. Number of Square Feet of Buildings Owned by Installation and Fiscal Year: In-House and Contractor-Held (at end of fiscal year)

Installation	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Ames Research Center	2,224,372	2,143,077	2,275,686	2,291,262	2,290,812	2,305,866	2,334,684	2,371,954	2,391,559	2,683,184
Dryden Flight Research Center	459,447	504,856	501,578	501,778	508,198	521,548	450,463	549,620	549,620	549,620
Goddard Space Flight Center	2,709,230	2,694,672	2,787,364	2,881,871	2,923,577	2,907,556	2,873,898	2,846,842	3,219,489	3,219,495
Jet Propulsion Laboratory	2,014,712	2,014,112	2,017,972	2,027,990	2,037,004	2,041,774	2,078,225	2,056,581	2,087,472	2,075,528
Johnson Space Center	4,534,939	4,551,432	4,555,826	4,561,147	4,771,805	4,793,677	4,794,341	4,817,208	4,886,903	4,892,190
Kennedy Space Center	5,337,276	5,312,570	5,375,291	5,431,336	5,507,621	5,766,191	5,875,980	6,041,808	6,640,212	6,720,200
Langley Research Center	2,140,135	2,085,380	2,098,203	2,068,679	2,066,812	2,098,215	2,110,851	2,141,362	2,160,326	2,180,360
Lewis Research Center	3,105,064	3,176,921	3,178,851	3,203,085	3,205,185	3,212,567	3,213,383	3,213,383	3,213,383	3,215,691
Marshall Space Flight Center	3,823,813	3,814,283	3,814,817	3,820,069	3,820,069	3,819,288	3,820,375	3,839,696	3,756,193	3,783,472
National Space Technology Laboratories	1,178,177	1,212,226	1,220,982	1,247,031	1,250,970	1,272,435	1,361,392	1,456,829	1,458,841	1,546,685
Wallops Flight Center (Facility)	1,057,344	1,064,064	1,068,312	1,058,045	1,083,545	1,087,893	1,091,268	1,094,093	1,083,382	1,083,362
Total *a*	32,571,723	32,679,347	32,876,733	33,096,988	33,524,976	33,886,388	34,065,483	34,582,023	35,601,147	35,736,863

a Total includes Michoud Assembly Facility, Slidell Computer Complex, and White Sands Test Facility.

Source: "NASA Locations by Accounting Installations," Annual Reports, 1979–1988, Office of Management Systems and Facilities, Facilities Engineering Division.

Table 6–8. Total Real Property Value by Installation and Fiscal Year: In-House and Contractor-Held (at end of fiscal year; in thousands of dollars)

Installation	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Headquarters	0	0	4	0	0	0	0	0	0	0
Ames Research Center	225,781	227,961	251,698	235,144	263,644	265,618	367,280	375,029	387,298	456,244
Dryden Flight Research Center	21,251	22,348	*a*	22,723	*b*					
Goddard Space Flight Center	161,591	165,944	267,030	265,852	272,286	275,454	268,599	270,473	282,047	286,517
Jet Propulsion Laboratory	159,171	161,265	165,977	169,323	180,609	182,981	194,484	201,249	214,541	215,076
Johnson Space Center	266,907	270,671	271,917	275,858	289,235	292,163	293,822	298,145	311,809	316,545
Kennedy Space Center	751,095	827,579	841,837	881,176	905,163	947,111	976,524	1,049,146	1,108,018	1,116,251
Langley Research Center	365,178	394,545	425,093	437,162	447,534	455,664	489,258	514,025	509,576	552,379
Lewis Research Center	287,871	294,474	295,281	310,466	312,487	315,445	315,955	320,337	325,196	326,670
Marshall Space Flight Center	338,283	354,983	355,526	363,635	390,082	395,769	395,153	427,014	447,152	459,030
National Space Technology Laboratories	280,984	282,618	281,554	280,956	282,239	284,104	291,698	300,882	302,790	321,360
Wallops Flight Center (Facility)	80,789	82,379	*c*							
Total	2,938,901	3,084,767	3,155,917	3,242,295	3,343,279	3,414,309	3,603,821	3,757,100	3,888,427	4,050,072

a Included with Ames Research Center.

b Included with Ames through 1988.

c Included with Goddard Space Flight Center through 1988.

Source: Table 6–4.

Table 6–9. Land Value by Installation and Fiscal Year: In-House and Contractor-Held
(at end of fiscal year; in thousands of dollars)

Installation	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Headquarters	0	0	0	0	0	0	0	0	0	0
Ames Research Center	2,928	2,928	2,928	2,928	2,929	2,929	2,929	2,928	2,929	2,929
Dryden Flight Research Center	0	0	*a*	0	*b*					
Goddard Space Flight Center	1,706	1,685	3,111	2,862	2,860	2,860	2,840	2,857	2,857	2,856
Jet Propulsion Laboratory	1,188	1,188	1,188	1,188	1,188	1,188	1,188	1,188	1,188	1,188
Johnson Space Center	9,107	9,107	9,115	9,115	10,571	10,888	10,889	10,889	10,889	10,883
Kennedy Space Center	71,345	71,345	71,345	71,345	71,345	71,345	71,345	71,345	71,345	71,345
Langley Research Center	162	162	162	162	162	162	162	162	156	156
Lewis Research Center	2,230	2,230	2,230	3,651	3,651	3,651	2,621	2,621	2,621	2,621
Marshall Space Flight Center	7,157	7,160	7,164	7,164	7,164	7,164	7,164	7,171	7,171	7,171
National Space Technology Laboratories	18,061	18,061	18,061	18,061	18,061	18,061	18,061	18,061	18,061	18,061
Wallops Flight Center (Facility)	1,305	1,391	*c*							
Total	115,189	115,257	115,304	116,476	117,931	118,248	117,199	117,222	117,217	117,210

a Included with Ames Research Center.
b Included with Ames through 1988.
c Included with Goddard Space Flight Center through 1988.
Source: NASA Budget Estimates, 1979–1988, Summary Tables.

Table 6–10. Building Value by Installation and Fiscal Year: In-House and Contractor-Held
(at end of fiscal year; in thousands of dollars)

Installation	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Headquarters	0	0	0	0	0	0	0	0	0	0
Ames Research Center	213,479	214,687	231,128	220,584	237,965	239,847	338,495	345,008	357,016	424,012
Dryden Flight Research Center	14,447	15,387	—	15,534	—	—	—	—	—	—
Goddard Space Flight Center	101,711	105,220	143,105	145,696	149,811	119,745	153,875	156,069	167,649	116,424
Jet Propulsion Laboratory	89,871	90,916	94,968	97,311	102,760	104,266	106,548	113,595	121,924	122,092
Johnson Space Center	195,875	199,120	198,397	201,533	210,687	212,379	213,725	215,869	221,976	224,437
Kennedy Space Center	349,073	373,472	377,650	390,154	407,436	415,255	432,633	455,310	508,917	526,623
Langley Research Center	147,434	135,586	135,762	137,318	142,321	147,046	156,937	168,061	171,213	182,064
Lewis Research Center	209,128	215,619	215,746	226,576	227,958	230,067	231,269	233,927	235,022	235,953
Marshall Space Flight Center	200,979	213,544	215,161	219,216	241,842	244,620	253,259	272,412	288,168	297,646
National Space Technology Laboratories	68,629	69,893	68,775	69,802	70,909	72,844	80,566	88,733	90,094	102,344
Wallops Flight Center (Facility)	26,585	27,180	—	—	—	—	—	—	—	—
Total	1,617,211	1,660,624	1,680,692	1,723,724	1,791,697	1,819,173	1,967,307	2,049,784	2,161,979	2,281,595

Table 6–11. Other Structures and Facilities Value by Installation and Fiscal Year: In-House and Contractor-Held (at end of fiscal year; in thousands of dollars)

Installation	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Headquarters	0	0	0	0	0	0	0	0	0	0
Ames Research Center	9,374	10,346	17,642	11,362	27,750	22,842	25,856	27,093	27,353	29,303
Dryden Flight Research Center	6,804	6,961	—	7,189	—	—	—	—	—	—
Goddard Space Flight Center	58,174	59,039	120,814	117,294	119,615	119,745	111,884	111,547	111,541	117,237
Jet Propulsion Laboratory	67,578	67,706	68,076	69,017	74,835	75,648	84,855	84,573	89,535	89,867
Johnson Space Center	61,925	62,444	64,405	65,210	67,977	68,896	69,208	71,282	78,839	81,120
Kennedy Space Center	330,677	382,762	392,842	419,677	426,382	415,255	472,546	522,491	527,756	518,283
Langley Research Center	217,582	258,797	289,169	299,682	305,051	308,456	332,159	345,802	338,207	370,159
Lewis Research Center	76,377	76,489	77,169	80,103	80,742	81,591	81,929	83,653	87,417	87,960
Marshall Space Flight Center	130,147	134,279	133,201	137,255	141,076	143,985	145,778	147,431	151,813	154,213
National Space Technology Laboratories	194,294	194,664	194,718	193,093	193,269	193,199	193,071	194,088	194,635	200,955
Wallops Flight Center (Facility)	52,899	53,808	—	—	—	—	—	—	—	—
Total	1,205,831	1,307,295	1,358,036	1,400,152	1,431,697	1,474,873	1,517,286	1,567,960	1,607,096	1,649,097

Source: Table 6–4.

Table 6–12. Capitalized Equipment Value by Installation and Fiscal Year: In-House and Contractor-Held (at end of fiscal year; in thousands of dollars)

Installation	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Headquarters	17,807	16,710	22,358	17,496	27,749	28,896	31,144	39,525	13,541	39,378
Ames Research Center	165,781	198,403	300,338	253,841	348,604	343,836	355,441	371,797	340,456	348,975
Dryden Flight Research Center	63,564	57,914	—	69,779	—	—	—	—	—	—
Goddard Space Flight Center	511,020	528,725	565,964	556,690	583,843	533,488	515,074	533,178	240,265	458,185
Jet Propulsion Laboratory	233,821	246,751	257,709	261,252	269,267	283,850	300,364	339,463	383,811	376,271
Johnson Space Center	442,347	608,577	614,839	602,774	649,879	551,269	525,849	470,726	449,727	447,149
Kennedy Space Center	967,416	934,382	935,986	1,549,138	1,576,544	423,636	605,005	765,008	708,750	623,870
Langley Research Center	183,710	184,587	189,088	193,620	217,078	216,123	222,046	306,845	200,700	205,899
Lewis Research Center	143,194	153,298	153,463	160,603	171,350	159,139	182,380	189,082	150,367	163,617
Marshall Space Flight Center	396,707	421,361	430,850	418,113	416,751	397,902	430,488	484,959	465,347	493,784
National Space Technology Laboratories	29,296	24,134	25,475	28,680	30,306	31,252	33,356	36,923	27,719	29,876
Wallops Flight Center (Facility)	56,015	57,025	—	—	—	—	—	—	—	—
Total	3,210,678	3,431,887	3,496,070	4,111,986	4,291,371	2,969,391	3,201,147	3,537,506	3,167,448	3,187,004

Source: Table 6–4.

Table 6–13. Land Value as a Percentage of Total Real Property Value by Installation and Fiscal Year: In-House and Contractor-Held (at end of fiscal year)

Installation	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Ames Research Center	1.3	1.3	1.2	1.1	1.1	1.1	0.8	0.8	0.8	0.6
Dryden Flight Research Center	0.0	0.0	—	0.0	—	—	—	—	—	—
Goddard Space Flight Center	1.1	1.0	1.2	1.1	1.1	1.0	0.1	1.0	1.0	1.0
Jet Propulsion Laboratory	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6
Johnson Space Center	3.4	3.4	3.4	3.4	3.7	3.7	3.7	3.7	3.5	3.4
Kennedy Space Center	9.5	8.6	8.5	8.1	7.8	7.5	7.3	6.8	6.5	6.4
Langley Research Center	*a*	*a*	*a*	*a*	*a*	*a*	*a*	*a*	*a*	*a*
Lewis Research Center	0.8	0.8	0.8	1.2	1.2	1.2	0.8	0.8	0.8	0.8
Marshall Space Flight Center	2.1	2.0	2.0	2.0	1.9	1.8	2.1	1.7	1.6	1.6
National Space Technology Laboratories	6.4	6.4	6.4	6.4	6.4	6.4	6.2	6.0	6.0	5.6
Wallops Flight Center (Facility)	1.6	1.7	—	—	—	—	—	—	—	—

a Less than 0.05 percent.

Source: Tables 6–4 and 6–9.

Table 6–14. Building Value as a Percentage of Total Real Property Value by Installation and Fiscal Year: In-House and Contractor-Held (at end of fiscal year)

Installation	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Ames Research Center	94.6	94.2	91.8	93.8	90.3	90.3	92.2	93.9	92.2	92.9
Dryden Flight Research Center	68.0	68.9	—	68.4	—	—	—	—	—	—
Goddard Space Flight Center	62.9	63.4	63.4	54.8	55.0	43.5	57.3	57.7	59.4	40.6
Jet Propulsion Laboratory	56.5	56.4	56.4	57.5	57.0	57.0	54.8	56.4	56.8	56.8
Johnson Space Center	73.4	73.6	73.0	73.1	72.8	73.0	72.7	72.4	71.2	49.0
Kennedy Space Center	46.5	45.1	45.1	44.3	45.0	44.0	44.3	43.4	45.9	47.2
Langley Research Center	40.4	34.4	34.4	31.4	30.7	32.3	32.1	32.7	33.6	33.0
Lewis Research Center	72.6	73.2	73.2	73.0	72.9	78.7	73.2	73.0	72.3	72.2
Marshall Space Flight Center	59.4	60.2	60.5	60.3	62.0	61.8	74.9	63.8	64.4	64.8
National Space Technology Laboratories	24.4	24.7	24.4	24.8	25.1	25.6	27.6	29.5	29.8	31.8
Wallops Flight Center (Facility)	32.9	33.0	—	—	—	—	—	—	—	—

Source: Tables 6–4 and 6–10.

Table 6–15. Other Structures and Facilities Value as a Percentage of Total Real Property Value by Installation and Fiscal Year: In-House and Contractor-Held (at end of fiscal year)

Installation	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Ames Research Center	4.2	4.5	7.0	4.9	10.5	9.0	7.0	7.2	7.1	6.4
Dryden Flight Research Center	32.0	31.1	—	31.6	—	—	—	—	—	—
Goddard Space Flight Center	36.0	35.6	45.2	44.1	43.9	43.4	41.5	41.2	39.5	58.1
Jet Propulsion Laboratory	42.5	35.6	41.0	40.8	41.4	41.3	43.6	42.0	41.7	41.8
Johnson Space Center	23.2	23.1	24.0	23.6	23.5	23.6	23.6	23.9	25.3	25.6
Kennedy Space Center	44.0	42.0	46.7	47.6	50.6	43.8	48.4	49.8	47.6	46.4
Langley Research Center	60.0	65.6	68.0	68.6	68.2	67.7	67.8	67.3	66.4	70.6
Lewis Research Center	27.0	26.0	26.1	25.8	25.8	25.9	25.9	26.1	27.5	26.9
Marshall Space Flight Center	38.5	37.8	37.5	37.7	36.2	36.4	43.1	34.5	34.0	33.6
National Space Technology Laboratories	69.1	68.9	69.2	68.7	68.5	68.0	66.2	64.5	64.3	62.5
Wallops Flight Center (Facility)	65.5	65.3	—	—	—	—	—	—	—	—

Source: Tables 6–4 and 6–11.

Table 6–16. Real Property Value of Installations Ranked as a Percentage of Total Real Property Value: In-House and Contractor-Held (at end of fiscal year, selected years)

Ranking	1979		1982		1986		1988	
1	Kennedy	25.6	Kennedy	27.2	Kennedy	27.9	Kennedy	27.6
2	Langley	12.4	Langley	13.5	Langley	13.7	Langley	13.6
3	Marshall	11.5	Marshall	11.2	Marshall	11.4	Marshall	11.3
4	Lewis	9.8	Lewis	9.6	Ames *a*	10.0	Ames	11.3
5	Nat'l Labs	9.6	Nat'l Labs	8.7	Lewis	8.5	Lewis	8.1
6	Johnson	9.1	Johnson	8.5	Nat'l Labs	8.0	Nat'l Labs *b*	8.0
7	Ames	7.7	Goddard *c*	8.2	Johnson	7.9	Johnson	7.8
8	Goddard	5.5	Ames	7.3	Goddard	7.2	Goddard	7.1
9	Jet Prop. Lab	5.4	Jet Prop. Lab	5.2	Jet Prop. Lab	5.4	Jet Prop. Lab	5.3
10	Wallops	2.7	Dryden	0.7				
11	Dryden	0.7						
Total *d*		100.0		100.1		100.0		100.1

a This included Dryden.
b This was renamed John C. Stennis Space Center.
c This included Wallops.
d Totals may not add up to 100 percent due to rounding.
Source: Table 6–4.

Table 6–17. Capitalized Equipment Value of Installations Ranked as a Percentage of Total Capitalized Equipment Value: In-House and Contractor-Held (at end of fiscal year, selected years)

Ranking	1979		1982		1986		1988	
1	Kennedy	30.1	Kennedy	17.7	Kennedy	21.7	Kennedy	19.6
2	Goddard	15.9	Johnson	14.7	Goddard	15.1	Marshall	15.5
3	Johnson	13.8	Goddard *a*	13.5	Marshall	13.7	Goddard	14.4
4	Marshall	12.4	Marshall	10.2	Johnson	13.3	Johnson	14.0
5	Jet Prop. Lab	7.3	Jet Prop. Lab	6.4	Ames *b*	10.5	Jet Prop. Lab	11.8
6	Langley	5.7	Ames	6.2	Jet Prop. Lab	9.6	Ames	10.9
7	Ames	5.2	Langley	4.7	Langley	8.7	Langley	6.5
8	Lewis	4.5	Lewis	3.9	Lewis	5.3	Lewis	5.1
9	Dryden	2.0	Dryden	1.7	Headquarters	1.1	Headquarters	1.2
10	Wallops	1.7	Nat’l Labs	0.7	Nat’l Labs	1.0	Nat’l Labs *c*	0.9
11	Nat’l Labs	0.9	Headquarters	0.4				
12	Headquarters	0.6						
Total *d*		100.1		100.1		100.0		99.9

a This included Wallops.
b This included Wallops.
c This was renamed John C. Stennis Space Center.
d Totals may not add up to 100 percent due to rounding.
Source: Table 6–4.

Table 6–18. NASA Tracking and Data Acquisition Stations (at end of fiscal year; value in thousands of dollars)

Fiscal Year	Buildings	Acres of Land	Value of Facilities
1979	317	11,448.4	129,616
1980	310	11,312.2	129,136
1981	313	11,312.2	137,644
1982	293	11,539.8	129,099
1983	303	11,539.8	133,712
1984	311	11,289.8	134,095
1985	309	11,289.8	134,605
1986	273	11,289.8	128,053
1987	263	11,289.8	133,163
1988	255	11,289.8	133,631

Source: "NASA Locations by Accounting Installations," Annual Reports, 1979–1988, Office of Management Systems and Facilities, Facilities Engineering Division.

Table 6–19. Distribution of Research and Development and Space Flight Control and Data Communications Budget Plan by Installation and Program Office: FY 1988 (in thousands of dollars; percentage of total budget plan in parentheses)

Installation	Space Station	Space Flight *a*	Space Science and Applications	Aeronautics and Space Technology	Space Tracking and Data Systems *b*	Commercial Programs	Total Budget Plan *c*
Ames Research Center	1,130	6,100	89,500	163,453	10,500	1,155	271,838
	(0.4)	(2.2)	(33.0)	(60.1)	(3.9)	(0.4)	(100.0)
Goddard Space Flight Center	44,304	31,800	443,078	7,790	442,135	1,450	970,557
	(4.6)	(3.3)	(45.7)	(0.8)	(45.6)	(0.1)	(100.1)
Jet Propulsion Laboratory	11,393	3,800	425,449	31,774	142,031	1,070	615,517
	(1.9)	(0.6)	(69.1)	(5.2)	(23.1)	(0.2)	(100.1)
Johnson Space Center	135,189	1,029,500	55,929	9,695	50	2,602	1,232,965
	(11.0)	(83.5)	(4.5)	(0.8)	*d*	(0.2)	(100.0)
Kennedy Space Center	10,898	782,200	10,880	402	—	1,036	805,416
	(1.4)	(97.1)	(1.4)	*d*	—	(0.1)	(100.0)
Langley Research Center	2,553	1,200	19,968	160,423	—	1,215	185,359
	(1.4)	(0.6)	(10.8)	(87.2)	—	(0.7)	(100.0)
Lewis Research Center	31,821	5,400	93,280	115,914	—	2,575	248,991
	(12.8)	(2.2)	(37.5)	46.6)	—	(1.0)	(100.1)
Marshall Space Flight Center	54,701	1,574,100	281,675	37,887	51,200	4,853	2,004,416
	(2.7)	(78.5)	(14.1)	(1.9)	(2.6)	(0.2)	(100.0)
Stennis Space Center	331	28,900	723	—	—	5,325	35,279
	(0.9)	(81.9)	(2.0)	—	—	(15.1)	(99.9)
NASA Headquarters	99,980	56,700	161,318	26,862	251,384	27,419	623,663
	(16.0)	(9.1)	(25.9)	(4.3)	(40.3)	(4.4)	(100.0)
Total	392,300	3,519,700	1,581,800	554,200	897,300	48,700	6,994,000
	(5.7)	(51.0)	(22.9)	(8.8)	(12.8)	(0.7)	(100.0)

a Space Tracking and Data Systems includes both Research and Development and Space Flight Control and Data Communications appropriation categories.
b Space Flight includes both Research and Development and Space Flight Control and Data Communications appropriation categories.
c Total percentages may not add up to 100 percent due to rounding.
d Less than 0.05 percent.
Source: NASA Budget Estimates, 1990.

Table 6–20. NASA Headquarters Major Organizations

Code	Title
1979	
A	Office of the Administrator
B	Office of the Comptroller
C	Office of Legislative Affairs
D	Office of the Chief Engineer
E	Office of Space and Terrestrial Applications
G	Office of General Counsel
H	Office of Procurement
L	Office of External Affairs
M	Office of Space Transportation Systems
N	Office of Management Operations
P	Office of the Chief Scientist
R	Office of Aeronautics and Space Technology
S	Office of Space Science
T	Office of Space Tracking and Data Systems
U	Office of Equal Opportunity Programs
W	Office of Inspector General
1988	
A	Office of the Administrator
B	Office of the Comptroller
C	Office of Commercial Programs
D	Office of Headquarters Operations
E	Office of Space Science and Applications
G	Office of General Counsel
H	Office of Procurement
K	Office of Small and Disadvantaged Business Utilization
L	Office of Communications
M	Office of Space Flight
N	Office of Management
P	Office of the Chief Scientist
Q	Office of Safety, Reliability, Maintainability and Quality Assurance
R	Office of Aeronautics and Space Technology
S	Office of Space Station
T	Office of Space Operations
U	Office of Equal Opportunity Programs
W	Office of Inspector General
X	Office of External Relations
Z	Office of Exploration

Table 6–21. Headquarters Capitalized Equipment Value (at end of fiscal year; in thousands of dollars)

1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
17,807	16,710	22,358	17,496	27,749	29,896	31,144	39,525	27,719	39,378

Source: Table 6–4.

Table 6–22. Headquarters Personnel (at end of fiscal year)

Category	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Paid Employees										
Permanent	1,414	1,516	1,504	1,431	1,492	1,396	1,383	1,362	1,532	1,653
Temporary	120	142	207	183	144	130	170	106	116	176
Total Paid Employees	1,534	1,658	1,638	1,614	1,636	1,526	1,553	1,468	1,648	1,829
Occupational Code Groups (permanent only)										
200, 700, and 900	368	382	382	365	363	340	314	309	387	462
600 and 500	1,033	1,123	1,110	1,054	1,117	1,043	1,057	1,042	1,137	1,182
300	5	4	4	4	4	5	4	4	3	4
100	8	7	8	8	8	8	8	7	5	5
Excepted and Supergrade	173	194	187	180	194	188	173	189	198	225
Minority Permanent Employees	299	312	317	301	354	338	349	351	378	395
Female Permanent Employees	559	608	609	568	612	576	585	587	674	718

Source: Tables 7–14 through 7–17.

Table 6–23. Headquarters Funding by Fiscal Year (in millions of dollars)

Appropriation Title	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Research and Development	115.7	135.9	144.5	137.2	239.7	160.7	179.6	204.5	328.1	374.6
Space Flight Control and Data Communications	—	—	—	—	—	240.4	263.7	211.0	860.9	202.9
Research and Program Management	84.5	89.6	96.4	109.8	111.0	108.2	116.9	74.0	139.4	212.5
Total	200.2	225.5	240.9	247.0	350.7	509.3	560.2	489.5	1,328.4	870.0

Source: NASA Budget Estimates.

Table 6–24. Headquarters Total Procurement Activity by Fiscal Year (in millions of dollars)

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Net Value of Contract Awards	157.1	181.1	201.3	221.9	277.5	419.1	476.0	435.1	507.5	600.7
Percentage of NASA Total	3.7	3.7	3.7	3.8	4.1	5.7	5.7	5.3	5.9	6.9

Source: Annual Procurement Reports.

Table 6–25. Ames in-House and Contractor-Held Property (at end of fiscal year; money amounts in thousands of dollars)

Category	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
In-House and Contractor-Held Property										
Land (acres)	429.9	429.9	432.0	432.0	432.0	432.0	432.0	432.0	432.0	432.0
Number of Buildings	144	147	145	145	216	227	255	247	248	222
Area of Buildings (square feet)	2,224,372	2,143,077	2,275,686	2,291,262	2,799,010	2,855,486	2,785,147	2,921,574	2,941,179	3,232,804
Value of in-House and Contractor-Held Property										
Land	2,928	2,928	2,928	2,928	2,929	2,929	2,929	2,928	2,929	2,929
Buildings	213,479	214,687	231,128	220,584	237,965	239,847	338,495	345,808	357,016	424,012
Other Structures and Facilities	9,374	10,346	17,642	11,632	22,750	22,842	25,856	27,093	27,353	29,303
Total Real Property Value	225,781	227,961	251,698	235,144	263,644	265,618	367,280	375,029	387,298	456,244
Capitalized Equipment Value	165,781	198,403	300,338	253,841	348,604	343,836	355,441	371,797	340,456	348,975

Note: Beginning with FY 1983, figures include amounts for Dryden.
Source: Table 6–5 through 6–12.

Table 6–26. Ames Value of Real Property Components as a Percentage of Total (total real property value in thousands of dollars)

Component	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Land	1.3	1.3	1.2	1.1	1.1	1.1	0.8	0.8	0.8	0.6
Buildings	94.6	94.2	91.8	93.8	90.3	90.3	92.2	93.9	92.2	92.9
Other Structures and Facilities	4.2	4.5	7.0	4.9	10.5	9.0	7.0	7.2	7.1	6.4
Total Real Property Value	225,781	227,961	251,698	235,144	263,644	265,618	367,280	375,029	387,298	456,244

Source: Tables 6–8 and 6–13 through 6–15.

Table 6–27. Ames Personnel (at end of fiscal year)

Category	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Paid Employees										
Permanent	1,664	1,651	1,606	2,041	2,033	2,043	2,052	2,072	2,079	2,101
Temporary	49	62	46	123	105	102	107	81	82	68
Total Paid Employees	1,713	1,713	1,652	2,164	2,138	2,145	2,159	2,153	2,161	2,169
Occupational Code Groups (permanent only)										
200, 700, and 900	847	856	823	1,011	1,037	1,052	1,047	1,061	1,085	1,102
600 and 500	301	300	391	462	458	469	486	502	506	369
300	149	105	106	216	175	177	166	153	146	142
100	267	290	286	352	363	345	353	356	342	342
Excepted and Supergrade	29	22	24	36	35	34	33	35	38	37
Minority Permanent Employees	263	285	284	372	377	391	409	419	425	425
Female Permanent Employees	329	244	404	402	412	436	450	478	487	494

Source: Tables 7–14 through 7–17, 7–22, and 7–27.

Table 6–28. Ames Funding by Fiscal Year (in millions of dollars)

Appropriation Title	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Research and Development	141.5	147.9	160.4	175.3	180.1	189.7	217.3	245.8	282.1	261.2
Space Flight Control and Data Communications	—	—	—	—	—	9.8	12.3	15.4	16.3	15.4
Research and Program Management	62.7	67.4	94.8	101.1	107.2	113.9	120.3	123.3	133.6	165.2
Construction of Facilities	9.7	2.9	13.9	18.5	3.5	4.7	13.6	7.8	22.2	23.4
Total	213.9	218.2	269.1	294.9	290.9	318.1	363.5	392.3	454.2	465.2

Note: Beginning with FY 1981, figures include funding for Dryden.
Source: NASA Budget Estimates.

Table 6–29. Ames Total Procurement Activity by Fiscal Year (in millions of dollars)

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Net Value of Contract Awards	219.8	236.2	207.0	222.1	247.8	281.2	340.4	361.3	467.0	431.5
Percentage of NASA Total	4.6	4.3	3.4	3.8	3.6	3.8	4.1	4.4	5.4	4.5

Source: Annual Procurement Reports.

Table 6–30. Dryden in-House and Contractor-Held Property (at end of fiscal year; money amounts in thousands of dollars)

Category	1979	1980	1981	1982
In-House and Contractor-Held Property				
Land (acres)	—	—	—	—
Number of Buildings	63	63	65	65
Area of Buildings (square feet)	459,447	504,856	501,578	501,778
Value of in-House and Contractor-Held Property				
Land	0	0	— *a*	0
Buildings	14,447	15,387	—	15,534
Other Structures and Facilities	6,804	6,961	—	7,189
Total Real Property Value	21,251	22,348	—	22,723
Capitalized Equipment Value	63,564	57,914	—	69,779

a Amounts are included with Ames.
Source: Table 6–5 through 6–12.

Table 6–31. Dryden Value of Real Property Components as a Percentage of Total (total real property value in thousands of dollars)

Component	1979	1980	1981 *a*	1982
Land	0.0	0.0	—	0.0
Buildings	68.0	68.9	—	68.4
Other Structures and Facilities	32.0	31.1	—	31.6
Total Real Property Value	21,251	22,348	—	22,723

a Amounts are included with Ames.
Source: Tables 6–8 and 6–13 through 6–15.

Table 6–32. Dryden Personnel (at end of fiscal year)

Category	1979	1980	1981
Paid Employees			
Permanent	468	465	446
Temporary	30	34	45
Total Paid Employees	498	499	491
Occupational Code Groups (permanent only)			
200, 700, and 900	183	186	181
600 and 500	97	87	78
300	185	192	183
100	3	—	4
Excepted and Supergrade	9	11	12
Minority Permanent Employees	65	70	75
Female Permanent Employees	66	67	67

Note: Personnel for Dryden were included with Ames beginning in 1982.
Source: Tables 7–14 through 7–17, 7–22, and 7–27.

Table 6–33. Dryden Funding by Fiscal Year (in millions of dollars)

Appropriation Title	1979	1980
Research and Development	13.1	16.6
Research and Program Management	19.1	20.4
Construction of Facilities	—	—
Total	32.2	37.0

Source: NASA Budget Estimates.

Table 6–34. Dryden Total Procurement Activity by Fiscal Year (in millions of dollars)

	1979	1980	1981
Net Value of Contract Awards	25.0	26.0	25.0
Percentage of NASA Total	0.6	0.5	0.5

Note: Beginning in FY 1982, Dryden procurements were included with Ames.
Source: Annual Procurement Reports.

Table 6–35. Goddard in-House and Contractor-Held Property
(at end of fiscal year; money amounts in thousands of dollars)

Category	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
In-House and Contractor-Held Property										
Land (acres)	12,002.7	11,408.9	12,408.9	12,636.5	18,826.4	18,576.4	18,576.5	18,576.5	18,576.5	18,576.5
Number of Buildings	260	261	264	242	513	524	506	487	470	463
Area of Buildings (square feet)	2,709,230	2,694,672	2,787,364	2,881,871	4,007,122	3,995,449	3,965,166	3,940,935	4,302,871	4,302,857
Value of in-House and Contractor-Held Property										
Land	1,706	1,685	3,111	2,862	2,860	2,860	2,840	2,857	2,857	2,856
Buildings	101,711	105,220	143,105	145,696	149,811	152,869	153,875	156,069	167,649	166,424
Other Structures and Facilities	58,174	59,039	120,814	117,294	119,615	119,745	111,884	111,547	111,541	117,237
Total Real Property Value	161,591	165,944	267,030	265,852	272,286	275,454	268,599	270,473	282,047	286,517
Capitalized Equipment Value	511,020	528,745	565,964	556,690	583,843	533,488	515,074	533,178	427,030	458,185

Note: Beginning with FY 1983, figures include amounts for Wallops.
Source: Table 6–5 through 6–12.

Table 6–36. Goddard Value of Real Property Components as a Percentage of Total (total real property value in thousands of dollars)

Component	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Land	1.1	1.0	1.2	1.1	1.1	1.0	1.0	1.1	1.0	1.0
Buildings	62.9	63.4	53.6	54.8	55.0	55.5	57.3	57.7	59.4	58.1
Other Structures and Facilities	36.0	35.6	45.2	44.1	43.9	43.5	41.7	41.2	39.6	40.9
Total Real Property Value	161,591	165,944	267,030	265,853	272,286	275,454	268,599	270,473	282,047	286,517

Source: Tables 6–8 and 6–13 through 6–15.

Table 6–37. Goddard Personnel (at end of fiscal year)

Category	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Paid Employees										
Permanent	3,482	3,436	3,319	3,621	3,668	3,541	2,629	3,679	3,648	3,626
Temporary	80	99	112	125	126	106	109	106	98	101
Total Paid Employees	3,562	3,535	3,431	3,746	3,794	3,647	3,738	3,785	3,746	3,727
Occupational Code Groups (permanent only)										
200, 700, and 900	1,726	1,707	1,675	1,725	1,774	1,738	1,830	1,895	1,893	1,901
600 and 500	1,112	1,126	1,063	1,191	1,204	1,123	1,158	1,152	1,150	1,134
300	497	463	443	563	557	536	513	500	478	468
100	147	140	138	142	133	125	128	132	127	123
Excepted and Supergrade	45	47	45	49	51	49	46	41	45	50
Minority Permanent Employees	385	431	410	455	476	453	469	506	527	541
Female Permanent Employees	750	803	821	834	875	865	914	962	973	990

Source: Tables 7–14 through 7–17, 7–22, and 7–27.

Table 6–38. Goddard Funding by Fiscal Year (in millions of dollars)

Appropriation Title	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Research and Development	519.3	552.0	571.2	744.0	730.1	361.6	399.0	461.6	483.9	506.8
Space Flight Control and Data Communications	—	—	—	—	—	431.0	431.1	331.2	416.9	464.3
Research and Program Management	127.9	133.5	162.4	169.1	180.6	186.8	196.9	199.5	213.8	242.8
Construction of Facilities	5.6	—	—	—	4.7	—	2.2	3.6	15.2	19.8
Total	650.3	685.5	717.8	913.1	915.4	979.4	1,029.4	995.9	1,129.8	1,233.7

Source: NASA Budget Estimates.

Table 6–39. Goddard Total Procurement Activity by Fiscal Year (in millions of dollars)

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Net Value of Contract Awards	634.2	694.0	790.4	864.0	952.4	953.8	1,076.8	1,265.4	1,313.3	1,356.3
Percentage of NASA Total	14.4	13.7	14.0	14.7	14.0	13.0	13.0	15.5	15.3	14.2

Source: Annual Procurement Reports.

Table 6–40. JPL in-House and Contractor-Held Property
(at end of fiscal year; money amounts in thousands of dollars)

Category	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
In-House and Contractor-Held Property										
Land (acres)	155.8	155.8	155.8	155.8	155.8	155.8	155.8	155.8	155.8	155. 8
Number of Buildings	341	341	341	344	337	338	353	335	333	327
Area of Buildings (square feet)	2,014,712	2,014,112	2,017,972	2,027,990	2,037,004	2,041,774	2,078,225	2,056,581	2,087,472	2,075,528
Value of in-House and Contractor-Held Property										
Land	1,188	1,188	1,188	1,188	1,188	1,188	1,188	1,188	1,188	1,188
Buildings	89,871	90,916	94,698	97,311	102,760	104,266	106,548	113,595	121,924	122,092
Other Structures and Facilities	67,578	67,706	68,076	69,017	74,835	75,648	84,855	84,573	89,535	89,867
Total Real Property Value	159,171	161,265	165,977	169,323	180,609	182,981	194,484	201,249	214,541	215,076
Capitalized Equipment Value	233,821	246,751	257,709	261,252	269,267	283,850	300,364	339,463	383,811	376,271

Source: Table 6–5 through 6–12.

Table 6–41. JPL Value of Real Property Components as a Percentage of Total (total real property value in thousands of dollars)

Component	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Land	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6
Buildings	56.5	56.4	57.2	57.5	56.9	57.0	54.8	56.4	56.8	56.8
Other Structures and Facilities	42.5	42.0	41.0	40.8	41.4	41.3	43.6	42.0	41.7	41.8
Total Real Property Value	159,171	161,265	165,977	169,323	180,609	182,981	194,484	201,249	214,541	215,076

Source: Tables 6–8 and 6–13 through 6–15.

Table 6–42. JPL Funding by Fiscal Year (in millions of dollars)

Appropriation Title	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Research and Development	235.1	315.4	258.7	316.2	304.9	248.3	338.7	412.7	452.4	486.3
Space Flight Control and Data Communications	—	—	—	—	—	97.2	111.0	116.2	124.3	131.5
Research and Program Management *a*	—	—	—	—	—	—	—	—	—	—
Construction of Facilities	4.6	—	3.5	1.0	—	4.3	12.2	9.4	16.3	7.2
Total	239.7	315.4	262.2	317.2	304.9	349.8	461.9	538.3	593.0	625.0

a JPL was staffed entirely by contractor personnel so no funds from the Research and Program Management appropriation were allocated to the facility.
Source: NASA Budget Estimates.

Table 6–43. JPL Total Procurement Activity by Fiscal Year (in millions of dollars)

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Net Value of Contract Awards	338.6	397.2	410.8	426.3	454.9	523.1	724.6	895.4	1,008.8	986.0
Percentage of NASA Total	8.1	8.2	7.6	7.2	6.7	7.3	8.7	11.0	11.7	10.3

Source: Annual Procurement Reports.

Table 6–44. Johnson in-House and Contractor-Held Property (at end of fiscal year; money amounts in thousands of dollars)

Category	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
In-House and Contractor-Held Property										
Land (acres)	1,785.9	1,785.9	1,785.9	1,785.9	1,819.4	1,822.9	1,822.9	1,823.1	1,823.1	1,821.0
Number of Buildings	182	182	190	190	202	204	204	204	217	212
Area of Buildings (square feet)	4,534,939	4,551,432	4,555,826	4,561,147	4,771,805	4,793,677	4,794,341	4,817,208	4,886,903	4,892,190
Value of in-House and Contractor-Held Property										
Land	9,107	9,107	9,115	9,115	10,571	10,888	10,889	10,889	10,889	10,883
Buildings	195,875	199,120	198,397	201,533	210,687	212,379	213,725	215,869	221,976	224,437
Other Structures and Facilities	61,925	62,444	64,405	65,210	67,977	68,896	69,208	71,282	78,839	81,120
Total Real Property Value	266,907	270,671	271,917	275,858	289,235	292,163	293,822	298,145	311,089	316,545
Capitalized Equipment Value	442,347	608,577	614,839	602,774	649,879	551,269	525,849	470,726	449,727	447,149

Source: Table 6–5 through 6–12.

Table 6–45. Johnson Value of Real Property Components as a Percentage of Total (total real property value in thousands of dollars)

Component	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Land	3.4	3.4	3.4	3.3	3.7	3.7	3.7	3.7	3.5	3.4
Buildings	73.4	73.6	73.0	73.1	72.8	72.7	72.7	72.4	71.2	70.9
Other Structures and Facilities	23.2	23.0	23.6	23.6	23.5	23.6	23.6	23.9	25.3	25.6
Total Real Property Value	266,907	270,671	271,917	275,858	289,235	292,163	293,822	298,145	311,089	316,545

Source: Tables 6–8 and 6–13 through 6–15.

Table 6–46. Johnson Personnel (at end of fiscal year)

Category	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Paid Employees										
Permanent	3,481	3,508	3,380	3,268	3,235	3,227	3,330	3,269	3,349	3,399
Temporary	82	108	118	177	176	125	119	93	114	99
Total Paid Employees	3,563	3,616	3,498	3,445	3,411	3,352	3,449	3,362	3,463	3,498
Occupational Code Groups (permanent only)										
200, 700, and 900	2,185	2,212	2,157	2,087	2,078	2,013	2,086	2,069	2,135	2,204
600 and 500	976	989	926	900	893	958	1,001	573	1,002	986
300	297	287	273	259	245	239	228	220	205	202
100	23	24	24	22	19	17	15	7	7	7
Excepted and Supergrade	59	57	54	52	56	55	50	48	50	50
Minority Permanent Employees	395	463	431	320	425	458	475	476	510	533
Female Permanent Employees	687	755	717	705	724	824	910	930	996	1,034

Source: Tables 7–14 through 7–17, 7–22, and 7–27.

Table 6–47. Johnson Funding by Fiscal Year (in millions of dollars)

Appropriation Title	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Research and Development	1,151.2	1,388.0	1,523.3	1,598.5	1,550.0	175.8	239.7	244.7	325.1	327.5
Space Flight Control and Data Communications	—	—	—	—	—	1,303.2	1,159.7	988.2	2,337.9	907.8
Research and Program Management	152.9	164.7	176.1	186.5	195.2	201.1	214.8	206.0	227.9	281.9
Construction of Facilities	—	—	—	0.7	—	2.3	3.2	—	18.4	11.1
Total	1,304.1	1,552.7	717.8	1,699.4	1,785.2	1,682.4	1,671.4	1,439.0	2,909.3	1,528.3

Source: NASA Budget Estimates.

Table 6–48. Johnson Total Procurement Activity by Fiscal Year (in millions of dollars)

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Net Value of Contract Awards	1,197.6	1,429.1	1,625.8	1,690.0	1,737.8	1,636.2	1,719.1	1,359.5	1,627.4	1,806.4
Percentage of NASA Total	28.4	29.5	30.0	38.7	25.5	22.1	20.7	16.6	18.9	18.9

Source: Annual Procurement Reports.

Table 6–49. Kennedy in-House and Contractor-Held Property (at end of fiscal year; money amounts in thousands of dollars)

Category	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
In-House and Contractor-Held Property										
Land (acres)	82,943.0	82,943.0	82,943.0	82,943.0	82,943.0	82,943.0	82,943.0	82,943.0	82,943.0	82,943.0
Number of Buildings	350	353	442	500	532	678	514	556	572	566
Area of Buildings (square feet)	5,337,276	5,312,570	5,375,291	5,431,336	5,507,621	5,766,191	5,875,980	6,041,808	6,640,212	6,720,200
Value of in-House and Contractor-Held Property										
Land	71,345	71,345	71,345	71,345	71,345	71,345	71,345	71,345	71,345	71,345
Buildings	349,073	373,472	377,650	390,154	407,436	415,255	432,633	455,310	508,917	526,623
Other Structures and Facilities	330,677	382,762	392,842	419,677	426,382	415,255	472,546	522,491	527,756	518,283
Total Real Property Value	751,095	827,579	841,837	881,176	905,163	947,111	976,524	1,049,146	1,108,018	1,116,251
Capitalized Equipment Value	967,416	934,382	935,986	1,549,138	1,576,544	423,636	605,005	765,008	708,750	623,870

Source: Table 6–5 through 6–12.

Table 6–50. Kennedy Value of Real Property Components as a Percentage of Total (total real property value in thousands of dollars)

Component	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Land	9.5	8.6	8.4	8.0	7.9	7.6	7.3	6.8	6.4	6.4
Buildings	46.5	45.1	45.0	44.3	45.0	43.8	44.3	43.4	50.0	47.2
Other Structures and Facilities	44.0	46.3	46.7	47.7	47.1	48.6	48.4	49.8	47.6	46.4
Total Real Property Value	751,095	827,579	841,837	881,176	905,163	947,111	976,524	1,049,146	1,108,018	1,116,251

Source: Tables 6–8 and 6–13 through 6–15.

Table 6–51. Kennedy Personnel (at end of fiscal year)

Category	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Paid Employees										
Permanent	2,192	2,201	2,138	2,104	2,084	2,067	2,081	2,051	2,188	2,236
Temporary	72	90	86	95	96	64	84	69	90	94
Total Paid Employees	2,264	2,291	2,224	2,199	2,180	2,131	2,165	2,120	2,278	2,330
Occupational Code Groups (permanent only)										
200, 700, and 900	1,205	1,191	1,165	1,725	1,169	1,738	1,830	1,895	1,893	1,901
600 and 500	760	778	752	740	718	705	718	695	701	694
300	224	228	217	202	193	188	176	185	194	223
100	3	4	4	3	4	5	5	5	4	5
Excepted and Supergrade	29	29	25	26	26	64	66	71	32	31
Minority Permanent Employees	186	169	171	177	192	195	211	222	257	268
Female Permanent Employees	442	474	474	486	495	511	555	563	604	618

Source: Tables 7–14 through 7–17, 7–22, and 7–27.

Table 6–52. Kennedy Funding by Fiscal Year (in millions of dollars)

Appropriation Title	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Research and Development	233.5	300.6	365.1	486.1	529.3	53.0	45.7	69.0	53.8	86.0
Space Flight Control and Data Communications	—	—	—	—	—	439.9	383.1	448.5	642.1	719.7
Research and Program Management	123.3	133.2	150.2	156.0	161.3	172.6	184.5	192.2	200.2	241.9
Construction of Facilities	—	5.8	0.8	1.7	10.7	58.6	36.9	—	11.9	26.9
Total	356.8	439.6	512.1	643.8	701.3	724.1	650.2	709.7	908.0	1,704.5

Source: NASA Budget Estimates.

Table 6–53. Kennedy Total Procurement Activity by Fiscal Year (in millions of dollars)

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Net Value of Contract Awards	357.3	395.9	527.9	585.4	724.7	814.2	977.9	1,026.6	883.4	1,069.2
Percentage of NASA Total	8.5	8.2	9.8	9.9	10.7	11.1	11.8	12.6	10.3	11.2

Source: Annual Procurement Reports.

Table 6–54. Langley in-House and Contractor-Held Property (at end of fiscal year; money amounts in thousands of dollars)

Category	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
In-House and Contractor-Held Property										
Land (acres)	897.6	897.6	897.6	897.6	897.6	897.6	897.6	897.6	787.6	787.6
Number of Buildings	151	151	153	159	159	159	165	166	171	170
Area of Buildings (square feet)	2,140,135	2,085,380	2,098,203	2,068,679	2,066,812	2,098,215	2,110,851	2,141,362	2,160,326	2,180,360
Value of in-House and Contractor-Held Property										
Land	162	162	162	162	162	162	162	162	156	156
Buildings	147,434	135,586	135,762	137,318	142,321	147,046	156,937	168,061	171,213	182,064
Other Structures and Facilities	217,582	258,797	289,169	299,682	305,051	308,456	332,159	345,802	338,207	370,159
Total Real Property Value	365,178	394,545	425,093	437,162	447,534	455,664	489,258	514,025	509,576	552,379
Capitalized Equipment Value	183,710	184,587	189,088	193,620	217,078	216,123	222,046	306,845	200,700	205,899

Source: Table 6–5 through 6–12.

Table 6–55. Langley Value of Real Property Components as a Percentage of Total (total real property value in thousands of dollars)

Component	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Land	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.03
Buildings	40.4	34.7	31.9	31.4	31.8	32.3	32.1	32.7	33.6	33.0
Other Structures and Facilities	59.6	65.6	68.0	68.6	68.2	67.7	67.9	67.2	66.4	67.0
Total Real Property Value	365,178	394,545	425,093	437,162	447,534	455,664	489,258	514,025	509,576	552,379

Source: Tables 6–8 and 6–13 through 6–15.

Table 6–56. Langley Personnel (at end of fiscal year)

Category	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Paid Employees										
Permanent	3,005	2,966	2,895	2,801	2,904	2,821	2,827	2,814	2,851	2,840
Temporary	120	83	133	115	128	131	122	118	128	126
Total Paid Employees	3,125	3,094	3,028	2,916	3,032	2,952	2,165	2,949	2,979	2,966
Occupational Code Groups (permanent only)										
200, 700, and 900	1,338	1,306	1,305	1,281	1,343	1,328	1,296	1,293	1,304	1,310
600 and 500	554	556	538	508	547	531	547	556	575	562
300	1,056	1,010	963	927	957	920	926	904	899	909
100	57	94	89	85	57	42	58	61	73	59
Excepted and Supergrade	32	20	23	28	28	29	29	32	35	34
Minority Permanent Employees	275	319	311	305	331	321	338	329	341	355
Female Permanent Employees	508	541	531	515	570	553	579	601	633	642

Source: Tables 7–14 through 7–17, 7–22, and 7–27.

Table 6–57. Langley Funding by Fiscal Year (in millions of dollars)

Appropriation Title	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Research and Development	138.8	170.9	142.9	129.6	131.0	140.1	176.0	173.0	217.6	197.1
Space Flight Control and Data Communications	—	—	—	—	—	0.2	0.1	0.1	0.1	0.1
Research and Program Management	106.6	114.0	120.8	126.6	132.7	140.0	147.1	145.6	154.3	177.9
Construction of Facilities	6.5	8.0	20.8	3.0	16.2	9.5	13.8	4.7	17.9	7.2
Total	251.9	292.9	284.5	259.2	279.9	289.8	337.0	223.4	389.9	382.3

Source: NASA Budget Estimates.

Table 6–58. Langley Total Procurement Activity by Fiscal Year (in millions of dollars)

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Net Value of Contract Awards	225.0	235.5	218.0	181.7	216.5	214.6	248.4	261.4	289.5	297.3
Percentage of NASA Total	5.4	4.9	4.0	3.1	3.2	2.9	3.0	3.2	3.4	3.1

Source: Annual Procurement Reports.

Table 6–59. Lewis in-House and Contractor-Held Property (at end of fiscal year; money amounts in thousands of dollars)

Category	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
In-House and Contractor-Held Property										
Land (acres)	6,204.6	6,204.6	6,204.6	8,356.7	8,356.7	8,356.7	6,804.8	6,804.8	6,804.8	6,804.8
Number of Buildings	250	250	250	259	258	256	256	256	256	258
Area of Buildings (square feet)	3,105,064	3,176,921	3,178,851	3,203,085	3,205,185	3,212,567	3,213,383	3,213,383	3,213,383	3,215,691
Value of in-House and Contractor-Held Property										
Land	2,230	2,230	2,230	3,651	3,651	3,651	2,621	2,621	2,621	2,621
Buildings	209,128	215,619	215,746	226,576	227,958	230,067	231,269	233,927	235,022	235,953
Other Structures and Facilities	76,377	76,489	77,169	80,103	80,742	81,591	81,929	83,653	87,417	87,960
Total Real Property Value	287,871	294,474	295,281	310,466	312,487	315,445	315,955	320,337	325,196	326,670
Capitalized Equipment Value	143,194	153,298	153,463	160,603	171,350	159,139	182,380	189,082	150,367	163,617

Source: Table 6–5 through 6–12.

Table 6–60. Lewis Value of Real Property Components as a Percentage of Total (total real property value in thousands of dollars)

Component	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Land	0.8	0.8	0.8	1.2	1.2	1.2	0.8	0.8	0.8	0.8
Buildings	61.8	73.2	73.1	73.0	72.9	72.9	73.2	73.0	72.3	72.2
Other Structures and Facilities	32.8	26.0	26.1	25.8	25.8	25.7	25.9	26.1	26.9	26.9
Total Real Property Value	287,871	294,474	295,281	310,466	312,487	315,445	315,955	320,337	325,196	326,670

Source: Tables 6–8 and 6–13 through 6–15.

Table 6–61. Lewis Personnel (at end of fiscal year)

Category	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Paid Employees										
Permanent	2,840	2,822	2,138	2,485	2,632	2,624	2,715	2,598	2,663	2,649
Temporary	67	79	644	182	119	78	67	44	53	67
Total Paid Employees	2,907	2,901	2,782	2,667	2,751	2,702	2,782	2,642	2,716	2,716
Occupational Code Groups (permanent only)										
200, 700, and 900	1,302	1,238	1,183	1,144	1,296	1,277	1,337	1,279	1,373	1,392
600 and 500	487	522	515	458	464	484	539	496	497	499
300	217	225	210	200	213	220	217	214	220	228
100	834	837	782	683	659	643	632	609	573	530
Excepted and Supergrade	29	25	22	26	28	28	24	26	30	40
Minority Permanent Employees	155	228	227	213	236	250	265	260	271	284
Female Permanent Employees	373	429	417	384	433	452	501	459	484	488

Source: Tables 7–14 through 7–17, 7–22, and 7–27.

Table 6–62. Lewis Funding by Fiscal Year (in millions of dollars)

Appropriation Title	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Research and Development	149.2	170.7	163.4	175.1	281.1	281.9	311.4	259.9	277.8	254.8
Space Flight Control and Data Communications	—	—	—	—	—	2.0	3.4	3.0	5.1	3.7
Research and Program Management	87.5	94.8	99.9	106.4	118.8	128.7	137.4	143.4	151.7	181.9
Construction of Facilities	6.1	5.7	10.4	1.2	3.9	10.6	—	—	12.1	22.7
Total	242.8	271.2	273.7	282.7	403.1	423.2	452.2	406.3	446.7	463.1

Source: NASA Budget Estimates.

Table 6–63. Lewis Total Procurement Activity by Fiscal Year (in millions of dollars)

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Net Value of Contract Awards	274.1	319.8	338.0	427.2	467.3	628.0	657.7	625.5	381.8	417.9
Percentage of NASA Total	6.5	6.6	6.3	7.3	6.9	8.5	8.2	7.6	4.4	4.4

Source: Annual Procurement Reports.

Table 6–64. Marshall in-House and Contractor-Held Property
(at end of fiscal year; money amounts in thousands of dollars)

Category	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
In-House and Contractor-Held Property										
Land (acres)	409.5	409.5	409.5	409.5	409.5	409.5	409.5	409.5	409.5	409.5
Number of Buildings	176	168	166	166	166	165	167	174	175	194
Area of Buildings (square feet)	3,823,813	3,814,283	3,814,817	3,820,069	3,820,069	3,819,288	3,820,375	3,839,696	3,756,193	3,783,472
Value of in-House and Contractor-Held Property										
Land	7,157	7,160	7,164	7,164	7,164	7,164	7,164	7,171	7,171	7,171
Buildings	200,979	213,544	215,161	219,216	241,842	244,620	253,259	272,412	288,168	297,646
Other Structures and Facilities	130,147	134,279	133,201	137,255	141,076	143,985	145,778	147,431	151,813	154,213
Total Real Property Value	338,283	354,983	355,526	363,635	390,082	395,769	395,153	427,014	447,152	459,030
Capitalized Equipment Value	396,707	421,361	430,850	418,113	416,751	397,902	430,488	484,959	465,347	493,784

Source: Table 6–5 through 6–12.

Table 6–65. Marshall Value of Real Property Components as a Percentage of Total (total real property value in thousands of dollars)

Component	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Land	2.1	2.0	2.0	2.0	1.9	1.8	2.1	1.7	1.6	1.6
Buildings	59.4	60.2	60.5	60.3	62.0	61.8	74.9	63.8	64.4	64.8
Other Structures and Facilities	38.5	37.8	37.5	37.7	36.2	36.4	43.1	34.5	34.0	33.6
Total Real Property Value	338,283	354,983	355,526	363,635	390,082	395,769	395,153	427,014	447,152	459,030

Source: Tables 6–8 and 6–13 through 6–15.

Table 6–66. Marshall Personnel (at end of fiscal year)

Category	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Paid Employees										
Permanent	3,598	3,563	3,385	3,332	3,351	3,223	3,284	3,260	3,384	3,340
Temporary	79	83	94	108	113	63	102	101	94	89
Total Paid Employees	3,677	3,646	3,479	3,440	3,464	3,286	3,386	3,361	3,478	3,429
Occupational Code Groups (permanent only)										
200, 700, and 900	1,977	1,982	1,900	1,924	1,980	1,910	1,996	2,016	2,146	2,106
600 and 500	1,069	1,085	1,055	1,001	999	981	949	987	1,021	1,040
300	525	474	419	393	286	264	244	219	195	194
100	27	22	11	14	86	68	50	38	22	—
Excepted and Supergrade	57	52	43	47	51	51	54	48	50	50
Minority Permanent Employees	126	173	198	183	215	233	276	279	318	333
Female Permanent Employees	628	692	710	695	722	735	813	858	955	983

Source: Tables 7–14 through 7–17, 7–22, and 7–27.

Table 6–67. Marshall Funding by Fiscal Year (in millions of dollars)

Appropriation Title	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Research and Development	747.8	863.8	996.0	1,200.0	1,624.2	447.1	500.0	538.4	721.1	744.4
Space Flight Control and Data Communications	—	—	—	—	—	1,272.9	1,223.5	1,543.7	1,580.1	1,261.2
Research and Program Management	149.0	155.9	165.0	172.1	184.3	189.9	198.1	194.2	212.0	237.5
Construction of Facilities	—	3.5	—	—	17.8	11.7	1.6	—	10.1	19.2
Total	896.8	1,023.2	1,161.0	1,372.1	1,826.3	1,921.6	1,923.2	2,276.3	2,523.3	2,262.3

Source: NASA Budget Estimates.

Table 6–68. Marshall Total Procurement Activity by Fiscal Year (in millions of dollars)

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Net Value of Contract Awards	774.4	917.2	1,050.7	1,225.5	1,677.5	1,834.6	1,999.1	1,891.8	2,059.8	2,428.3
Percentage of NASA Total	18.4	19.0	19.4	20.8	24.7	24.9	24.1	23.1	23.9	25.5

Source: Annual Procurement Reports.

Table 6–69. National Space Technology Laboratories/Stennis in-House and Contractor-Held Property (at end of fiscal year; money amounts in thousands of dollars)

Category	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
In-House and Contractor-Held Property										
Land (acres)	20,642.2	20,642.2	20,642.2	20,642.2	20,642.2	20,642.2	20,642.2	20,642.2	20,642.2	20,642.2
Number of Buildings	120	120	115	111	104	106	111	117	118	120
Area of Buildings (square feet)	1,178,177	1,212,226	1,220,982	1,247,031	1,250,970	1,272,435	1,361,392	1,456,829	1,458,841	1,546,685
Value of in-House and Contractor-Held Property										
Land	18,061	18,061	18,061	18,061	18,061	18,061	18,061	18,061	18,061	18,061
Buildings	68,629	69,893	68,775	69,802	70,909	72,844	80,566	88,733	90,094	102,344
Other Structures and Facilities	194,294	194,664	194,718	193,093	193,269	193,199	193,071	194,088	194,635	200,955
Total Real Property Value	280,984	282,618	281,554	280,956	282,239	284,104	291,698	300,882	302,790	321,360
Capitalized Equipment Value	29,296	24,134	25,475	28,680	30,306	31,252	33,356	36,923	27,719	29,876

Source: Table 6–5 through 6–12.

Table 6–70. National Space Technology Laboratories/Stennis Value of Real Property Components as a Percentage of Total (total real property value in thousands of dollars)

Component	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Land	6.4	6.4	6.4	6.4	6.4	6.4	6.2	6.0	6.0	5.6
Buildings	24.4	24.7	24.4	24.8	25.1	25.6	27.6	29.5	29.8	31.8
Other Structures and Facilities	69.1	68.9	69.2	68.7	68.5	68.0	66.2	64.5	64.3	62.5
Total Real Property Value	280,984	282,618	281,554	280,956	282,239	284,104	291,698	300,882	302,790	321,360

Source: Tables 6–8 and 6–13 through 6–15.

Table 6–71. National Space Technology Laboratories/Stennis Personnel (at end of fiscal year)

Category	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Paid Employees										
Permanent	98	103	105	103	106	108	122	123	137	147
Temporary	10	8	8	16	22	21	13	14	10	12
Total Paid Employees	108	111	113	119	128	129	135	137	147	159
Occupational Code Groups (permanent only)										
200, 700, and 900	46	47	51	50	54	52	56	59	67	75
600 and 500	52	56	54	53	51	55	65	63	68	70
300	—	—	—	—	1	1	1	1	2	2
100	—	—	—	—	—	—	—	—	—	—
Excepted and Supergrade	3	2	3	3	3	3	2	3	3	3
Minority Permanent Employees	7	7	8	7	8	10	14	14	15	18
Female Permanent Employees	25	27	28	31	31	34	42	41	43	48

Source: Tables 7–14 through 7–17, 7–22, and 7–27.

Table 6–72. National Space Technology Laboratories/Stennis Funding by Fiscal Year (in millions of dollars)

Appropriation Title	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Research and Development	15.4	9.4	8.5	9.9	8.3	9.6	10.8	9.6	11.8	19.1
Space Flight Control and Data Communications	—	—	—	—	—	0.8	6.3	8.5	15.8	16.2
Research and Program Management	4.5	4.9	4.9	5.5	6.3	10.2	10.7	11.2	12.0	20.5
Construction of Facilities	—	—	—	—	—	—	3.3	—	6.2	4.9
Total	19.9	14.3	13.4	15.4	14.6	20.6	31.1	29.3	45.8	60.7

Source: NASA Budget Estimates.

Table 6–73. National Space Technology Laboratories/Stennis Total Procurement Activity by Fiscal Year (in millions of dollars)

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Net Value of Contract Awards	33.7	36.7	38.4	39.6	40.4	49.3	60.0	57.7	71.4	91.5
Percentage of NASA Total	0.8	0.8	0.7	0.7	0.6	0.7	0.7	0.7	0.8	1.0

Source: Annual Procurement Reports.

Table 6–74. Wallops in-House and Contractor-Held Property (at end of fiscal year; money amounts in thousands of dollars)

Category	1979	1980	1981	1982
In-House and Contractor-Held Property				
Land (acres)	6,165.8	6,065.8	6,165.8	6,165.8
Number of Buildings	282	284	258	257
Area of Buildings (square feet)	1,057,344	1,064,064	1,068,312	1,058,045
Value of in-House and Contractor-Held Property *a*				
Land	1,305	1,391		
Buildings	26,585	27,180		
Other Structures and Facilities	52,889	53,808		
Total Real Property Value	80,789	82,379		
Capitalized Equipment Value	56,015	57,025		

a Value of property included with Goddard beginning in FY 1981.

Source: Table 6–5 through 6–12.

Table 6–75. Wallops Value of Real Property Components as a Percentage of Total (total real property value in thousands of dollars)

Component	1979	1980
Land	0.0	0.0
Buildings	68.0	68.9
Other Structures and Facilities	32.0	31.1
Total Real Property Value	80,789	82,379

Source: Tables 6–8 and 6–13 through 6–15.

Table 6–76. Wallops Personnel (at end of fiscal year)

Category	1979	1980
Paid Employees		
Permanent	391	382
Temporary	18	24
Total Paid Employees	409	406
Occupational Code Groups (permanent only)		
200, 700, and 900	107	103
600 and 500	108	109
300	151	150
100	25	20
Excepted and Supergrade	5	5
Minority Permanent Employees	32	37
Female Permanent Employees	71	72

Note: Personnel for Wallops were included with Goddard beginning in 1981.
Source: Tables 7–14 through 7–17, 7–22, and 7–27.

Table 6–77. Wallops Funding by Fiscal Year (in millions of dollars)

Appropriation Title	1979	1980
Research and Development	16.6	17.5
Research and Program Management	15.8	17.7
Construction of Facilities	—	1.1
Total	32.4	36.3

Note: Beginning in FY 1981, Wallops funding amounts were included with Goddard.
Source: NASA Budget Estimates.

Table 6–78. Wallops Total Procurement Activity by Fiscal Year (in millions of dollars)

	1979	1980	1981
Net Value of Contract Awards	26.6	29.0	32.9
Percentage of NASA Total	0.6	0.6	0.6

Source: Annual Procurement Reports.