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Volume IV

NASA Resources 1969-1978

Ihor Gawdiak
with
Helen Fedor

The NASA History Series

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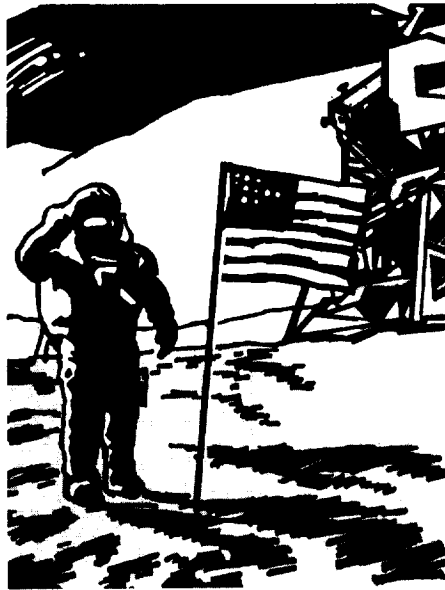
PREFACE

This volume is the fourth in a series of reference works intended to present a statistical summary of the activity of the National Aeronautics and Space Administration from its inception. Volume IV, *NASA Resources 1969–1978*, is an update of the initial volume in the series, *NASA Resources 1958–1968*. The present volume treats briefly, as did its predecessor, NASA's history, organization, management, financing, personnel, and procurement matters during the second decade of its existence. Its primary objective is to provide the reader with comprehensive statistical data to illustrate the status of NASA in the decade after the first man set foot on the Moon.

Volume IV is organized in the same way as the first volume. Each chapter of the present volume deals with the same subject matter as the first one. There are some differences, however. Whereas the first volume provided statistical data not only for the individual installations but also for each installation's component facilities as well, this volume combines statistical data of the component facilities with the data of the parent installation. There are two reasons for this. First, many of the component facilities were consolidated with their parent installation between 1969 and 1978. Second, increasingly during this decade NASA offices themselves tended to consolidate all statistical data on the particular installation. The statistical tables in this volume contain some gaps simply because the prerequisite data were not available. Finally, until 1976 the fiscal year began in July and ended at the end of June. Starting October 1976, it began in October and ended at the end of September. Whenever information was available, data were provided for the so-called "transition quarter" (TQ) to cover the period July 1, 1976, to September 30, 1976. Otherwise, the transitional quarter is combined with 1976.

The author wishes to acknowledge the contributions of numerous individuals to this volume. The author expresses his gratitude to Dr. Roger D. Launius, the Chief Historian of NASA's History Division, Lee D. Saegesser of NASA's History Division, and others at NASA who contributed their guidance, extensive knowledge, and research materials. He is particularly grateful to his colleague, Helen Fedor, who worked with him on this project formatting the large number of tables in this volume and entering the data into them. Special thanks are owed David P. Cabitto, who designed the artwork on the title page of each chapter and oversaw the preparation of the map and graphic work. Finally, the author is especially grateful to Andrea T. Merrill for her diligence in the editing and preparation of the manuscript.

Ihor Y. Gawdiak
February 1993



CHAPTER ONE

INTRODUCTION

CHAPTER ONE

INTRODUCTION

As the 1960s came to a close, NASA could proudly look back at the past decade as one of significant achievements and triumphs. In a relatively short span of time, NASA's great feats in space exploration had allowed the United States to pass the Soviet Union as the unquestioned leader in this endeavor. A decade of spectacular space voyages had been crowned on July 20, 1969, when NASA landed the first human on the moon. NASA hoped that in the next decade the agency would accomplish new and equally spectacular achievements in space exploration. The proposed program of space exploration for the next two decades, submitted to the President in 1969 by the Space Task Group chaired by Vice President Spiro T. Agnew, delineated such projects as a Mars manned mission, a lunar surface base, a lunar orbital space station, an earth orbital space station, and reusable space shuttles.

Paradoxically, it was at this moment of NASA's great triumphs that the tide of public opinion began to turn. NASA's very success—catching up to and overtaking the Soviet space program—dulled the public's appetite for new sensational feats in space. Furthermore, the increasingly unpopular war in Vietnam fully preoccupied the public's attention, placed a heavy burden on the nation's economy, strained the Government budget, and generated a host of domestic problems. NASA's annual budget, which had reached more than \$5 billion in the mid-1960s and stood at almost \$4 billion in 1969, was reduced to \$3.7 billion in 1970 and just over \$3 billion in 1974.

The cuts in the NASA budget had a considerable impact on the agency. Grandiose space programs were eschewed in favor of more modest and, from the public's point of view, practical programs. Thus, of the programs suggested in 1969 by the Space Task Group, only the development of the Space Shuttle was approved, in 1972. And the approved Space Shuttle project was a more economical and scaled down version than the one originally envisioned by NASA. Funds appropriated for research and development were reduced, not only because of cuts in the overall NASA budget but also because an increasing share of NASA funds went for administrative operations. In 1969 almost \$3.4 billion was appropriated for research and development. In 1974 the figure fell to a low of \$2.2 billion, rising again to slightly over \$3 billion in 1978.

Cuts in the NASA budget had an impact on the growth and development of the individual NASA installations as well. Although one could hardly have expected the extensive growth and expansion of NASA facilities during 1958-68 to continue into the next decade, some expansion of NASA facilities likely would have occurred if NASA's budget had not been cut. As it was, NASA underwent a process of consolidation and reduction of its facilities during 1969-78. The best examples of this were the closing of the Electronics Research Center as a NASA installation in 1970 and the transfer of its facilities to the Department of Transportation and also the disestablishment of the Space Nuclear Systems Office in 1973.

The change in the nature and emphasis of research and development carried out by NASA during the second decade of its existence was reflected in the quantity and composition of its personnel. Between 1969 and 1978, the number of NASA in-house employees was reduced by almost 10,000, or by about a third of what it was in 1969. The reduced work force contained, however, an increasingly large percentage of scientists and engineers and other personnel with professional degrees. In addition, there was a marked increase during this period in the number of minority employees at NASA. Minority employees made particularly impressive gains among NASA's professional administrative ranks. There was also a slight increase in the percentage of women employed by NASA during the 1969-78 period. Like minority employees, women achieved their greatest gains in professional administrative positions.

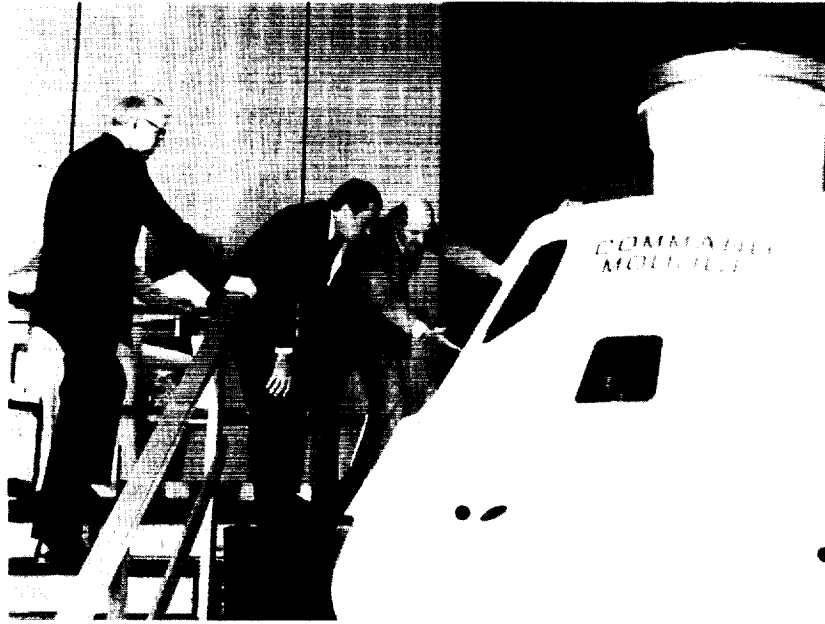
In spite of the considerable cuts in its funding and personnel, during the 1969-78 decade NASA continued to push forward in space exploration and to make important advances in the development of spacecraft technology. Many of the NASA projects that were begun during the previous decades endured into the 1970s. Apollo lunar exploration continued until December 1972 with the launching of Apollo 17, the last flight of the Apollo Moon program. The Mariner space probes to Mars in 1969 and 1971 were followed by the Mariner probe of the planet Mercury in 1974. In 1972 Pioneer 10 began its successful year and one-half journey to the planet Jupiter. Pioneer 11 repeated the journey in 1973 and then flew toward the planet Saturn. A Viking probe of Mars in 1976 was followed by a Voyager flight to Jupiter in 1977 and a Pioneer probe of Venus in 1978. These and other flights to the planets of our solar system marked a period of intensive study of the planets in search of knowledge that could explain the mysteries of the earth itself.

Concurrently with the exploration of the planets, NASA was pursuing programs that had tangible and immediate impact on earth-related problems. In the 1970s, a number of satellites were launched into orbit around the earth. These satellites, such as the Earth Resources Technology Satellite launched in July 1972, scanned the earth and provided real-time information on such topics as crop inventory and crop health, water storage, air and water pollution, forest diseases and forest fires, and coastal and oceanic movements. Although unmanned satellites performed the bulk of research in space, manned space flight was not neglected. Instead of sending astro-

nauts on a distant journey to the planets, however, NASA's Skylab project called for them to live and perform experiments in a space laboratory orbiting around the earth. The Skylab, a space workshop, was launched by a Saturn V rocket and placed into an earth orbit in May 1973. Eleven days later, a manned Apollo command and service module combination was launched into orbit by another Saturn rocket and docked with the workshop. The first crew spent twenty-eight days aboard the Skylab, proving that humans could live and work in space. Two other missions followed in 1973.

Increasingly, the satellites put into orbit by NASA during this period were performing research and experiments for other Government agencies, private corporations, and even foreign governments. The increased cooperation in space exploration between the United States and other countries led to one of the more striking feats in space. In July 1975, the United States and the Soviet Union carried out a joint space venture, the Apollo-Soyuz Test Project, when an orbiting Soviet Soyuz spacecraft rendezvoused and docked with a American Apollo spacecraft. The two spacecraft then proceeded to exchange crews and conduct joint experiments.

In its second decade of existence, from 1969 to 1978, NASA achieved notable successes. After the enormous achievement of landing a man on the Moon in 1969, NASA went on to other missions, including sending space probes to explore other planets in our solar system, orbiting satellites to study the earth, establishing an orbiting space laboratory, and performing space exploration jointly with other countries. As the next decade dawned, NASA was embarking on new ventures, chief among them the Space Shuttle program, to fulfill its commitment to maintaining United States leadership in space exploration.



President Richard M. Nixon being briefed by Flight Commander, Astronaut Thomas P. Stafford on the Apollo Command Module to be used in the U.S.-U.S.S.R. Apollo-Soyuz flight in the summer of 1975. Standing at the President's right is Dr. James C. Fletcher, NASA Administrator.



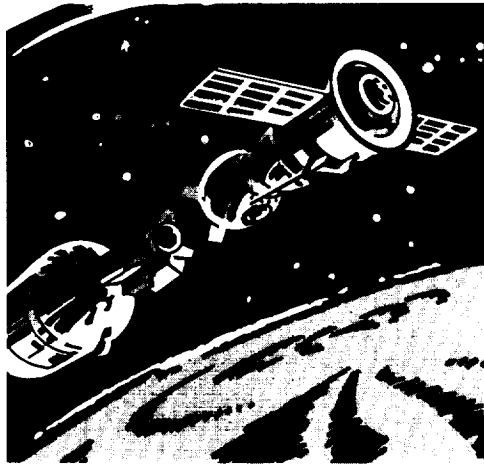
President Gerald R. Ford and NASA Administrator James C. Fletcher examine a model of the Space Shuttle during a meeting at the White House on September 8, 1976.

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President James E. Carter awarding the Space Medal of Honor to former Astronaut Alan B. Shepard during NASA's 20th anniversary celebration at the Kennedy Space Center on October 1, 1978. A mock-up of the Space Shuttle is in the background.

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CHAPTER TWO

NASA FACILITIES

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CHAPTER TWO

NASA FACILITIES

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CHAPTER TWO

NASA FACILITIES

For NASA facilities, the first decade of NASA's existence was a period of rapid growth and expansion. The basic configuration of NASA installations was developed from 1958 to 1968. By the end of FY 1968, there were ten NASA field installations, each with its own Director. They were the Ames Research Center (ARC) at Moffett Field, California; the Electronics Research Center (ERC) in Cambridge, Massachusetts; the Flight Research Center (FRC) at Edwards Air Force Base, California; the Goddard Space Flight Center (GSFC) in Greenbelt, Maryland; the John F. Kennedy Space Center (KSC) near Cape Canaveral, Florida; the Langley Research Center (LaRC) at Langley Field in Hampton, Virginia; the Lewis Research Center (LeRC) in Cleveland, Ohio; the Manned Spacecraft Center (MSC) near Houston, Texas; the George C. Marshall Space Flight Center (MSFC) in Huntsville, Alabama; and the Wallops Station (WS) on Wallops Island, Virginia. In addition, the Jet Propulsion Laboratory (JPL), operated in Government-owned facilities in Pasadena by the California Institute of Technology, has been under contract to NASA since 1959. Another NASA installation, the Space Nuclear Propulsion Office (SNPO) in Germantown, Maryland, with branch offices in New Mexico, Ohio, and Nevada, reported directly to the NASA Headquarters Office of Advanced Research and Technology. Also, several of the independent NASA centers had component installations.

The second decade of NASA's existence was for the most part a period of retrenchment for its facilities. The Electronics Research Center closed as a NASA installation on June 30, 1970, and its facilities were transferred to the Department of Transportation. Also that year, the Space Nuclear Propulsion Office was renamed the Space Nuclear Systems Office. It was disestablished in 1973. The Manned Spacecraft Center was renamed the Lyndon B. Johnson Space Center (JSC) on February 17, 1973. On April 14, 1974, Wallops Station was renamed the Wallops Flight Center (WFC), reflecting its expanded use as a rocket flight-test range. The same year, on June 14, 1974, the Mississippi Test Facility at Bay St. Louis, Mississippi, one of the component installations of the Marshall Space Flight Center, was established as an independent NASA field installation and renamed the National Space Technology Laboratories (NSTL). On January 8, 1976,

the Flight Research Center was renamed the Hugh L. Dryden Flight Research Center (DFRC) in honor of the first NASA Deputy Director, who was an aeronautical research pioneer.

Whereas the first decade of NASA's existence witnessed a rapid growth in the number and size of its facilities, a comparable expansion did not take place in the second decade. Indeed, as indicated by Tables 2-1 to 2-30, the most remarkable characteristic of NASA's field installations during the second decade of NASA's existence was the lack of any significant changes. From 1959 to 1968, the land area on which NASA installations were located grew from 5,179 acres to over 142,000 acres. By 1978 the number of acres had actually decreased to just slightly over 136,000 acres. The total real property value grew from just over \$268 million in 1959 to \$2.4 billion in 1968; in 1978 it stood at \$2.8 billion. The total investment value of NASA installations—comprising real property, leasehold improvements, capitalized equipment, and fixed assets-in-progress—rose from \$4.4 billion in 1968 to \$6 billion in 1978. From 1968 to 1978, investment value rose only modestly in three of the above categories but showed a marked increase in capitalized equipment value from \$1.4 billion in 1968 to \$2.9 billion in 1978.

Attainment of stability in the NASA system of installations is further evidenced by comparing proportional changes that make up the total real property value. Whereas the value of buildings changed from almost 92 percent of the total in 1959 to close to 54 percent in 1968, it remained almost steady during the next decade, rising to only slightly less than 56 percent in 1978. Similarly, the value of other structures and facilities rose from about 8 percent of the total in 1959 to almost 42 percent in 1968, and in the next decade it changed by only 2 percent, attaining the figure of 40 percent in 1978. The value of NASA-owned land was 0.3 percent of the total in 1959, 4.3 percent in 1968, and 4.1 percent of the total real property value in 1978.

Definition of Terms

Definitions of the terms used in this chapter were taken from NASA Management Instructions (NMIs) and NASA Handbook (NHB) *Approval of Facility Projects*.¹

Buildings. Facilities with the basic function of enclosing usable space. This category of real property includes buildings leased by or on behalf of NASA and improvements to NASA-owned buildings and installed property but excludes leasehold improvements (NMI 8800.1A).

Note: In the tables of this chapter and those of Chapter Six, the square footage of buildings leased does not include GSA-leased buildings.

¹NASA, Office of Organization and Management, Administrative Services Division, NASA Management Instruction (NMI) 8800.1A and 1132.2A; and NASA Handbook (NHB) 7330.1, *Approval of Facility Projects*.

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 (NMI 1132.2A).

Component installations of NASA Headquarters include:

NASA Pasadena Office

The Space Nuclear Propulsion Office/Space Nuclear Systems Office was organizationally under the NASA Headquarters Office of Advanced Research and Technology and in some cases was regarded as a component installation.

Former component installations of NASA Headquarters include:

NASA Daytona Beach Operation

NASA Office—Downey

North Eastern Office

Western Coordination Office

Western Operations Office

Western Support Office

Component installations of centers include:

Kennedy Space Center—Western Test Range Operations Division

Lewis Research Center—Plum Brook Station

Manned Spacecraft Center—White Sands Test Facility

Marshall Space Flight Center—Michoud Assembly Facility with its Computer Operations Office; Mississippi Test Facility (until June 14, 1974, when it became the independent National Space Technology Laboratories); and Slidell Computer Facility

Easement. An acquired privilege or right of use or enjoyment that one party may have in the land of another, for example, an easement or right-of-way for road or highway purposes or for construction and maintenance of utility lines (NHB 7330.1, 26).

Equipment. Personal property that meets all of the following criteria: (a) has an estimated service life of one year or more, (b) has an initial acquisition cost of \$50 or more per unit, (c) retains its identity when put into use, and (d) will not be consumed during an experiment (NHB 7330.1, 26-27).

Collateral Equipment. All nonintegral, severable equipment that is acquired for use, or is used, in a facility. Collateral equipment is not required to make the structure or building useful and operable as a structure or building, but it imparts to the facility its particular character at the time, for example, furniture in an office building or test equipment in a test stand (NHB 7330.1, 25). See Personal Property.

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. Integral equipment includes such items

as elevators, central air-conditioning systems, and electrical and plumbing fixtures and equipment (NHB 7330.1, 28). See *Installed Property*.

Note: As used in this chapter and in Chapter Six, equipment refers to capitalized equipment only. (To be recorded as capitalized equipment, the equipment must have an estimated service life of more than one year, be identifiable as equipment when in use and not part of other equipment, generally cost \$200 or more, and not be intended to be consumed in an experiment. Noncapitalized equipment is charged to the appropriate cost account as "expensed equipment."²)

Facility. A generic term used to encompass real property and related integral and collateral equipment of a capital nature; thus the term does not encompass operating materials, supplies, and noncapitalized equipment. The term "facility" is used in connection with land, buildings (facilities with the basic function of enclosing usable space), structures (facilities with the basic function of a research or operational tool or activity), and other real property improvements (NHB 7330.1, 27).

Field Installation. A NASA organizational element located geographically apart from NASA Headquarters and headed by a Director. The following are NASA field installations:

- Ames Research Center
- Electronics Research Center, disestablished June 30, 1970
- Flight Research Center/Hugh L. Dryden Flight Research Center, as of January 8, 1976
- Goddard Space Flight Center
- John F. Kennedy Space Center
- Langley Research Center
- Lewis Research Center
- Manned Spacecraft Center/Lyndon B. Johnson Space Center, as of February 17, 1973
- George C. Marshall Space Flight Center
- National Space Technology Laboratories, established June 14, 1974
- Wallops Station/Wallops Flight Center, as of April 14, 1974

The Jet Propulsion Laboratory is not a NASA field installation but is operated by the California Institute of Technology under contract to NASA.

The Space Nuclear Propulsion Office/Space Nuclear Systems Office was not a NASA field installation but reported to the NASA Headquarters Office of Advanced Research and Technology.

Industrial Facility. NASA property that is contractor held. Figures for industrial property are included with NASA's in-house property in all tables, unless otherwise noted.

Installation. A NASA organizational element, including both Headquarters and field installations (NMI 1132.2A).

Installed Property. Items of fixtures and equipment normally required

²NASA, Office of Administration, Financial Management Division, *Financial Management Manual*, paragraph 9250-32a, 32b.

for the functional use of a building or structure, the removal of which would impair the usefulness, comfort, and safety of the building or structure. Installed property is included as part of the building or structure and is accounted for accordingly. Examples of installed property items included as real property are plumbing fixtures and equipment, electrical and fixed fire protection systems, overhead crane runways, components that become part of a system, and other similar built-in or permanently affixed items (NMI 8800.1A). See Integral Equipment.

Investment Value, Total. A figure representing the total of (a) real property value, including land, buildings, and other structures and facilities; (b) leasehold improvements value; (c) capitalized equipment value; and (d) assets-in-progress value. Value is based on cost plus improvements.

Note: As used in Chapter Two, total investment value includes both in-house and contractor-held facilities.

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 (NMI 8800.1A).

Note: As used in the tables of Chapters Two and Six, land includes only NASA-owned land unless otherwise noted. Figures presented for this variable do not include leased land or land held under use permit or agreement. NASA-owned land means Government-owned land for which NASA has custody and accountability.

Lease. An instrument conveying land, buildings, or other structures or facilities or portions thereof for a specified term of time, in consideration of payment of a rental fee (NHB 7330.1, 28).

Leasehold Improvements. Improvements made by or on behalf of NASA to leased land, buildings, or other structures and facilities; easements and rights-of-way (NMI 8800.1A).

Note: Although NASA Management Instruction 8800.1A deems leasehold improvements a category of real property, they are considered as a separate component of total investment value in Chapter Two.

Other Structures and Facilities. Category of real property that includes facilities having the basic function of research or operational tools or activities as distinct from buildings, which have the primary function of enclosing usable space. Includes all structures and facilities and installed property owned or leased by or on behalf of NASA, for example, storage tanks, gantry cranes, launch pads, blockhouses, airfield pavements, roads, monuments, sidewalks, parking areas, and fences. Excludes leasehold improvements (NMI 8800.1A).

Personal Property. Items of equipment that are installed in a building or structure to perform or assist in performing the operation housed within the buildings or structures and that, if removed, would retain their identity and usefulness as individual items of equipment, for example, a machine tool installed in a building (NMI 8800.1A). See Collateral Equipment.

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

property includes equipment attached to and made a part of buildings, structures, and other facilities (such as heating systems) but excludes collateral equipment (such as machine tools) that is removable without significant damage to the real property (NHB 7330.1, 29).

Real property—when under the control of the United States or of any instrumentality, entity, or wholly owned corporation of the United States—means any interest in land, excluding lands in the Public Domain or reserved or dedicated for National Forest or National Park purposes, and any fixture, structure, appurtenance, or other improvement permanently annexed to land, including lands to which the United States has no title or interest and lands in the Public Domain or dedicated or devoted to National Forest or National Park purposes (NMI 8800.1A).

Note: In the tables of Chapters Two and Six, total real property value is the sum of land value, buildings value, and other structures and facilities value. Leasehold improvements are not included in total real property value but are considered as a separate component of total investment value.

Use Permit. A document conferring temporary permission to NASA to use land, buildings, structures, or other facilities for which another Government agency has custody and accountability.

NASA Installations and Abbreviations

For installation summaries, see Chapter Six.

Ames Research Center (ARC)

Electronics Research Center (ERC), disestablished June 30, 1970

Flight Research Center (FRC)/Hugh L. Dryden Flight Research Center (DFRC)

Goddard Space Flight Center (GSFC)

John F. Kennedy Space Center (KSC)

Langley Research Center (LaRC)

Lewis Research Center (LeRC)

Manned Spacecraft Center (MSC)/Lyndon B. Johnson Space Center (JSC)

George C. Marshall Space Flight Center (MSFC)

National Space Technology Laboratories (NSTL)

Space Nuclear Propulsion Office (SNPO)/Space Nuclear Systems Office (SNSO)

Wallops Station (WS)/Wallops Flight Center (WFC)

Jet Propulsion Laboratory (JPL)

NASA Headquarters (Hq.)

Table 2-1. Property: In-House and Contractor-Held, FY 1969-FY 1978
(at end of fiscal year; money amounts in thousands)

Category	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
1. Total real property value	2,586,311	2,652,271	2,697,804	2,643,646	2,587,919	2,589,042	2,687,151	2,735,161	2,743,223	2,834,809
Percentage change	7.4%	2.5%	1.7%	-2.0%	-2.1%	*	3.8%	1.8%	0.3%	3.3%
Land value	120,034	123,245	117,496	117,449	117,488	118,080	117,246	116,810	116,884	116,537
Percentage change	15.1%	2.6%	-4.7%	*	*	-0.5%	-0.7%	0.4%	0.06%	-0.3%
Buildings value	1,383,481	1,424,410	1,444,695	1,454,415	1,428,291	1,431,332	1,487,590	1,507,817	1,533,951	1,584,804
Percentage change	6.6%	3.0%	1.4%	0.7%	-1.8%	0.2%	3.9%	1.4%	1.7%	3.3%
Other structures and facilities value	1,082,796	1,104,616	1,135,613	1,071,782	1,042,140	1,039,630	1,082,315	1,110,534	1,092,388	1,133,468
Percentage change	7.2%	2.0%	2.8%	-5.6%	-2.8%	-0.2%	4.1%	2.6%	-1.6%	3.8%
2. Leasehold improvements value	985	863	4,218	4,375	4,483	4,228	1,031	957	NA	2,383
Percentage change	-7.3%	-12.4%	388.8%	3.7%	2.5%	-5.7%	-75.6%	-7.2%	NA	NA
3. Capitalized equipment value	1,690,850	2,298,512	2,721,830	2,969,461	2,985,671	3,151,968	3,040,531	2,868,064	NA	2,933,021
Percentage change	19.2%	35.9%	18.4%	9.1%	0.6%	5.6%	-3.5%	-5.7%	NA	NA
4. Fixed assets-in-progress value	206,932	84,858	103,241	132,122	116,366	197,545	187,173	231,455	NA	242,528
Percentage change	-64.7%	-59.0%	21.7%	28.0%	-11.9%	69.8%	-5.3%	23.7%	NA	NA
5. Total investment value (1 + 2 + 3 + 4)	4,485,138	5,036,504	5,527,093	5,749,604	5,694,439	5,942,783	5,915,886	5,835,637	NA	6,012,741
Percentage change	1.7%	12.3%	9.7%	4.0%	-1.0%	4.4%	-0.5%	-1.4%	NA	NA

Table 2-1. Property: In-House and Contractor-Held, FY 1969-FY 1978 (continued)
(at end of fiscal year; money amounts in thousands)

Category	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
6. Number of acres of land	NA	NA	144,466	144,475	137,075	137,178	136,179	136,139	136,139	136,045
Percentage change			NA	*	-5.1%	0.1%	-0.7%	*	*	-0.1%
Number of buildings			2,895	2,819	2,717	2,588	2,583	2,466	2,412	2,424
Percentage change			NA	-2.6%	-3.6%	-4.8%	-0.2%	-4.5%	-2.2%	0.5%
Number of square feet of buildings			32,100,557	32,264,639	32,181,510	31,965,114	32,028,298	32,241,069	32,327,081	32,624,432
Percentage change			NA	0.5%	-0.3%	-0.7%	0.2%	0.7%	0.3%	9.2%
7. NASA leased property rental value	NA	NA	321,414	377,839	2,191,686	1,130,507	2,002,763	2,376,371	2,214,015	2,176,644
Percentage change			NA	17.6%	480.1%	-48.4%	77.2%	18.7%	-6.8%	-1.7%
Number of acres leased			2,874	2,874	1,345	1,107	601	361	368	358
Number of buildings leased			NA	NA	NA	NA	NA	NA	NA	NA
Number of square feet of buildings leased			114,250	114,611	510,832	486,379	631,386	638,454	500,039	444,497

NA = Not available.

*Less than 0.05%.

Source: Facilities Engineering Division, Office of Facilities.

Table 2-2. Value of Real Property Components as a Percentage of Total Real Property: In-House and Contractor-Held*
(at end of fiscal year; total real property value in thousands)

Component	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Land	4.6	4.7	4.4	4.4	4.5	4.6	4.4	4.3	4.3	4.1
Buildings	53.5	53.7	53.6	55.0	55.2	55.3	55.4	55.1	55.9	5.9
Other structures and facilities	41.9	41.6	42.0	40.5	40.3	40.1	40.3	40.6	39.8	40.0
Total real property value	2,586,371	2,652,271	2,697,805	2,643,729	2,587,919	2,589,042	2,687,151	2,735,161	2,743,223	2,834,809

*Because of rounding, columns may not add up to 100.0%.

Source: Facilities Engineering Division, Office of Facilities.

**Table 2-3. Contractor-Held Facilities
(at end of fiscal year; dollar amounts in thousands)**

Category	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
1. Total real property value	312,291	NA	313,909	602,146	573,910	557,124	329,846	337,827	328,777	331,168
Percentage change	52.0%		NA	91.8%	-4.7%	-2.9%	-40.8%	2.4%	-2.7%	0.7%
Land value	15,800		12,309	30,993	30,914	30,914	12,211	12,230	12,230	11,901
Buildings value	194,435		195,306	280,154	255,623	242,797	190,926	198,760	202,042	202,089
Other structures and facilities value	102,056		106,294	290,999	287,373	283,413	126,709	126,837	114,505	117,178
2. Number of acres owned	NA	NA	10,987	31,900	25,032	25,032	4,525	4,525	4,525	4,477
Percentage change			NA	190.3	-21.5	0.0	-81.9	0.0	0.0	-1.1
3. Number of buildings	NA	NA	578	638	609	597	497	460	449	449
Number of square feet of buildings			7,967,220	8,981,379	8,865,374	8,598,788	7,648,249	7,614,238	7,638,021	7,644,015

NA = Not available.

Source: Facilities Engineering Division, Office of Facilities.

Table 2-4. NASA Facilities Total Investment Value, FY 1969: In-house and Contractor-Held
(at end of fiscal year; in thousands of dollars)

Facility	Total Real Property Value	Leasehold Improvements	Capitalized Equipment	Fixed Assets- in-Progress	Total Investment	Percentage of NASA Total Investment
NASA Headquarters	0	0	14,878	0	14,878	0.3
<i>Office of Manned Space Flight</i>						
Kennedy Space Center	776,309	0	169,769	101,215	1,047,293	23.4
Manned Spacecraft Center ^a	225,586	8	230,086	17,057	472,737	10.5
Marshall Space Flight Center	576,751	116	347,703	19,052	943,622	21.0
TOTAL	1,578,646	124	747,558	137,324	2,463,652	54.9
<i>Office of Aeronautics and Space Technology^b</i>						
Ames Research Center	172,505	1	60,811	4,510	237,827	5.3
Electronics Research Center ^c	1,388	0	20,613	14,713	36,714	0.8
Flight Research Center ^d	9,793	0	36,744	595	47,132	1.0
Langley Research Center	255,962	0	114,575	19,370	389,907	8.7
Lewis Research Center	251,958	145	99,970	27,362	379,435	8.6
Space Nuclear Propulsion Office ^e	25,874	0	24,133	249	50,256	1.1
TOTAL	717,480	146	356,846	66,799	1,141,271	25.5
<i>Office of Space Science and Applications</i>						
Goddard Space Flight Center	141,128	301	421,902	0	563,331	12.6
Jet Propulsion Laboratory	82,205	414	110,806	2,809	193,425	4.3
Wallops Station ^f	66,852	0	38,860	0	108,521	2.4
TOTAL	290,185	715	571,568	2,809	865,277	19.3
NASA TOTAL	2,586,311	985	1,690,850	206,932	4,485,078	100.0

^aRenamed Johnson Space Center in 1973.

^bCalled Office of Advanced Research & Technology until 1970.

^cDisestablished in 1970.

^dRenamed Dryden Flight Research Center in 1976.

^eRenamed Space Nuclear Systems in 1970. Disestablished in 1973.

^fRenamed Wallops Flight Center in 1974.

Source: Facilities Engineering Division, Office of Facilities.

**Table 2-4A. NASA Facilities Total Investment Value, FY 1970-FY 1972: In-house and Contractor-Held
(at end of fiscal year; in thousands of dollars)**

Facility	Total Real Property Value			Leasehold Improvements			Capitalized Equipment		
	1970	1971	1972	1970	1971	1972	1970	1971	1972
NASA Headquarters	0	1	83	0	1	83	32,077	21,171	21,406
<i>Office of Manned Space Flight</i>									
Kennedy Space Center	773,603	783,358	708,473	0	0	0	222,097	464,972	588,968
Manned Spacecraft Center ^a	234,974	235,240	239,899	0	0	0	500,607	572,736	622,132
Marshall Space Flight Center	585,101	616,392	616,336	0	3,523	3,607	468,775	505,252	532,570
TOTAL	1,593,678	1,634,990	1,564,708	0	3,523	3,607	1,191,479	1,542,960	1,743,670
<i>Office of Aeronautics and Space Technology^b</i>									
Ames Research Center	176,577	182,067	182,523	1	0	0	73,617	82,684	87,432
Electronics Research Center ^c	21,757	—	—	0	—	—	28,255	—	—
Flight Research Center ^d	9,948	10,407	11,108	0	0	0	52,914	56,198	47,477
Langley Research Center	265,962	272,475	274,147	0	0	0	122,671	140,009	138,525
Lewis Research Center	256,863	263,641	265,049	139	139	139	122,032	122,657	139,478
Space Nuclear Propulsion Office ^e	25,928	25,930	25,918	0	0	0	27,217	27,594	27,985
TOTAL	757,035	754,520	758,745	140	139	139	426,706	429,142	440,897
<i>Office of Space Science and Applications</i>									
Goddard Space Flight Center	151,721	151,898	157,422	303	102	81	474,147	507,499	521,949
Jet Propulsion Laboratory	83,332	89,077	94,297	420	453	465	131,587	173,299	192,777
Wallops Station ^f	66,505	67,319	68,474	0	0	0	42,516	47,759	48,762
TOTAL	301,558	308,294	320,193	723	555	546	648,250	728,557	763,488
NASA TOTAL	2,652,271	2,697,804	2,643,646	863	4,218	4,375	2,298,512	2,721,830	2,969,461

Table 2-4A. NASA Facilities Total Investment Value, FY 1970-FY 1972: In-house and Contractor-Held (continued)
(at end of fiscal year; in thousands of dollars)

Facility	Fixed Assets-in-Progress			Total Investment			Percentage of NASA Total Investment		
	1970	1971	1972	1970	1971	1972	1970	1971	1972
NASA Headquarters	0	0	0	32,077	21,172	21,489	0.6	0.4	0.4
<i>Office of Manned Space Flight</i>									
Kennedy Space Center	9,448	8,595	13,352	1,005,148	1,256,925	1,310,793	19.9	22.7	22.9
Manned Spacecraft Center ^d	12,998	13,459	12,334	748,579	821,435	874,365	14.9	14.9	15.2
Marshall Space Flight Center	1,983	2,281	5,998	1,055,859	1,127,448	1,158,511	21.0	20.4	20.1
TOTAL	24,429	24,335	31,684	2,809,586	3,205,808	3,343,669	55.8	58.0	58.2
<i>Office of Aeronautics and Space Technology^b</i>									
Ames Research Center	6,022	4,546	10,609	256,217	269,297	280,564	5.1	4.9	4.9
Electronics Research Center ^c	567	—	—	50,579	—	—	1.0	—	—
Flight Research Center ^d	366	393	514	63,228	66,998	59,099	1.3	1.2	1.0
Langley Research Center	14,335	13,589	15,527	402,968	426,073	428,199	8.0	7.7	7.4
Lewis Research Center	19,017	17,557	23,894	398,051	403,994	428,560	7.9	7.3	7.5
Space Nuclear Propulsion Office ^e	27	0	5	53,172	53,524	53,908	1.0	1.0	0.9
TOTAL	40,334	36,085	50,549	1,224,215	1,219,886	1,250,330	24.3	22.1	21.7
<i>Office of Space Science and Applications</i>									
Goddard Space Flight Center	2,623	8,083	11,149	628,794	667,582	690,601	12.5	12.0	12.0
Jet Propulsion Laboratory	16,129	33,472	36,740	231,468	296,301	324,279	4.6	5.4	5.6
Wallops Station ^f	1,343	1,266	2,000	110,364	116,344	119,236	2.2	2.1	2.1
TOTAL	20,095	42,821	49,889	970,626	1,080,227	1,134,116	19.3	19.5	19.7
NASA TOTAL	84,858	103,241	132,122	5,036,504	5,527,093	5,749,604	100.0	100.0	100.0

^aRenamed Johnson Space Center in 1973.

^bCalled Office of Advanced Research & Technology until 1970.

^cDisestablished in 1970.

^dRenamed Dryden Flight Research Center in 1976.

^eRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^fRenamed Wallops Flight Center in 1974.

Source: Facilities Engineering Division, Office of Facilities.

**Table 2-4B. NASA Facilities Total Investment Value, FY 1973-FY 1975: In-house and Contractor-Held
(at end of fiscal year; in thousands of dollars)**

Facility	Total Real Property Value			Leasehold Improvements			Capitalized Equipment		
	1973	1974	1975	1973	1974	1975	1973	1974	1975
NASA Headquarters	0	0	0	0	0	0	38,186	34,656	32,155
<i>Office of Manned Space Flight</i>									
Kennedy Space Center	680,363	674,361	679,999	0	0	0	562,581	616,791	589,556
Manned Spacecraft Center ^a	241,104	246,895	256,105	0	115	151	605,637	639,702	612,243
Marshall Space Flight Center	564,496	304,715	314,282	3,776	3,288	0	554,524	485,165	476,560
TOTAL	1,485,963	1,225,971	1,250,386	3,776	3,403	151	1,722,742	1,741,658	1,678,359
<i>Office of Aeronautics and Space Technology^b</i>									
Ames Research Center	187,718	190,684	205,635	0	0	0	100,011	110,274	114,810
Flight Research Center ^c	11,560	12,008	12,890	0	0	0	52,882	61,307	63,823
Langley Research Center	274,250	281,581	288,326	0	0	0	145,256	166,062	169,343
Lewis Research Center	274,710	279,102	284,624	139	139	178	139,525	142,504	123,300
National Space Technology Laboratories ^d	—	245,011	279,120	—	0	0	—	68,236	40,901
TOTAL	748,238	1,008,386	1,070,595	139	139	178	437,674	548,383	512,177
<i>Office of Space Science and Applications</i>									
Goddard Space Flight Center	155,759	156,335	152,161	81	172	172	534,371	555,188	549,170
Jet Propulsion Laboratory	127,432	125,988	139,820	487	514	530	204,856	221,808	218,625
Wallops Station ^e	70,527	72,362	74,189	0	0	0	47,842	50,275	50,045
TOTAL	353,718	354,685	366,170	568	686	702	787,069	827,271	817,840
NASA TOTAL	2,587,919	2,589,042	2,687,151	4,483	4,228	1,031	2,985,671	3,151,968	3,040,531

Table 2-4B. NASA Facilities Total Investment Value, FY 1973-FY 1975: In-house and Contractor-Held (continued)
(at end of fiscal year; in thousands of dollars)

Facility	Fixed Assets-in-Progress				Total Investment				Percentage of NASA Total Investment			
	1973	1974	1975	1973	1974	1975	1973	1974	1975	1973	1974	1975
NASA Headquarters	0	0	0	38,186	34,656	32,155	0.7	0.6	0.5			
<i>Office of Manned Space Flight</i>												
Kennedy Space Center	9,196	16,034	23,622	1,252,140	1,307,186	1,293,177	22.0	22.0	21.8			
Manned Spacecraft Center ^a	14,149	27,298	30,664	860,890	914,010	899,163	15.1	15.4	15.2			
Marshall Space Flight Center	14,359	27,035	24,570	1,137,155	820,203	815,412	20.0	13.8	13.8			
TOTAL	37,704	70,367	78,856	3,250,185	3,041,399	3,007,752	57.1	51.2	50.8			
<i>Office of Aeronautics and Space Technology^b</i>												
Ames Research Center	17,042	24,774	16,938	304,771	325,732	337,383	5.4	5.5	5.7			
Flight Research Center ^c	539	884	1,459	64,981	74,199	78,172	1.1	1.2	1.5			
Langley Research Center	26,083	40,486	45,694	445,589	488,129	503,363	7.8	8.2	8.5			
Lewis Research Center	12,496	21,904	12,064	426,870	443,649	420,166	7.5	7.5	7.1			
National Space Technology Laboratories ^d		9,655	0		322,902	320,021		5.4	5.4			
TOTAL	56,160	97,703	76,155	1,242,211	1,654,611	1,659,105	21.8	27.8	28.2			
<i>Office of Space Science and Applications</i>												
Goddard Space Flight Center	10,183	12,562	14,647	700,394	724,257	716,150	12.3	12.2	12.1			
Jet Propulsion Laboratory	10,145	14,216	14,938	342,920	362,526	373,913	6.0	6.1	6.3			
Wallops Station ^e	2,174	2,697	2,577	120,543	125,334	126,811	2.1	2.1	2.1			
TOTAL	22,502	29,475	32,162	1,163,857	1,212,117	1,216,874	20.4	20.4	20.5			
NASA TOTAL	116,366	197,545	187,173	5,694,439	5,942,783	5,915,886	100.0	100.0	100.0			

^aRenamed Johnson Space Center in 1973.

^bCalled Office of Advanced Research & Technology until 1970.

^cRenamed Dryden Flight Research Center in 1976.

^dEstablished as an independent NASA field installation in 1974.

^eRenamed Wallops Flight Center in 1974.

Source: Facilities Engineering Division, Office of Facilities.

**Table 2-4C. NASA Facilities Total Investment Value, FY 1976-FY 1978: In-house and Contractor-Held
(at end of fiscal year; in thousands of dollars)**

Facility	Total Real Property Value			Leasehold Improvements			Capitalized Equipment		
	1976	1977	1978	1976	1977	1978	1976	1977	1978
NASA Headquarters	0	0	0	0	NA	0	11,592	NA	11,764
<i>Office of Manned Space Flight</i>									
Kennedy Space Center	704,266	681,406	718,151	0	0	0	773,035		494,442
Manned Spacecraft Center ^a	259,584	264,066	265,115	116		53	409,576		421,746
Marshall Space Flight Center	317,223	301,518	311,946	0		0	427,131		686,106
TOTAL	1,281,073	1,246,990	1,295,212	116	NA	53	1,609,742	NA	1,602,294
<i>Office of Aeronautics and Space Technology^b</i>									
Ames Research Center	209,058	215,848	220,141	0		1,583	115,308		136,331
Flight Research Center ^c	13,687	15,534	15,859	0		0	61,437		62,310
Langley Research Center	288,423	304,947	334,451	0		0	145,903		163,301
Lewis Research Center	291,813	294,386	296,199	139		136	118,544		120,441
National Space Technology Laboratories ^d	270,222	275,735	276,342	0		0	47,304		30,919
TOTAL	1,073,203	1,106,450	1,142,992	139	NA	1,719	488,496	NA	513,302
<i>Office of Space Science and Applications</i>									
Goddard Space Flight Center	157,675	156,221	160,630	172		91	484,554		521,134
Jet Propulsion Laboratory	147,283	155,803	156,628	530		520	217,765		231,701
Wallops Station ^e	75,927	77,759	79,347	0		0	55,915		52,826
TOTAL	380,885	389,783	396,605	702	NA	611	758,234	NA	805,661
NASA TOTAL	2,735,161	2,743,223	2,834,809	957	NA	2,383	2,868,064	NA	2,933,021

Table 2-4C. NASA Facilities Total Investment Value, FY 1976-FY 1978: In-house and Contractor-Held (continued)
(at end of fiscal year; in thousands of dollars)

Facility	Fixed Assets-in-Progress			Total Investment			Percentage of NASA Total Investment		
	1976	1977	1978	1976	1977	1978	1976	1977	1978
NASA Headquarters	0	NA	0	11,592	NA	11,764	0.2	NA	0.2
<i>Office of Manned Space Flight</i>									
Kennedy Space Center	60,057		116,583	1,537,358		1,329,176	26.3		22.1
Manned Spacecraft Center ^a	35,733		23,034	705,009		709,948	12.1		11.8
Marshall Space Flight Center	15,430		8,016	759,784		1,006,068	13.0		16.7
TOTAL	111,220	NA	147,633	3,002,151	NA	3,045,192	51.4	NA	50.6
<i>Office of Aeronautics and Space Technology^b</i>									
Ames Research Center	12,826		19,108	337,192		377,163	5.8		6.3
Flight Research Center ^c	2,543		2,478	77,667		80,647	1.3		1.3
Langley Research Center	57,914		11,317	492,240		509,069	8.4		8.5
National Space Technology Laboratories ^d	6,420		12,948	416,916		429,724	7.1		7.1
TOTAL	79,703	NA	45,851	1,641,541	NA	1,703,864	28.0	NA	28.3
<i>Office of Space Science and Applications</i>									
Goddard Space Flight Center	15,865		19,234	658,266		701,089	11.3		11.7
Jet Propulsion Laboratory	21,069		25,305	386,647		414,154	6.6		6.9
Wallops Station ^e	3,598		4,505	135,440		136,678	2.3		2.3
TOTAL	40,532	NA	49,044	1,180,353	NA	1,251,921	20.2	NA	20.9
NASA TOTAL	231,455	NA	242,528	5,835,637	NA	6,012,741	99.8	100.0	100.0

NA = Not available

^a = Because of rounding, columns may not add up to 100.0%.

^bRenamed Johnson Space Center in 1973.

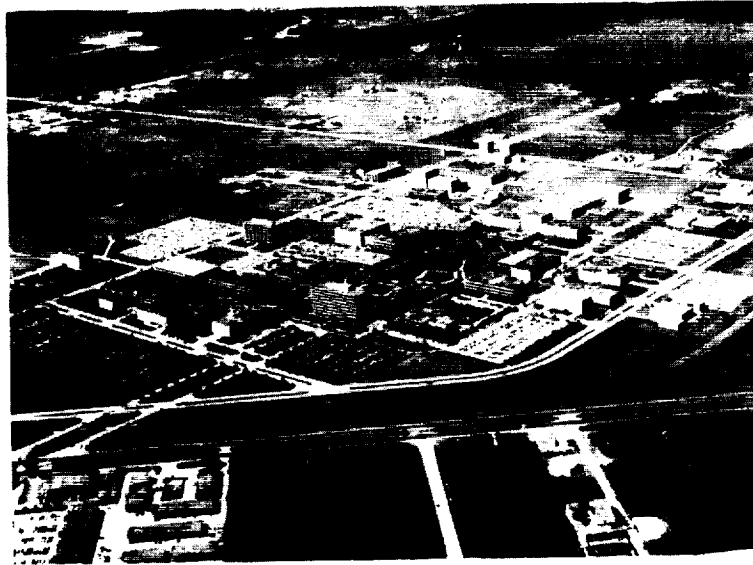
^cCalled Office of Advanced Research & Technology until 1970.

^dRenamed Dryden Flight Research Center in 1976.

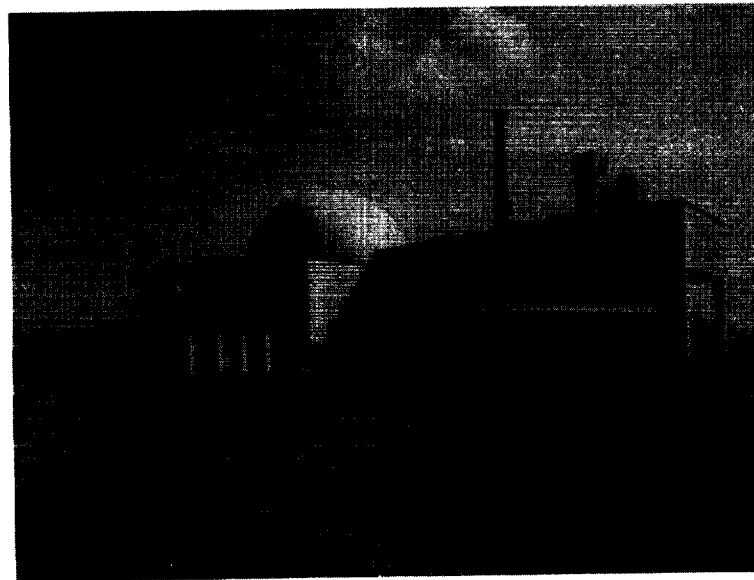
^eEstablished as an independent NASA field installation in 1974.

^fRenamed Wallops Flight Center in 1974.

Source: Facilities Engineering Division, Office of Facilities.



Aerial view of the Western Test Range Operations Division at the Vandenberg Air Force Base in California. The Western Test Range Operations Division is a component installation of the Kennedy Space Center.



The Space Power Facility at the Plum Brook Station in Sandusky, Ohio is a component installation of the Lewis Research Center. It has many uses, from testing space vehicles to creating clouds for study purposes.

Table 2-5. Land Owned by Installation and Fiscal Year in Acres: In-House and Contractor-Held¹
(at end of fiscal year)

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	NA	NA	366	374	374	430	430	430	430	430
Electronics Research Center ^a	NA	NA	—	—	—	—	—	—	—	—
Flight Research Center ^b	NA	NA	0	0	0	0	0	0	0	0
Goddard Space Flight Center	NA	NA	12,003	12,003	12,003	12,003	12,003	12,003	12,003	12,003
Jet Propulsion Laboratory	NA	NA	146	146	146	146	146	146	146	156
Kennedy Space Center	NA	NA	84,021	84,031	84,031	84,031	82,944	82,943	82,943	82,943
Langley Research Center	NA	NA	540	540	540	540	540	898	898	898
Lewis Research Center	NA	NA	15,760	15,750	8,350	8,398	8,402	8,402	8,402	8,357
Manned Spacecraft Center ^c	NA	NA	3,195	3,195	3,195	3,195	3,195	3,195	3,195	3,195
Marshall Space Flight Center	NA	NA	21,821	21,821	21,821	905	1,314	1,314	1,314	1,256
National Space Technology Laboratories ^d	—	—	—	—	—	20,916	20,643	20,643	20,642	20,642
Space Nuclear Propulsion Office ^e	NA	NA	0	0	—	—	—	—	—	—
Wallops Station ^f	NA	NA	6,615	6,615	6,615	6,615	6,563	6,166	6,166	6,166
TOTAL	NA	NA	144,466	144,475	137,075	137,178	136,179	136,139	136,139	136,045

¹Because of rounding, columns may not add up to total.

^aDisestablished in 1970.

^bRenamed Dryden Flight Research Center in 1976.

^cRenamed Johnson Space Center in 1973.

^dEstablished as an independent NASA field installation in 1974.

^eRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^fRenamed Wallops Flight Center in 1974.

NA = Not available.

Source: Facilities Engineering Division, Office of Facilities.

**Table 2-6. Contractor-Held Land by Installation and Fiscal Year, in Acres
(at end of fiscal year)**

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Goddard Space Flight Center	NA	NA	2,789	2,789	2,789	2,789	2,789	2,789	2,789	2,789
Jet Propulsion Laboratory	NA	NA	146	146	146	146	146	146	146	156
Langley Research Center	NA	NA	110	110	110	110	110	110	110	110
Lewis Research Center	NA	NA	6,871	6,868	0	0	0	0	0	0
Manned Spacecraft Center ^a	NA	NA	166	166	166	166	166	166	166	166
Marshall Space Flight Center	NA	NA	905	21,821	21,821	905	1,314	1,314	1,314	1,256
National Space Technology Laboratories ^b	—	—	—	—	—	20,916	0	0	0	0
TOTAL	NA	NA	10,987	31,900	25,032	25,032	4,525	4,525	4,525	4,477

^aRenamed Johnson Space Center in 1973.

^bEstablished as an independent NASA field installation in 1974.

NA = Not available.

Source: Facilities Engineering Division, Office of Facilities.

Table 2-7. Number of Buildings Owned by Installation and Fiscal Year: In-House and Contractor-Held
(at end of fiscal year)

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	NA	NA	129	129	129	123	124	128	133	153
Electronics Research Center ^a	NA	NA	—	—	—	—	—	—	—	—
Flight Research Center ^b	NA	NA	36	36	40	48	54	58	62	62
Goddard Space Flight Center	NA	NA	262	286	278	278	276	268	260	262
Jet Propulsion Laboratory	NA	NA	386	351	353	339	342	317	322	320
Kennedy Space Center	NA	NA	538	484	470	413	405	350	333	344
Langley Research Center	NA	NA	155	156	144	144	142	142	144	152
Lewis Research Center	NA	NA	289	292	262	264	263	264	265	259
Manned Spacecraft Center ^c	NA	NA	274	280	273	269	263	257	255	253
Marshall Space Flight Center	NA	NA	455	433	408	254	249	236	221	226
National Space Technology Laboratories ^d	—	—	—	—	—	95	107	109	111	113
Space Nuclear Propulsion Office ^e	NA	NA	16	16	—	—	—	—	—	—
Wallops Station ^f	NA	NA	355	356	360	361	358	337	306	280
TOTAL	NA	NA	2,895	2,819	2,717	2,588	2,583	2,466	2,412	2,424

^aDisestablished in 1970.

^bRenamed Dryden Flight Research Center in 1976.

^cRenamed Johnson Space Center in 1973.

^dEstablished as an independent NASA field installation in 1974.

^eRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^fRenamed Wallops Flight Center in 1974.

NA = Not available.

Source: Facilities Engineering Division, Office of Facilities.

**Table 2-8. Number of Square Feet of Buildings Owned by Installation and Fiscal Year: In-House and Contractor-Held
(at end of fiscal year)**

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	NA	NA	1,886,736	2,006,888	2,060,021	2,114,797	2,109,355	2,336,655	2,350,060	2,433,145
Electronics Research Center ^a	NA	NA	—	374,702	375,189	386,276	399,353	409,573	434,872	446,897
Flight Research Center ^b	NA	NA	2,730,170	2,776,199	2,767,353	2,758,596	2,718,910	2,719,150	2,698,057	2,698,348
Goddard Space Flight Center	NA	NA	1,790,964	1,853,783	1,904,695	1,864,394	1,896,330	1,940,062	1,993,168	1,997,380
Jet Propulsion Laboratory	NA	NA	5,232,145	5,049,372	5,172,427	5,131,877	5,133,170	5,134,774	5,121,605	5,297,528
Kennedy Space Center	NA	NA	1,933,184	1,938,041	1,997,466	2,042,659	2,057,768	2,057,768	2,105,510	2,153,591
Langley Research Center	NA	NA	3,264,126	3,247,008	3,166,684	3,172,115	3,169,856	3,161,247	3,162,721	3,123,410
Lewis Research Center	NA	NA	4,585,189	4,738,065	4,739,099	4,753,454	4,793,419	4,795,311	4,832,326	4,826,481
Manned Spacecraft Center ^c	NA	NA	9,073,961	9,046,354	8,952,586	7,714,176	7,712,053	7,608,269	7,534,902	7,529,877
Marshall Space Flight Center	—	—	—	—	—	—	—	—	—	—
National Space Technology Laboratories ^d	—	—	—	—	—	975,274	988,990	1,034,864	1,054,469	1,064,511
Space Nuclear Propulsion Office ^e	NA	NA	189,220	189,220	—	—	—	—	—	—
Wallops Station ^f	NA	NA	1,040,160	1,045,007	1,045,990	1,051,496	1,049,094	1,043,396	1,039,391	1,053,264
TOTAL	NA	NA	32,100,557	32,164,639	32,081,510	31,965,114	32,028,298	32,241,069	32,327,081	32,624,432

^aDisestablished in 1970.

^bRenamed Dryden Flight Research Center in 1976.

^cRenamed Johnson Space Center in 1973.

^dEstablished as an independent NASA field installation in 1974.

^eRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^fRenamed Wallops Flight Center in 1974.

NA = Not available.

Source: Facilities Engineering Division, Office of Facilities.

Table 2-9. Contractor-Held Buildings by Installation and Fiscal Year: Number of Buildings
(at end of fiscal year)

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	NA	NA	15	13	13	0	0	0	0	0
Flight Research Center ^a	NA	NA	0	0	2	0	0	0	0	0
Goddard Space Flight Center	NA	NA	3	3	3	1	1	1	1	1
Jet Propulsion Laboratory	NA	NA	386	351	353	339	342	317	322	320
Langley Research Center	NA	NA	1	1	1	1	1	1	1	1
Lewis Research Center	NA	NA	15	17	0	0	0	0	0	0
Manned Spacecraft Center ^b	NA	NA	74	75	71	71	69	64	60	61
Marshall Space Flight Center	NA	NA	84	178	166	80	84	77	65	66
National Space Technology Laboratories ^c	—	—	—	—	—	95	0	0	0	0
TOTAL	NA	NA	578	638	609	587	497	460	449	449

^aRenamed Dryden Flight Research Center in 1976.

^bRenamed Johnson Space Center in 1973.

^cEstablished as an independent NASA field installation in 1974.

NA = Not available.

Source: Facilities Engineering Division, Office of Facilities.

**Table 2-10. Contractor-Held Buildings by Installation and Fiscal Year: Number of Square Feet
(at end of fiscal year)**

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	NA	NA	11,016	6,666	6,666	0	0	0	0	0
Flight Research Center ^a	NA	NA	0	0	1,100	0	0	0	0	0
Goddard Space Flight Center	NA	NA	2,352	2,352	2,352	80	80	80	80	80
Jet Propulsion Laboratory	NA	NA	1,790,964	1,853,783	1,904,695	1,864,394	1,896,330	1,940,062	1,993,168	1,997,380
Langley Research Center	NA	NA	65,990	65,990	65,990	65,990	65,990	65,990	65,990	65,990
Lewis Research Center	NA	NA	87,236	68,106	0	0	0	0	0	0
Manned Spacecraft Center ^b	NA	NA	1,717,163	1,717,563	1,715,193	1,720,996	1,716,577	1,711,377	1,733,668	1,734,673
Marshall Space Flight Center	NA	NA	4,292,499	5,266,919	5,169,378	3,972,054	3,969,272	3,896,729	3,845,115	3,845,892
National Space Technology Laboratories ^c	—	—	—	—	—	975,274	0	0	0	0
TOTAL	NA	NA	7,967,220	8,981,379	8,865,374	8,598,788	7,648,249	7,614,238	7,638,021	7,644,015

^aRenamed Dryden Flight Research Center in 1976.

^bRenamed Johnson Space Center in 1973.

^cEstablished as an independent NASA field installation in 1974.

NA = Not available.

Source: Facilities Engineering Division, Office of Facilities.

Table 2-11. Total Real Property Value by Installation and Fiscal Year: In-House and Contractor-Held^a
(at end of fiscal year; in thousands of dollars)

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	172,505	176,577	182,067	182,523	187,718	190,684	205,635	209,058	215,848	220,141
Electronics Research Center ^b	1,388	21,757	—	—	—	—	—	—	—	—
Flight Research Center ^c	9,793	9,948	10,407	11,108	11,560	12,008	12,890	13,687	15,534	15,859
Goddard Space Flight Center	141,128	151,721	151,898	157,422	155,759	156,335	152,161	157,675	156,221	160,630
Jet Propulsion Laboratory	82,205	83,332	89,077	94,297	127,432	125,988	139,820	147,283	155,803	156,628
Kennedy Space Center	776,309	773,603	783,358	708,473	680,363	674,361	679,999	704,266	681,406	718,151
Langley Research Center	255,962	265,962	272,475	274,147	274,250	281,581	288,326	288,423	304,947	334,451
Lewis Research Center	251,958	256,863	263,641	265,049	274,710	279,102	284,624	291,813	294,386	296,199
Manned Spacecraft Center ^d	225,586	234,974	235,240	239,899	241,104	246,895	256,105	259,584	264,066	265,115
Marshall Space Flight Center	576,751	585,101	616,392	616,336	564,496	304,715	314,282	317,223	301,518	311,946
National Space Technology Laboratories ^e	—	—	—	—	—	245,011	279,120	270,222	275,735	276,342
Space Nuclear Propulsion Office ^f	25,874	25,928	25,930	25,918	—	—	—	—	—	—
Wallops Station ^g	66,852	66,505	67,319	68,474	70,527	72,362	74,189	75,927	77,759	79,347
TOTAL	2,586,311	2,652,271	2,697,804	2,643,646	2,587,919	2,589,042	2,687,151	2,735,161	2,743,223	2,834,809

^aReal property total = land value + buildings value + other structures and facilities value.

^bDisestablished in 1970.

^cRenamed Dryden Flight Research Center in 1976.

^dRenamed Johnson Space Center in 1973.

^eEstablished as an independent NASA field installation in 1974.

^fRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^gRenamed Wallops Flight Center in 1974.

Source: Facilities Engineering Division, Office of Facilities.

Table 2-12. Land Value by Installation and Fiscal Year: In-House and Contractor-Held
(at end of fiscal year; in thousands of dollars)

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	2,372	2,374	2,372	2,373	2,373	2,928	2,928	2,928	2,928	2,928
Electronics Research Center ^a	1,384	1,573	—	—	—	—	—	—	—	—
Flight Research Center ^b	0	0	0	0	0	0	0	0	0	0
Goddard Space Flight Center	1,544	1,640	1,647	1,647	1,661	1,661	1,661	1,661	1,675	1,675
Jet Propulsion Laboratory	1,067	1,067	1,067	1,067	1,067	1,067	1,067	1,067	1,067	1,188
Kennedy Space Center	71,018	72,173	72,173	72,171	72,171	72,172	71,345	71,345	71,345	71,345
Langley Research Center	116	116	116	116	116	116	116	162	162	162
Lewis Research Center	1,696	3,391	3,739	3,692	3,624	3,657	3,661	3,662	3,662	3,651
Manned Spacecraft Center ^c	9,029	9,029	9,029	9,029	9,029	9,029	9,036	9,047	9,107	9,107
Marshall Space Flight Center	30,822	30,810	26,270	26,271	26,271	7,568	7,568	7,587	7,587	7,137
National Space Technology Laboratories ^d	—	—	—	—	—	18,703	18,703	18,074	18,074	18,061
Space Nuclear Propulsion Office ^e	0	0	0	0	—	—	—	—	—	—
Wallops Station ^f	986	1,072	1,083	1,083	1,176	1,179	1,161	1,277	1,277	1,283
TOTAL	120,034	123,245	117,496	117,449	117,488	118,080	117,246	116,810	116,884	116,537

^aDisestablished in 1970.

^bRenamed Dryden Flight Research Center in 1976.

^cRenamed Johnson Space Center in 1973.

^dEstablished as an independent NASA field installation in 1974.

^eRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^fRenamed Wallops Flight Center in 1974.

Source: Facilities Engineering Division, Office of Facilities.

Table 2-13. Buildings Value by Installation and Fiscal Year: In-House and Contractor-Held
(at end of fiscal year; in thousands of dollars)

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	167,146	170,901	175,801	176,188	180,858	183,260	196,541	198,848	204,998	208,900
Electronics Research Center ^a	0	18,468	—	—	—	—	—	—	—	—
Flight Research Center ^b	7,658	7,726	8,147	8,479	8,989	9,175	9,853	10,401	11,972	12,094
Goddard Space Flight Center	86,019	87,283	88,224	91,628	91,769	92,607	91,830	97,108	98,377	101,115
Jet Propulsion Laboratory	53,172	53,864	55,821	59,887	63,133	62,966	71,754	79,370	85,498	86,131
Kennedy Space Center	281,739	285,847	290,392	286,274	291,191	291,853	297,723	297,983	299,588	332,226
Langley Research Center	121,397	121,891	126,472	125,024	123,301	127,837	132,810	132,810	139,340	144,442
Lewis Research Center	189,287	191,979	197,673	198,193	200,097	202,332	206,375	213,168	214,690	215,729
Manned Spacecraft Center ^c	164,949	172,787	173,677	178,011	179,061	183,042	189,215	191,551	194,275	194,928
Marshall Space Flight Center	269,190	272,439	287,688	289,415	266,767	193,595	197,558	198,136	196,797	199,266
National Space Technology Laboratories ^d	—	—	—	—	—	60,848	69,902	64,865	64,374	64,204
Space Nuclear Propulsion Office ^e	18,957	19,000	19,000	18,988	—	—	—	—	—	—
Wallops Station ^f	23,967	22,225	21,800	22,328	23,125	23,817	24,029	23,577	24,042	25,769
TOTAL	1,383,481	1,424,410	1,444,695	1,454,415	1,428,291	1,431,332	1,487,590	1,507,817	1,533,951	1,584,804

^aDisestablished in 1970.

^bRenamed Dryden Flight Research Center in 1976.

^cRenamed Johnson Space Center in 1973.

^dEstablished as an independent NASA field installation in 1974.

^eRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^fRenamed Wallops Flight Center in 1974.

Source: Facilities Engineering Division, Office of Facilities.

Table 2-14. 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	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	2,987	3,302	3,894	3,962	4,487	4,496	6,166	7,282	7,922	8,313
Electronics Research Center ^a	4	1,716	—	—	—	—	—	—	—	—
Flight Research Center ^b	2,135	2,222	2,260	2,629	2,571	2,833	3,037	3,286	3,562	3,765
Goddard Space Flight Center	53,565	62,798	62,027	64,147	62,329	62,067	58,670	58,906	56,169	57,840
Jet Propulsion Laboratory	27,966	28,401	32,189	33,343	63,232	61,955	66,999	66,846	69,238	69,309
Kennedy Space Center	423,552	415,583	420,793	350,028	317,001	310,336	310,931	334,938	310,473	314,580
Langley Research Center	134,449	143,955	145,887	149,007	150,833	153,628	155,400	155,451	165,445	189,847
Lewis Research Center	60,975	61,493	62,229	63,164	70,989	73,113	74,588	74,983	76,034	76,819
Manned Spacecraft Center ^c	51,608	53,158	52,534	52,859	53,014	54,824	57,854	58,986	60,684	61,080
Marshall Space Flight Center	276,739	281,852	302,434	300,650	271,458	103,552	109,156	111,500	97,134	105,543
National Space Technology Laboratories ^d	—	—	—	—	—	165,460	190,515	187,283	193,287	194,077
Space Nuclear Propulsion Office ^e	6,917	6,928	6,930	6,930	—	—	—	—	—	—
Wallops Station ^f	41,899	43,208	44,436	45,063	46,226	47,366	48,999	51,073	52,440	52,295
TOTAL	1,082,796	1,104,616	1,135,613	1,071,782	1,042,140	1,039,630	1,082,315	1,110,534	1,092,388	1,133,468

^aDisestablished in 1970.

^bRenamed Dryden Flight Research Center in 1976.

^cRenamed Johnson Space Center in 1973.

^dEstablished as an independent NASA field installation in 1974.

^eRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^fRenamed Wallops Flight Center in 1974.

Source: Facilities Engineering Division, Office of Facilities.

**Table 2-15. Capitalized Equipment Value by Installation and Fiscal Year: In-House and Contractor-Held
(at end of fiscal year; in thousands of dollars)**

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	60,811	73,617	82,684	87,432	100,011	110,274	114,810	115,308	NA	136,331
Electronics Research Center ^a	20,613	28,255	—	—	—	—	—	—	—	—
Flight Research Center ^b	36,744	52,914	56,198	47,477	52,882	61,307	63,823	61,437	NA	62,310
Goddard Space Flight Center	421,902	474,147	507,499	521,949	534,371	555,188	549,170	484,554	NA	521,134
Jet Propulsion Laboratory	110,806	131,587	173,299	192,777	204,856	221,808	218,625	217,765	NA	231,701
Kennedy Space Center	169,769	222,097	464,972	588,968	562,581	616,791	589,556	773,035	NA	494,442
Langley Research Center	114,575	122,671	140,009	138,525	145,256	166,062	169,343	145,903	NA	163,301
Lewis Research Center	99,970	122,032	122,657	139,478	139,525	142,504	123,300	118,544	NA	120,441
Manned Spacecraft Center ^c	230,086	500,607	572,736	622,132	605,637	639,702	612,243	409,576	NA	421,746
Marshall Space Flight Center	347,703	468,775	505,252	532,570	554,524	485,165	476,560	427,131	NA	686,106
National Space Technology Laboratories ^d	—	—	—	—	—	68,236	40,901	47,304	NA	30,919
Space Nuclear Propulsion Office ^e	24,133	27,217	27,594	27,985	—	—	—	—	—	—
Wallops Station ^f	38,860	42,516	47,759	48,762	47,842	50,275	50,045	55,915	NA	52,826
NASA Headquarters	14,878	32,077	21,171	21,406	38,186	34,656	32,155	11,592	NA	11,764
TOTAL	1,690,850	2,298,512	2,721,830	2,969,461	2,985,671	3,151,968	3,040,531	2,868,064	NA	2,933,021

^aDisestablished in 1970.

^bRenamed Dryden Flight Research Center in 1976.

^cRenamed Johnson Space Center in 1973.

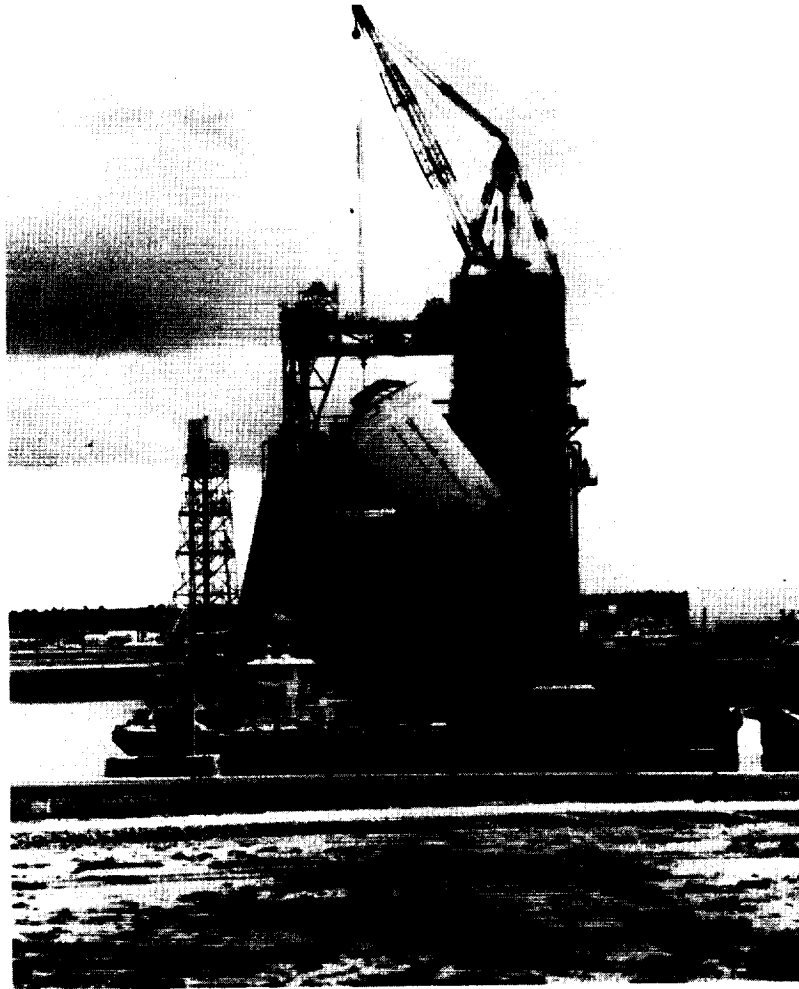
^dEstablished as an independent NASA field installation in 1974.

^eRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^fRenamed Wallops Flight Center in 1974.

NA = Not available.

Source: Facilities Engineering Division, Office of Facilities.



A flight model of the second stage of the Saturn V is being hoisted into its test stand at the Mississippi Test Facility, a component installation of Marshall Space Flight Center.

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Table 2-16. 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	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	1.4	1.3	1.3	1.3	1.3	1.5	1.4	1.4	1.4	1.3
Electronics Research Center ^a	99.7	7.2	—	—	—	—	—	—	—	—
Flight Research Center ^b	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Goddard Space Flight Center	1.1	1.1	1.1	1.0	1.1	1.1	1.1	1.1	1.1	1.0
Jet Propulsion Laboratory	1.3	1.3	1.2	1.1	0.8	0.8	0.8	0.7	0.7	0.8
Kennedy Space Center	9.1	9.3	9.2	10.2	10.6	10.7	10.5	10.1	10.5	9.9
Langley Research Center	*	*	*	*	*	*	*	0.1	0.1	*
Lewis Research Center	0.7	1.3	1.4	1.4	1.3	1.3	1.3	1.3	1.2	1.2
Manned Spacecraft Center ^c	4.0	3.8	3.8	3.8	3.7	3.7	3.5	3.5	3.4	3.4
Marshall Space Flight Center	5.4	5.3	4.2	4.3	4.7	2.5	2.4	2.4	2.5	2.3
National Space Technology Laboratories ^d	—	—	—	—	—	7.6	6.7	6.7	6.6	6.5
Space Nuclear Propulsion Office ^e	0.0	0.0	0.0	0.0	—	—	—	—	—	—
Wallops Station ^f	1.5	1.6	1.6	1.6	1.7	1.6	1.6	1.7	1.6	1.6

* = Less than 0.05%.

^aDisestablished in 1970.

^bRenamed Dryden Flight Research Center in 1976.

^cRenamed Johnson Space Center in 1973.

^dEstablished as an independent NASA field installation in 1974.

^eRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^fRenamed Wallops Flight Center in 1974.

Source: Tables 2-11 and 2-12.

Table 2-17. Buildings 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	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	96.9	96.8	96.6	96.5	96.4	96.1	95.6	95.1	95.0	94.9
Electronics Research Center ^a	0.0	84.9	—	—	—	—	—	—	—	—
Flight Research Center ^b	78.2	77.7	78.3	76.3	77.8	76.4	76.4	76.0	77.1	76.3
Goddard Space Flight Center	60.9	57.5	58.1	58.2	58.9	59.2	60.4	61.6	63.0	62.9
Jet Propulsion Laboratory	64.7	64.6	62.7	63.5	49.5	50.0	51.3	53.9	54.9	55.0
Kennedy Space Center	36.3	37.0	37.1	40.4	42.8	43.3	43.8	42.3	44.0	46.3
Langley Research Center	47.4	45.8	46.4	45.6	45.0	45.4	46.1	46.1	45.7	43.2
Lewis Research Center	75.1	74.7	75.0	74.8	72.8	72.5	72.5	73.0	72.9	72.8
Manned Spacecraft Center ^c	73.0	73.5	73.8	74.2	74.3	74.1	73.9	73.8	73.6	73.5
Marshall Space Flight Center	46.7	46.6	46.7	47.0	47.3	63.5	62.9	62.5	65.3	63.9
National Space Technology Laboratories ^d	—	—	—	—	—	24.8	25.0	24.0	23.3	23.2
Space Nuclear Propulsion Office ^e	73.3	73.3	73.3	73.3	—	—	—	—	—	—
Wallops Station ^f	35.8	33.4	32.4	32.6	33.8	32.9	32.4	31.0	30.9	32.5

^aDisestablished in 1970.

^bRenamed Dryden Flight Research Center in 1976.

^cRenamed Johnson Space Center in 1973.

^dEstablished as an independent NASA field installation in 1974.

^eRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^fRenamed Wallops Flight Center in 1974.

Source: Tables 2-11 and 2-13.

**Table 2-18. 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	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	1.7	1.9	2.1	2.2	2.4	2.4	3.0	3.5	3.8	3.8
Electronics Research Center ^a	0.3	7.9	—	—	—	—	—	—	—	—
Flight Research Center ^b	21.8	22.3	21.7	23.7	22.2	23.6	23.6	24.0	22.9	23.7
Goddard Space Flight Center	37.9	41.4	40.8	40.7	40.0	39.7	38.6	37.4	36.0	36.0
Jet Propulsion Laboratory	34.0	34.1	36.1	35.4	49.6	49.2	47.9	45.4	44.4	44.3
Kennedy Space Center	54.6	53.7	53.7	49.4	46.6	46.0	45.7	47.6	45.6	43.8
Langley Research Center	52.5	54.1	53.5	54.4	55.0	54.6	53.9	53.9	54.3	56.8
Lewis Research Center	24.2	23.9	23.6	23.8	25.8	26.2	26.2	25.7	25.8	25.9
Manned Spacecraft Center ^c	22.9	17.1	22.3	22.0	22.0	22.2	22.6	22.7	23.0	23.0
Marshall Space Flight Center	48.0	48.2	49.1	48.8	48.1	34.0	34.7	35.1	32.2	33.8
National Space Technology Laboratories ^d	—	—	—	—	—	67.5	68.3	69.3	70.1	70.2
Space Nuclear Propulsion Office ^e	26.7	26.7	26.7	26.7	—	—	—	—	—	—
Wallops Station ^f	62.7	65.0	66.0	65.8	65.5	65.5	66.0	67.3	67.4	65.9

^aDisestablished in 1970.

^bRenamed Dryden Flight Research Center in 1976.

^cRenamed Johnson Space Center in 1973.

^dEstablished as an independent NASA field installation in 1974.

^eRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^fRenamed Wallops Flight Center in 1974.

Source: Tables 2-11 and 2-14.

Table 2-19. Real Property Value of Installations Ranked as a Percentage of NASA Total Real Property Values: In-House and Contractor-Held^a
(at end of fiscal year, selected years)

Ranking		1969		1970		1974		1978
1	KSC	30.0	KSC	29.2	KSC	26.0	KSC	25.3
2	MSFC	22.3	MSFC	22.1	MSFC	11.8	LaRC	11.8
3	LaRC	9.9	LaRC	10.0	LaRC	10.9	MSFC	11.0
4	LeRC	9.7	LeRC	9.7	LeRC	10.8	LeRC	10.4
5	MSC ^b	8.7	MSC	8.9	JSC	9.5	NSTL ^c	9.7
6	ARC	6.7	ARC	6.7	NSTL	9.5	JSC	9.4
7	GSFC	5.5	GSFC	5.7	ARC	7.4	ARC	7.8
8	JPL	3.2	JPL	3.1	GSFC	6.0	GSFC	5.7
9	WS ^d	2.6	WS	2.5	JPL	4.9	JPL	5.5
10	SNPO ^e	1.0	SNPO	1.0	WFC	2.8	WFC	2.8
11	FRC	0.4	ERC ^f	0.8	FRC	0.5	DFRC	0.6
12	ERC	*	FRC	0.4				
TOTAL		100.0		100.0		100.0		100.0

* = Less than 0.05%.

^aBecause of rounding, columns may not add up to 100.0%.

^bRenamed Johnson Space Center (JSC) in 1973.

^cEstablished as an independent NASA field installation in 1974.

^dRenamed Wallops Flight Center (WFC) in 1974.

^eRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^fDisestablished in 1970.

Source: Table 2-11.

Table 2-20. Capitalized Equipment Value of Installations Ranked as a Percentage of NASA Total Capitalized Equipment Value^a
(at end of fiscal year, selected years)

Ranking		1969		1970		1974		1978
1	GSFC	24.9	MSC ^b	21.8	MSC	20.3	MSFC	23.4
2	MSFC	20.6	GSFC	20.6	KSC	19.6	GSFC	17.8
3	MSC	13.6	MSFC	20.4	GSFC	17.6	KSC	16.9
4	KSC	10.0	KSC	9.7	MSFC	15.4	JSC	14.4
5	LaRC	6.8	JPL	5.7	JPL	7.0	JPL	7.9
6	JPL	6.5	LaRC	5.3	LaRC	5.3	LaRC	5.6
7	LeRC	5.9	LeRC	5.3	LeRC	4.5	ARC	4.7
8	ARC	3.6	ARC	3.2	ARC	3.5	LeRC	4.1
9	WS ^c	2.3	FRC ^d	2.3	NSTL ^e	2.2	DFRC	2.1
10	FRC	2.2	WS	1.9	FRC	1.9	WFC	1.8
11	SNPO ^f	1.4	HQ	1.4	WFC	1.6	NSTL	1.1
12	ERC ^g	1.2	SNPO	1.2	HQ	1.1	HQ	0.4
13	HQ	0.9	ERC	1.2				
TOTAL		100.0		100.0		100.0		100.0

^aBecause of rounding, columns may not add up to 100.0%.

^bRenamed Johnson Space Center (JSC) in 1973.

^cRenamed Wallops Flight Center (WFC) in 1974.

^dRenamed Dryden Flight Research Center (DRFC) in 1976.

^eEstablished as an independent NASA field installation in 1974.

^fRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^gDisestablished in 1970.

Source: Table 2-15.

Table 2-21. Contractor-Held Real Property Value by Installation and Fiscal Year
(at end of fiscal year; in thousands of dollars)

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	47	NA	158	125	125	0	0	0	0	0
Flight Research Center ^a	0	NA	0	104	8	0	0	0	0	0
Goddard Space Flight Center	133	NA	133	133	133	46	46	46	46	46
Jet Propulsion Laboratory	82,205	83,332	89,077	94,297	127,432	125,988	139,820	147,283	155,803	156,628
Langley Research Center	15,248	NA	15,509	15,435	15,435	15,435	15,435	15,486	15,486	14,482
Lewis Research Center	8,346	NA	7,914	6,779	0	0	0	0	0	0
Manned Spacecraft Center ^b	33,127	NA	33,319	33,633	33,606	33,627	33,573	34,581	34,778	34,728
Marshall Space Flight Center	170,371	NA	167,799	451,640	397,171	137,017	140,972	140,431	122,664	125,284
National Space Technology Laboratories ^c	—	—	—	—	—	245,011	0	0	0	0
Wallops Station ^d	2,814	NA	0	0	0	0	0	0	0	0
TOTAL	312,291	NA	313,909	602,146	573,910	557,124	329,846	337,827	328,777	331,168

^aRenamed Dryden Flight Research Center in 1976.

^bRenamed Johnson Space Center in 1973.

^cEstablished as an independent NASA field installation in 1974.

^dRenamed Wallops Flight Center in 1974.

NA = Not available.

Source: Facilities Engineering Division, Office of Facilities.

Table 2-22. Contractor-Held Real Property Value as a Percentage of Total NASA Real Property Value by Installation and Fiscal Year (at end of fiscal year)

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	*	NA	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Flight Research Center ^a	0.0	NA	0.0	0.9	0.1	0.0	0.0	0.0	0.0	0.0
Goddard Space Flight Center	0.1	NA	0.1	0.1	0.1	*	*	*	*	*
Jet Propulsion Laboratory	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Langley Research Center	6.0	NA	5.7	5.6	5.6	5.5	5.4	5.4	5.1	4.3
Lewis Research Center	3.3	NA	3.0	2.6	0.0	0.0	0.0	0.0	0.0	0.0
Manned Spacecraft Center ^b	14.7	NA	14.2	14.0	13.9	13.6	13.1	13.3	13.2	13.1
Marshall Space Flight Center	29.5	NA	27.2	73.3	70.4	45.0	44.9	44.3	40.7	40.2
National Space Technology Laboratories ^c	—	—	—	—	—	100.0	0.0	0.0	0.0	0.0
Wallops Station ^d	4.2	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

* = Less than 0.05%.

^aRenamed Dryden Flight Research Center in 1976.

^bRenamed Johnson Space Center in 1973.

^cEstablished as an independent NASA field installation in 1974.

^dRenamed Wallops Flight Center in 1974.

NA = Not available.

Source: Tables 1 and 2-21.

Table 2-23. Contractor-Held Land Value by Installation and Fiscal Year
(at end of fiscal year; in thousands of dollars)

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Jet Propulsion Laboratory	1,067	1,067	1,067	1,067	1,067	1,067	1,067	1,067	1,067	1,188
Langley Research Center	6	NA	6	6	6	6	6	6	6	6
Lewis Research Center	99	NA	99	79	0	0	0	0	0	0
Manned Spacecraft Center ^a	3,570	NA	3,570	3,570	3,570	3,570	3,570	3,570	3,570	3,570
Marshall Space Flight Center	11,058	NA	7,567	26,271	26,271	7,568	7,568	7,587	7,587	7,137
National Space Technology Laboratories ^b	—	—	—	—	—	18,703	0	0	0	0
TOTAL	15,800	NA	12,309	30,993	30,914	30,914	12,211	12,230	12,230	11,901

^aRenamed Johnson Space Center in 1973.

^bEstablished as an independent NASA field installation in 1974.

NA = Not available.

Source: Facilities Engineering Division, Office of Facilities.

**Table 2-24. Contractor-Held Land Value as a Percentage of Total NASA Land Value by Installation and Fiscal Year
(at end of fiscal year)**

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Jet Propulsion Laboratory	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Langley Research Center	5.2	NA	5.2	5.2	5.2	5.2	5.2	3.7	3.7	3.7
Lewis Research Center	5.8	NA	2.6	2.1	0.0	0.0	0.0	0.0	0.0	0.0
Manned Spacecraft Center ^a	39.5	NA	39.5	39.5	39.5	39.5	39.5	39.5	39.2	39.2
Marshall Space Flight Center	35.8	NA	28.8	100.0	100.0	100.0	100.0	100.0	100.0	100.0
National Space Technology Laboratories ^b	—	—	—	—	—	100.0	0.0	0.0	0.0	0.0

^aRenamed Johnson Space Center in 1973.

^bEstablished as an independent NASA field installation in 1974.

NA = Not available.

Source: Tables 2-12 and 2-23.

Table 2-25. Contractor-Held Buildings Value by Installation and Fiscal Year
(at end of fiscal year; in thousands of dollars)

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	47	NA	158	125	125	0	0	0	0	0
Flight Research Center ^a	0	NA	0	0	8	0	0	0	0	0
Goddard Space Flight Center	88	NA	88	88	88	1	1	1	1	1
Jet Propulsion Laboratory	53,172	53,864	55,821	59,887	63,133	62,966	71,754	79,370	85,498	86,131
Langley Research Center	15,217	NA	15,478	15,404	15,404	15,404	15,404	15,404	15,404	14,400
Lewis Research Center	4,240	NA	4,164	3,051	0	0	0	0	0	0
Manned Spacecraft Center ^b	24,415	NA	24,770	25,022	25,016	25,063	24,978	25,981	26,172	26,082
Marshall Space Flight Center	94,712	NA	94,827	176,577	151,849	78,515	78,789	78,004	74,967	75,475
National Space Technology Laboratories ^c	—	—	—	—	—	60,848	0	0	0	0
Wallops Station ^d	2,544	NA	0	0	0	0	0	0	0	0
TOTAL	194,435	NA	195,306	280,154	255,623	242,797	190,926	198,760	202,042	202,089

^aRenamed Dryden Flight Research Center in 1976.

^bRenamed Johnson Space Center in 1973.

^cEstablished as an independent NASA field installation in 1974.

^dRenamed Wallops Flight Center in 1974.

NA = Not available.

Source: Facilities Engineering Division, Office of Facilities.

**Table 2-26. Contractor-Held Buildings Value as a Percentage of Total NASA Buildings Value by Installation and Fiscal Year
(at end of fiscal year)**

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	*	NA	0.1	0.1	0.1	0	0	0	0	0
Goddard Space Flight Center	0.1	NA	0.1	0.1	0.1	*	*	*	*	*
Jet Propulsion Laboratory	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Langley Research Center	12.5	NA	12.5	12.3	12.5	12.0	11.6	11.6	11.1	12.6
Lewis Research Center	2.2	NA	2.1	1.5	0.0	0.0	0.0	0.0	0.0	0.0
Manned Spacecraft Center ^a	14.8	NA	14.3	14.1	14.0	13.7	13.2	13.6	13.5	13.4
Marshall Space Flight Center	35.2	NA	33.0	61.0	56.9	40.6	39.9	39.4	38.1	37.9
National Space Technology Laboratories ^b	—	—	—	—	—	100.0	0.0	0.0	0.0	0.0
Wallops Station ^c	10.6	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

* = Less than 0.05%.

^aRenamed Johnson Space Center in 1973.

^bEstablished as an independent NASA field installation in 1974.

^cRenamed Wallops Flight Center in 1974.

NA = Not available.

Source: Tables 2-13 and 2-25.

Table 2-27. Contractor-Held Other Structures and Facilities Value by Installation and Fiscal Year
(at end of fiscal year; in thousands of dollars)

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Flight Research Center ^a	0	NA	0	104	0	0	0	0	0	0
Goddard Space Flight Center	45	NA	45	45	45	45	45	45	45	45
Jet Propulsion Laboratory	27,966	28,401	32,189	33,343	63,232	61,955	66,999	66,846	69,238	69,309
Langley Research Center	25	NA	25	25	25	25	25	76	76	76
Lewis Research Center	4,007	NA	3,651	3,649	0	0	0	0	0	0
Manned Spacecraft Center ^b	5,142	NA	4,979	5,041	5,020	4,994	5,025	5,030	5,036	5,076
Marshall Space Flight Center	64,601	NA	65,405	248,792	219,051	50,934	54,615	54,840	40,110	42,672
National Space Technology Laboratories ^c	—	—	—	—	—	165,460	0	0	0	0
Wallops Station ^d	270	NA	0	0	0	0	0	0	0	0
TOTAL	102,056	NA	106,294	290,999	287,373	283,413	126,709	126,837	114,505	117,178

^aRenamed Dryden Flight Research Center in 1976.

^bRenamed Johnson Space Center in 1973.

^cEstablished as an independent NASA field installation in 1974.

^dRenamed Wallops Flight Center in 1974.

NA - Not available.

Source: Facilities Engineering Division, Office of Facilities.

Table 2-28. Contractor-Held Other Structures and Facilities Value as a Percentage of Total NASA Other Structures and Facilities Value by Installation and Fiscal Year (at end of fiscal year)

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Flight Research Center ^a	0.0	NA	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0
Goddard Space Flight Center	0.1	NA	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Jet Propulsion Laboratory	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Langley Research Center	*	NA	*	*	*	*	*	*	*	*
Lewis Research Center	6.6	NA	5.9	5.8	0.0	0.0	0.0	0.0	0.0	0.0
Manned Spacecraft Center ^b	10.0	NA	9.5	9.5	9.5	9.1	8.7	8.5	8.3	8.3
Marshall Space Flight Center	23.3	NA	21.6	82.8	80.7	49.2	50.0	49.2	41.3	40.4
National Space Technology Laboratories ^c	—	—	—	—	—	100.0	0.0	0.0	0.0	0.0
Wallops Station ^d	0.6	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

* = Less than 0.05%.

^aRenamed Dryden Flight Research Center in 1976.

^bRenamed Johnson Space Center in 1973.

^cEstablished as an independent NASA field installation in 1974.

^dRenamed Wallops Flight Center in 1974.

NA = Not available

Source: Tables 2-14 and 2-27.

Table 2-29. NASA Leased Facilities^a
(at end of fiscal year)

Fiscal Year	Rental Cost	Acres of Land	Building Space (in square feet)
1969	NA	NA	NA
1970	NA	NA	NA
1971	321,414	2,873.5	114,250
1972	377,839	2,873.5	114,611
1973	2,191,686	1,344.6	510,832
1974	1,130,507	1,106.5	486,379
1975	2,002,763	600.6	631,386
1976	2,376,371	360.9	638,454
1977	2,214,015	367.6	500,039
1978	2,176,644	357.5	444,497

^aExcludes NASA Headquarters leased land and/or workspace.

NA = Not available.

Source: Facilities Engineering Division, Office of Facilities.

Table 2-30. NASA Tracking and Data Acquisition Stations^a
(at end of fiscal year)

Fiscal Year	Buildings	Acres of Land	Value of Facilities
1969	NA	NA	NA
1970	NA	NA	NA
1971	324	8,659.5	103,653,000
1972	351	8,659.5	105,850,000
1973	348	8,659.5	133,675,000
1974	323	8,659.5	130,473,000
1975	331	8,659.5	130,234,000
1976	302	8,659.5	129,619,000
1977	297	8,659.5	128,204,000
1978	293	8,659.5	130,056,000

^aIncludes the acquisition and improvement costs of other structures and facilities such as power distribution systems, utility systems, communication systems, roads, etc.

NA = Not available.

Source: Facilities Engineering Division, Office of Facilities.



CHAPTER THREE

NASA PERSONNEL

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CHAPTER THREE

NASA PERSONNEL

When NASA was created on October 1, 1958, its work force consisted of 8,000 in-house employees. In the ensuing years, NASA experienced a period of rapid growth in its in-house employees, reaching a peak of over 36,000 persons in 1967. The trend was reversed during the second decade of NASA's existence, when the number of NASA in-house employees steadily declined from 33,929 in 1969 to 23,779 in 1978, a decrease of almost 30 percent. At the same time, there was a significant change in the composition of NASA employees. In 1969 scientists and engineers made up slightly less than 42 percent of NASA's in-house work force, but by 1978 they constituted almost 50 percent of NASA's in-house employees. During the same period, there was also a slow but steady increase in the percentage of professional administrative employees at NASA. The percentage of NASA employees engaged in trades and labor, however, declined from 13 percent in 1969 to just over 6 percent in 1978, and there was a slight decline in the percentage of clerical and technical support employees. The changing character of NASA's work force during the second decade of its existence can be further demonstrated by the fact that an increasingly large share of its employees possessed professional degrees. Whereas only slightly less than half of NASA's permanent employees had professional degrees in 1969, almost 59 percent of NASA's permanent employees possessed them in 1978.

Because of an improved reporting system in the 1970s (particularly since 1972), this volume takes a closer look than the previous volume at the position of minorities and women within NASA's in-house work force. Between 1972 and 1978, the total number of minority employees increased from 1,290 (4.7 percent of NASA's total permanent in-house work force) to 2,061 (8.9 percent of the total). This growth in minority employment at NASA was spread uniformly over every minority category—Black, Hispanic, Asian, and American Indian. The most significant growth occurred among employees in the professional administrative branch of NASA, where the minority share rose from 3.0 percent in 1972 to 9.8 percent in 1978. Also, the percentage of minorities among technical support personnel and clerical personnel doubled, and it increased from 3.4 percent to 5.7 percent among scientists and engineers. In each of these categories, there

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was also a marked numerical increase in minority employees, although the overall permanent NASA work force shrank considerably between 1972 and 1978. Between 1972 and 1978, however, there was a slight decline in the average GS grade level of minority employees in each of the employment categories.

During the same period, the number of women in NASA's permanent in-house work force remained nearly constant, declining slightly from 4,449 in 1972 to 4,400 in 1978. Overall, women made up 16.2 percent of NASA's total permanent work force in 1972 and 19.0 percent in 1978. Only in the professional administrative positions did women make significant progress; the number of women in these positions rose from 535 (14.1 percent of the NASA total) in 1972 to 809 (23.3 percent of the NASA total) in 1978. The overwhelming majority of women, however, were employed as clerical personnel, constituting 88.3 percent of all NASA clerical employees in 1972 and 92.1 percent in 1978.

A more detailed analysis of NASA's work force can be made from the tables that follow. Tables 3-1 through 3-5, as well as Figure 3-1, give an overall view of the agency's in-house personnel. Tables 3-6 through 3-27 present an analysis of personnel data by installation. Tables 3-28 through 3-33 deal with minority employees, and Tables 3-34 through 3-38 provide a similar analysis of the agency's female employees. The last table, Table 3-39, gives the age profile of NASA's permanent in-house employees. (Jet Propulsion Laboratory employees are not listed because they are employed by the California Institute of Technology, under contract to NASA.)

Definition of Terms

Many of the terms used in the tables of this chapter are defined in NASA Management Instruction 3291, Subject: Personnel Definitions and Reporting Requirements. All of the quotations that follow are from this NASA Management Instruction.

Excepted Employees. Civil servants who fill high-level permanent positions created under the provisions of Section 203(b) of the Space Act of 1958. (P.L. 313 and Executive Pay Act employees are included under this heading for the purposes of this chapter.)

Grade. A civil service categorization scheme to differentiate levels of pay, duties, responsibilities, and so forth. Excepted positions are paid in the range from GS-16 to GS-18 and above. Wage System pay is locally rather than nationally set.

Military Detailees. Military personnel detailed to NASA. See Paid Employees.

Occupational Code Groups. The definitions that follow are taken from NASA Management Instruction 3291.

100—Trades and Labor Positions: "Includes trade, craft and general laboring positions (non-supervisory, leader and supervisory), compensated on the basis of prevailing locality wage rates."

200—Support Engineering and Related Positions: “Includes professional physical science, engineering, and mathematician positions in work situations not identified with aerospace technology.”

300—Technical Support Positions: “Includes scientific and engineering aid, technician, drafting, photography, illustrating, salaried shop superintendents, quality assurance specialists, production planning and inspecting positions.”

500—Clerical and Non-Professional Administrative Positions: “Includes secretarial, specialized and general clerical, and administrative specialist positions, the qualification requirements for which are clerical training and experience or specialized non-professional experience in supply, fiscal, procurement and similar or related activities.”

600—Professional Administrative Positions: “Includes professional management positions in research and development administration in such activities as financial management, contracting, personnel, security, administration, law, public affairs and the like for which a college degree or the equivalent, and specialized training and experience are required.”

700—Scientific and Engineering Positions: “Includes professional scientific and engineering positions requiring Aero-Space Technology (AST) qualifications. Includes professional positions engaged in aerospace research, development, operations, and related work including the development and operation of specialized facilities and supporting equipment.”

900—Life Science Positions: “Includes life science professional positions not requiring AST qualifications. Includes medical officers and other positions performing professional work in psychology, the biological sciences and professions which support the science of medicine such as nursing and medical technology.”

Paid Employees. Permanent employees and temporary employees combined. Specifically excluded from this category are military personnel detailed to NASA regardless of any reimbursement.

Permanent Employees. Defined as “all employees whose appointments are not time limited or . . . are for a period of more than one year.”

Temporary Employees. These are called “Other Than Permanent” in the currently used Personnel Management Information System (PMIS) and include “employees whose appointments are specifically limited to definite periods of one year or less” and others who are included in this category by definition (such as CO-OP [cooperative; alternating work and study] students and intermittent employees).

Table 3-1. Civilian and Military In-house Personnel
(at end of fiscal year)

Personnel	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Paid employees	31,733	31,223	29,478	27,428	25,955	24,854	24,333	24,039	23,569	23,169
Permanent employees	2,196	1,325	1,028	954	822	1,153	1,305	1,387	619	610
Temporary employees	33,929	32,548	30,506	28,382	26,777	26,007	25,638	25,426	24,188	23,779
Total paid employees	268	231	172	119	78	61	45	56	53	71
Military detailees	34,197	32,779	30,678	28,501	26,855	26,068	25,683	25,482	24,241	23,850
TOTAL	-726	-522	-1,745	-2,050	-1,473	-1,101	-521	-294	-470	-332
Net change, permanent only	-2.2%	-1.6%	-5.6%	-7.0%	-5.4%	-4.2%	-2.1%	-1.2%	-2.0%	-1.4%
Percentage change, permanent only										

Source: NASA Historical Pocket Statistics.

Table 3-2. Accessions and Separations of Permanent Employees

Activity and Category of Employee	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Accessions	1,278	1,070	590	264	1,051	1,246	1,087	1,038	936	1,098
Separations	2,015	1,672	2,655	2,344	2,513	2,358	1,604	1,318	1,358	1,508
Net accessions	-737	-602	-2,065	-2,080	-1,462	-1,112	-517	-280	-422	-410
Percentage change ^a	-2.3%	-1.9%	-6.6%	-7.1%	-5.3%	-4.3%	-2.1%	-1.2%	-1.8%	-1.7%

^aPercentage change calculated by dividing the net accessions or separations by the number of permanent employees at the beginning of the fiscal year.

Source: *The Civil Service Work Force*, NASA Personnel Analysis and Planning Office.

**Table 3-3. Paid Employees by NASA Occupational Code Group: Number on Board and Percentage of NASA Total
(at end of fiscal year)**

Occupational Code Group	1969	1970	1971	1972	1973	1974 ^a	1975	1976	1977 ^b	1978 ^b
200 (Supporting professional engineers)	326 0.9%	308 0.9%	266 0.9%	232 0.8%	184 0.7%	184 0.7%	180 0.7%	177 0.7%	NA	NA
700 and 900 (R&D engineers and scientists)	13,828 40.8%	13,701 42.1%	13,069 42.8%	12,454 43.9%	11,953 44.6%	11,679 45.9%	11,485 47.2%	11,435 47.6%	NA	NA
200, 700, and 900	14,154 41.7%	14,009 43.0%	13,335 43.7%	12,686 44.7%	12,137 45.3%	11,863 46.6%	11,665 47.9%	11,612 48.3%	11,544 49.0%	11,465 49.5%
300 (Technical support)	5,641 16.6%	6,139 18.9%	5,899 19.3%	5,573 19.6%	5,122 19.1%	4,611 18.1%	4,154 17.1%	3,904 16.2%	3,689 15.7%	3,482 15.0%
600 (Professional administrative)	4,469 13.2%	4,491 13.8%	4,190 13.7%	3,861 13.6%	3,689 13.8%	3,592 14.1%	3,504 14.4%	3,497 14.5%	3,499 14.8%	3,473 15.0%
500 (Clerical)	5,243 15.5%	4,965 15.3%	4,678 15.3%	4,285 15.1%	4,123 15.4%	3,702 14.6%	3,487 14.3%	3,488 14.5%	3,354 14.2%	3,297 14.2%
100 (Trades and labor)	4,422 13.0%	2,944 9.0%	2,404 7.9%	1,977 7.0%	1,706 6.4%	1,662 6.5%	1,523 6.3%	1,538 6.4%	1,483 6.3%	1,452 6.3%
TOTAL	33,929	32,548	30,506	28,382	26,777	25,430	24,333	24,039	23,569	23,169

^aAs of May 31, 1974.

^bFigures for 1977 and 1978 are for permanent NASA employees and exclude temporary employees.

NA = Not available.

Source: NASA Pocket Statistics.

**Table 3-4. Permanent Employees by NASA Occupational Code Group: Number on Board and Percentage of NASA Total
(at end of fiscal year)**

Occupational Code Group	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
200, 700, and 900 (Scientists and engineers)	NA	13,837 44.3%	13,227 44.9%	12,616 46.0%	12,085 46.6%	11,770 47.4%	11,665 47.9%	11,612 48.3%	11,544 49.0%	11,465 49.5%
300 (Technical support)	NA	5,709 18.3%	5,518 18.7%	5,130 18.7%	4,703 18.1%	4,403 17.7%	4,154 17.1%	3,904 16.2%	3,689 15.7%	3,482 15.0%
600 (Professional administrative)	NA	4,407 14.1%	4,115 14.0%	3,801 13.9%	3,640 14.0%	3,485 14.0%	3,504 14.4%	3,497 14.6%	3,499 14.8%	3,473 15.0%
500 (Clerical)	NA	4,362 14.0%	4,226 14.3%	3,920 14.3%	3,829 14.8%	3,642 14.6%	3,487 14.3%	3,488 14.5%	3,354 14.2%	3,297 14.2%
100 (Trades and labor)	NA	2,908 9.3%	2,392 8.1%	1,961 7.1%	1,698 6.5%	1,554 6.3%	1,523 6.3%	1,538 6.4%	1,483 6.3%	1,452 6.3%
TOTAL	31,733	31,223	29,478	27,428	25,955	24,854	24,333	24,039	23,569	23,169

NA = Not available.

Source: *The Civil Service Work Force*, NASA Personnel Analysis and Planning Office.

**Table 3-5. Average Salaries of Permanent Employees by Pay Plan
(with percentage increase from previous year at end of fiscal year)**

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
GS	\$13,470 9.1%	\$15,930 18.3%	\$17,080 7.2%	\$18,346 7.4%	\$19,403 5.8%	\$20,470 5.5%	\$21,661 5.8%	\$22,884 5.6%	\$24,629 7.6%	\$26,536 7.7%
Excepted	\$27,410 10.5%	\$32,420 18.3%	\$34,050 5.0%	\$34,972 2.7%	\$35,540 1.6%	\$35,714 0.5%	\$35,878 0.5%	\$37,630 4.9%	\$45,498 20.9%	\$46,710 2.7%
All NASA	\$13,110 9.8%	\$15,550 18.6%	\$16,770 7.8%	\$18,088 7.9%	\$19,174 6.0%	\$20,232 5.5%	\$21,472 6.1%	\$22,707 5.8%	\$24,598 8.3%	\$26,491 7.7%
Total white collar	\$13,670 9.1%	\$16,160 18.2%	\$17,310 7.8%	\$18,592 7.4%	\$19,644 5.7%	\$20,691 5.3%	\$21,899 5.8%	\$23,142 5.7%	\$25,002 8.0%	\$26,902 7.6%
Total blue collar	\$8,800 6.3%	\$9,570 8.8%	\$10,630 11.1%	\$11,544 8.6%	\$12,459 7.9%	\$13,354 7.2%	\$15,080 12.9%	\$16,349 8.4%	\$18,574 13.6%	\$20,342 9.5%

Source: *The Civil Service Work Force*, NASA Personnel Analysis and Planning Office.

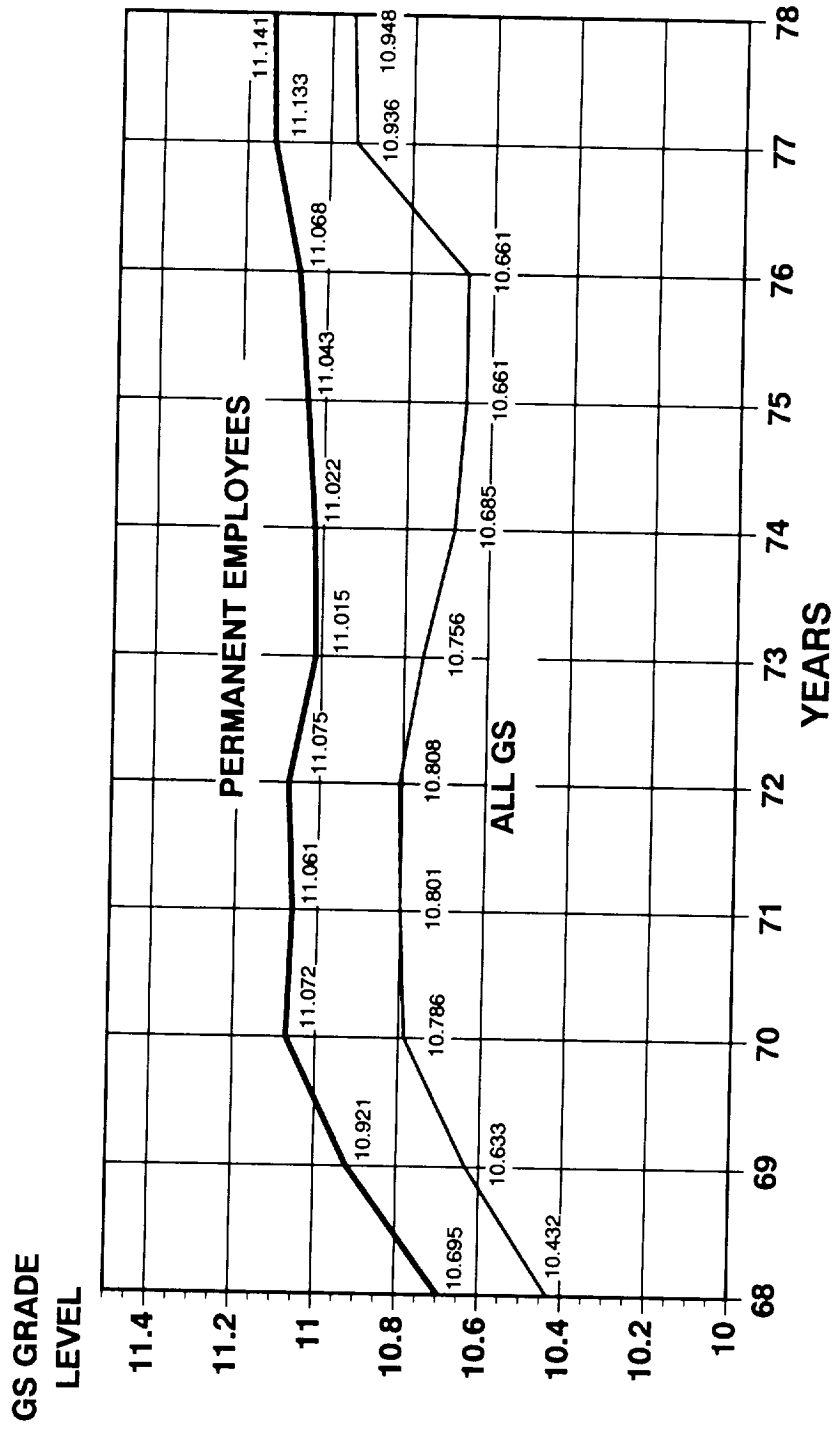


Figure 3-1. Average GS Grade Level of NASA permanent Employees (at end of fiscal year)

Table 3-6. Permanent Employees with Earned Professional Degrees by NASA Installation: Number on Board
(at end of fiscal year)

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	NA	979	968	944	947	936	937	938	941	987
Electronics Research Center ^a	NA	391	—	—	—	—	—	—	—	—
Flight Research Center ^b	NA	213	213	200	203	204	203	214	222	214
Goddard Space Flight Center	NA	2,227	2,263	2,169	2,115	2,096	2,105	2,075	2,056	2,134
Kennedy Space Center	NA	1,572	1,526	1,488	1,476	1,435	1,429	1,443	1,455	1,436
Langley Research Center	NA	1,670	1,656	1,566	1,521	1,547	1,528	1,524	1,510	1,477
Lewis Research Center	NA	1,894	1,849	1,747	1,589	1,486	1,470	1,467	1,465	1,442
Manned Spacecraft Center ^c	NA	2,767	2,672	2,536	2,515	2,504	2,537	2,510	2,489	2,505
Marshall Space Flight Center	NA	2,886	2,851	2,775	2,721	2,540	2,433	2,438	2,405	2,329
National Space Technology Laboratories ^d	—	—	—	—	—	—	37	37	54	64
Space Nuclear Propulsion Office ^e	NA	68	60	34	—	—	—	—	—	—
Wallops Station ^f	NA	107	112	111	106	105	106	107	118	123
NASA Headquarters	NA	1,096	1,007	944	1,011	917	878	880	921	894
TOTAL	15,863	15,870	15,177	14,514	14,204	13,770	13,663	13,633	13,636	13,605

^aDisestablished in 1970.

^bRenamed Dryden Flight Research Center in 1976.

^cRenamed Johnson Space Center in 1973.

^dEstablished as an independent NASA field installation in 1974.

^eRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^fRenamed Wallops Flight Center in 1974.

NA = Not available.

Source: *The Civil Service Work Force*, NASA Personnel Analysis and Planning Office.

**Table 3-7. Permanent Employees with Earned Professional Degrees by NASA Installation: Percentage
(at end of fiscal year)**

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	NA	50.1	51.2	53.4	55.4	55.6	55.8	57.0	58.7	59.4
Electronics Research Center ^a	NA	66.6	—	—	—	—	—	—	—	—
Flight Research Center ^b	NA	40.0	40.0	40.6	43.2	42.1	42.0	43.5	43.5	43.8
Goddard Space Flight Center	NA	50.5	51.4	53.4	55.6	55.0	56.1	56.4	57.0	59.8
Kennedy Space Center	NA	56.9	58.7	60.4	61.4	62.1	63.3	64.1	65.7	65.8
Langley Research Center	NA	43.3	44.3	45.3	46.0	46.1	46.1	47.1	48.4	48.2
Lewis Research Center	NA	45.1	45.8	46.0	47.5	48.1	48.3	48.5	48.9	49.7
Manned Spacecraft Center ^c	NA	64.8	64.4	66.4	67.7	68.1	69.3	69.5	70.2	71.1
Marshall Space Flight Center	NA	48.1	49.5	51.2	53.2	57.7	59.3	60.1	61.3	61.9
National Space Technology Laboratories ^d	—	—	—	—	—	—	53.6	53.6	60.0	62.7
Space Nuclear Propulsion Office ^e	NA	67.2	67.4	75.5	—	—	—	—	—	—
Wallops Station ^f	NA	21.1	23.3	24.7	25.2	24.8	25.5	26.5	29.1	30.4
NASA Headquarters	NA	53.1	56.0	56.6	60.5	56.3	56.2	56.0	49.2	59.1
ALL NASA	49.8	50.8	51.5	52.9	54.7	55.4	56.2	56.7	57.9	58.7

^aDisestablished in 1970.

^bRenamed Dryden Flight Research Center in 1976.

^cRenamed Johnson Space Center in 1973.

^dEstablished as an independent NASA field installation in 1974.

^eRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^fRenamed Wallops Flight Center in 1974.

NA = Not available.

Sources: Tables 3-6 and 3-11.

Table 3-8. Paid Employees by NASA Installation: Number on Board
(at end of fiscal year)

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	2,117	2,033	1,968	1,844	1,740	1,776	1,754	1,724	1,645	1,691
Electronics Research Center ^a	951	592	—	—	—	—	—	—	—	—
Flight Research Center ^b	601	583	579	539	509	531	544	566	546	514
Goddard Space Flight Center	4,295	4,487	4,459	4,178	3,852	3,936	3,871	3,808	3,666	3,641
Kennedy Space Center	3,058	2,895	2,704	2,568	2,516	2,408	2,377	2,404	2,270	2,234
Langley Research Center	4,087	3,970	3,830	3,592	3,389	3,504	3,472	3,407	3,207	3,167
Lewis Research Center	4,399	4,240	4,083	3,866	3,368	3,172	3,181	3,168	3,061	2,964
Manned Spacecraft Center ^c	4,751	4,539	4,298	3,935	3,896	3,886	3,877	3,796	3,640	3,617
Marshall Space Flight Center	6,639	6,325	6,060	5,555	5,287	4,574	4,337	4,336	4,014	3,808
National Space Technology Laboratories ^d	—	—	—	—	—	—	76	72	94	108
Space Nuclear Propulsion Office ^e	104	103	89	45	—	—	—	—	—	—
Wallops Station ^f	554	522	497	465	434	447	441	437	426	429
NASA Headquarters	2,373	2,259	1,939	1,795	1,786	1,773	1,708	1,708	1,619	1,606
TOTAL PAID EMPLOYEES	33,929	32,548	30,506	28,382	26,777	26,007	25,638	25,426	24,188	23,779

^aDisestablished June 30, 1970.

^bRenamed Dryden Flight Research Center in 1976.

^cRenamed Johnson Space Center in 1973.

^dEstablished as an independent NASA field installation in 1974.

^eRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^fRenamed Wallops Flight Center in 1974.

Source: NASA Pocket Statistics.

**Table 3-9. Paid Employees by NASA Installation: Percentage of NASA Total
(at end of fiscal year)**

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	6.2	6.3	6.5	6.5	6.5	6.8	6.8	6.8	6.8	7.1
Electronics Research Center ^a	2.8	1.8	—	—	—	—	—	—	—	—
Flight Research Center ^b	1.8	1.8	1.9	1.9	1.9	2.0	2.1	2.2	2.3	2.2
Goddard Space Flight Center	12.7	13.8	14.6	14.7	14.4	15.1	15.1	15.0	15.2	15.3
Kennedy Space Center	9.0	8.9	8.9	9.1	9.4	9.3	9.3	9.5	9.4	9.4
Langley Research Center	12.1	12.2	12.6	12.7	12.7	13.5	13.5	13.4	13.3	13.3
Lewis Research Center	13.0	13.0	13.4	13.6	12.6	12.2	12.4	12.5	12.7	12.5
Manned Spacecraft Center ^c	14.0	14.0	14.1	13.9	14.6	14.9	15.1	14.9	15.1	15.2
Marshall Space Flight Center	19.6	19.4	19.9	19.6	19.7	17.6	16.9	17.1	16.6	16.0
National Space Technology Laboratories ^d	—	—	—	—	—	—	0.3	0.3	0.4	0.5
Space Nuclear Propulsion Office ^e	0.3	0.3	0.3	0.2	—	—	—	—	—	—
Wallops Station ^f	1.6	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.8	1.8
NASA Headquarters	7.0	6.9	6.4	6.3	6.7	6.8	6.7	6.7	6.7	6.8
TOTAL ^g	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

^aDisestablished in 1970.

^bRenamed Dryden Flight Research Center in 1976.

^cRenamed Johnson Space Center in 1973.

^dEstablished as an independent NASA field installation in 1974.

^eRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^fRenamed Wallops Flight Center in 1974.

^gFigures may not add to total because of rounding.

Source: Table 3-8.

Table 3-10. Paid Employees by NASA Installation: Changes in Number on Board*

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	-80	-84	-65	-124	-104	36	-22	-30	-79	46
Electronics Research Center ^a	1	-359	-592	-40	-30	22	13	22	-20	-32
Flight Research Center ^b	-21	-18	-4	-281	-326	84	-65	-63	-142	-25
Goddard Space Flight Center	222	192	-28	-136	-52	-108	-31	27	-134	-36
Kennedy Space Center	14	-163	-191	-238	-203	115	-32	-65	-200	-40
Langley Research Center	-132	-117	-140	-217	-498	-196	9	-13	-107	-97
Lewis Research Center	-184	-159	-157	-363	-39	-10	-9	-81	-156	-23
Manned Spacecraft Center ^c	-205	-212	-241	-505	-268	-713	-237	-1	-322	-206
Marshall Space Flight Center	-296	-314	-265	-	-	-	76	-4	22	14
National Space Technology Laboratories ^d	-	-	-	-	-	-	-	-	-	-
Space Nuclear Propulsion Office ^e	-4	-1	-14	-44	-45	-	-	-	-	-
Wallops Station ^f	-11	-32	-25	-32	-31	13	-6	-4	-11	3
NASA Headquarters	-16	-114	-321	-143	-9	-13	-65	0	-89	-13
TOTAL	-712	-1,381	-2,043	-2,123	-1,605	-770	-369	-212	-1,238	-409

* Figures shown are the net increase or decrease in the number of paid employees for the year before the date.

^aDisestablished in 1970.

^bRenamed Dryden Flight Research Center in 1976.

^cRenamed Johnson Space Center in 1973.

^dEstablished as an independent NASA field installation in 1974.

^eRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^fRenamed Wallops Flight Center in 1974.

Source: Table 3-8.

**Table 3-11. Permanent Employees by NASA Installation: Number on Board
(at end of fiscal year)**

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	1,992	1,953	1,890	1,766	1,708	1,683	1,678	1,646	1,603	1,662
Electronics Research Center ^a	802	592	—	—	—	—	—	—	—	—
Flight Research Center ^b	539	534	532	493	470	484	483	492	510	489
Goddard Space Flight Center	4,129	4,411	4,404	4,061	3,802	3,808	3,750	3,676	3,607	3,570
Kennedy Space Center	2,877	2,762	2,600	2,463	2,403	2,309	2,259	2,250	2,215	2,182
Langley Research Center	3,912	3,853	3,740	3,455	3,305	3,355	3,315	3,233	3,118	3,065
Lewis Research Center	4,268	4,200	4,036	3,796	3,343	3,088	3,042	3,025	2,994	2,899
Manned Spacecraft Center ^c	4,384	4,270	4,147	3,817	3,717	3,676	3,660	3,613	3,548	3,523
Marshall Space Flight Center	6,149	5,994	5,760	5,414	5,115	4,400	4,100	4,059	3,922	3,760
National Space Technology Laboratories ^d	—	—	—	—	—	—	69	69	90	102
Space Nuclear Propulsion Office ^e	104	101	89	45	—	—	—	—	—	—
Wallops Station ^f	484	489	480	449	420	423	415	404	406	405
NASA Headquarters	2,093	2,064	1,800	1,669	1,672	1,628	1,562	1,572	1,556	1,512
TOTAL	31,733	31,223	29,478	27,428	25,955	24,854	24,333	24,039	23,569	23,169

^aDisestablished in 1970.

^bRenamed Dryden Flight Research Center in 1976.

^cRenamed Johnson Space Center in 1973.

^dEstablished as an independent NASA field installation in 1974.

^eRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^fRenamed Wallops Flight Center in 1974.

Source: *The Civil Service Work Force*. NASA Personnel Analysis and Planning Office.

**Table 3-12. Temporary Employees by NASA Installation: Number on Board
(at end of fiscal year)**

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	125	80	78	78	32	93	76	78	42	29
Electronics Research Center ^a	149	0	—	—	—	—	—	—	—	—
Flight Research Center ^b	62	49	47	46	39	47	61	74	36	25
Goddard Space Flight Center	166	76	55	117	50	128	121	132	59	71
Kennedy Space Center	181	133	104	105	113	99	118	154	55	52
Langley Research Center	175	117	90	137	84	149	157	174	89	102
Lewis Research Center	131	40	47	70	25	84	139	143	67	65
Manned Spacecraft Center ^c	367	269	151	118	179	210	217	183	92	94
Marshall Space Flight Center	490	331	300	141	172	174	237	277	92	48
National Space Technology Laboratories ^d	—	—	—	—	—	—	7	3	4	6
Space Nuclear Propulsion Office ^e	0	2	0	0	—	—	—	—	—	—
Wallops Station ^f	70	33	17	16	14	24	26	33	20	24
NASA Headquarters	280	195	139	126	114	145	146	136	63	94
TOTAL	2,196	1,325	1,028	954	822	1,153	1,305	1,387	619	610

^aDisestablished in 1970.

^bRenamed Dryden Flight Research Center in 1976.

^cRenamed Johnson Space Center in 1973.

^dEstablished as an independent NASA field installation in 1974.

^eRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^fRenamed Wallops Flight Center in 1974.

Source: Table 3-8 and Table 3-11.

**Table 3-13. NASA Excepted, P.L. 313, and Supergrade Employees by NASA Installation: Number on Board
(at end of fiscal year)**

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	47	46	45	37	33	30	26	24	23	25
Electronics Research Center ^a	16	16	—	—	—	—	—	—	—	—
Flight Research Center ^b	12	13	12	13	12	12	10	12	10	8
Goddard Space Flight Center	67	67	67	66	55	50	45	46	44	42
Kennedy Space Center	39	38	38	38	38	34	30	29	28	27
Langley Research Center	63	64	62	54	52	42	32	29	29	30
Lewis Research Center	51	51	51	48	39	32	28	28	28	28
Manned Spacecraft Center ^c	64	58	57	51	51	48	46	43	47	47
Marshall Space Flight Center	94	93	93	89	81	51	56	61	59	59
National Space Technology Laboratories ^d	—	—	—	—	—	—	2	1	2	2
Space Nuclear Propulsion Office ^e	9	8	9	6	—	—	—	—	—	—
Wallops Station ^f	3	3	3	3	3	3	3	3	3	3
NASA Headquarters	255	258	240	232	218	195	184	181	180	174
TOTAL	720	715	677	637	582	497	462	457	453	445

^aDisestablished in 1970.

^bRenamed Dryden Flight Research Center in 1976.

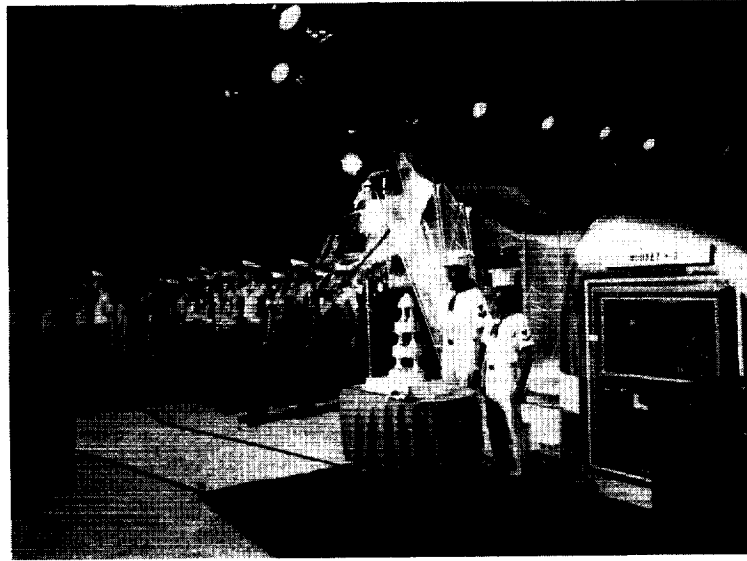
^cRenamed Johnson Space Center in 1973.

^dEstablished as an independent NASA field installation in 1974.

^eRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^fRenamed Wallops Flight Center in 1974.

Source: *The Civil Service Work Force*, NASA Personnel Analysis and Planning Office.



Apollo 11 Astronauts Neil A. Armstrong and Edwin A. Aldrin watch the traditional post-flight cake-cutting ceremony from their Mobile Quarantine Facility aboard the USS Hornet. Not shown is Astronaut Michael Collins. The Apollo 11 spacecraft is in the background.



The crew of Concept Verification Testing at their stations in the General Purpose Laboratory at the Marshall Space Flight Center.

**Table 3-14. NASA Excepted, P.L. 313, and Supergrade Employees by NASA Installation: Percentage of NASA Total
(at end of fiscal year)**

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	6.5	6.4	6.6	5.8	5.8	6.0	5.6	5.3	5.1	5.6
Electronics Research Center ^a	2.2	2.2	—	—	—	—	—	—	—	—
Flight Research Center ^b	1.7	1.8	1.8	2.0	2.1	2.4	2.2	2.6	2.2	1.8
Goddard Space Flight Center	9.3	9.4	10.0	10.4	9.5	10.1	9.7	10.1	9.7	9.4
Kennedy Space Center	5.4	5.3	5.6	6.0	6.5	6.8	6.5	6.3	6.2	6.1
Langley Research Center	8.8	9.0	9.2	8.5	8.9	8.5	6.9	6.3	6.4	6.7
Lewis Research Center	7.1	7.1	7.5	7.5	6.7	6.4	6.1	6.1	6.2	6.3
Manned Spacecraft Center ^c	8.9	8.1	8.4	8.0	8.8	9.7	10.0	9.4	10.4	10.6
Marshall Space Flight Center	13.1	13.0	13.7	14.0	13.9	10.3	12.1	13.3	13.0	13.3
National Space Technology Laboratories ^d	—	—	—	—	—	—	0.4	0.2	0.4	0.4
Space Nuclear Propulsion Office ^e	1.3	1.1	1.3	0.9	—	—	—	—	—	—
Wallops Station ^f	0.4	0.4	0.4	0.5	0.5	0.6	0.7	0.7	0.7	0.7
NASA Headquarters	35.4	36.1	35.5	36.4	37.4	39.2	39.8	39.6	39.7	39.1
TOTAL ^g	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

^aDisestablished in 1970.

^bRenamed Dryden Flight Research Center in 1976.

^cRenamed Johnson Space Center in 1973.

^dEstablished as an independent NASA field installation in 1974.

^eRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^fRenamed Wallops Flight Center in 1974.

^gPercentages are rounded to the nearest tenth of one percent and thus may not add to totals.

Source: Table 3-13.

Table 3-15. Military Detailees by NASA Installation: Number on Duty
(at end of fiscal year)

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	13	6	2	4	4	6	5	4	3	3
Electronics Research Center ^a	8	0	—	—	—	—	—	—	—	—
Flight Research Center ^b	2	9	9	7	7	9	3	2	0	2
Goddard Space Flight Center	9	8	9	1	0	0	0	0	0	0
Kennedy Space Center	5	2	0	0	0	1	1	5	6	5
Langley Research Center	4	2	1	0	0	0	1	1	1	0
Lewis Research Center	19	10	5	0	0	0	0	0	0	0
Manned Spacecraft Center ^c	170	158	120	80	44	38	28	36	33	45
Marshall Space Flight Center	17	14	10	13	11	1	1	3	7	8
National Space Technology Laboratories ^d	—	—	—	—	—	—	0	0	0	0
Space Nuclear Propulsion Office ^e	0	0	0	0	—	—	—	—	—	—
Wallops Station ^f	1	1	1	1	0	0	0	0	0	0
NASA Headquarters	20	21	15	13	12	6	6	5	3	8
TOTAL	268	231	172	119	78	61	45	56	53	71

^aDisestablished in 1970.

^bRenamed Dryden Flight Research Center in 1976.

^cRenamed Johnson Space Center in 1973.

^dEstablished as an independent NASA field installation in 1974.

^eRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^fRenamed Wallops Flight Center in 1974.

Source: *The Civil Service Work Force*, NASA Personnel Analysis and Planning Office.

Table 3-16. Scientific and Technological Paid Employees (Occupational Code Groups 200, 700, and 900) by NASA Installation: Number on Board (at end of fiscal year)

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	882	902	888	854	833	817	810	804	NA	NA
Electronics Research Center ^a	470	338	—	—	—	—	—	—	—	—
Flight Research Center ^b	197	199	196	182	179	180	180	191	NA	NA
Goddard Space Flight Center	1,916	1,962	1,979	1,905	1,785	1,770	1,765	1,738	NA	NA
Kennedy Space Center	1,365	1,352	1,312	1,281	1,262	1,235	1,239	1,237	NA	NA
Langley Research Center	1,596	1,616	1,611	1,522	1,460	1,478	1,441	1,426	NA	NA
Lewis Research Center	1,786	1,780	1,736	1,635	1,460	1,409	1,343	1,348	NA	NA
Manned Spacecraft Center ^c	2,533	2,502	2,427	2,275	2,229	2,193	2,233	2,210	NA	NA
Marshall Space Flight Center	2,652	2,596	2,539	2,442	2,351	2,260	2,133	2,142	NA	NA
National Space Technology Laboratories ^d	—	—	—	—	—	—	24	23	NA	NA
Space Nuclear Propulsion Office ^e	58	57	52	30	—	—	—	—	—	—
Wallops Station ^f	91	101	106	103	96	97	94	94	NA	NA
NASA Headquarters	608	604	489	457	482	424	403	399	NA	NA
TOTAL	14,154	14,009	13,335	12,686	12,137	11,863	11,665	11,612	11,544	11,465

^aAs of 31 May 1974.

^bDisestablished in 1970.

^cRenamed Dryden Flight Research Center in 1976.

^dRenamed Johnson Space Center in 1973.

^eEstablished as an independent NASA field installation in 1974.

^fRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^gRenamed Wallops Flight Center in 1974.

NA = Not available.

Source: NASA Pocket Statistics.

Table 3-17. Scientific and Technological Paid Employees (Occupational Code Groups 200, 700, and 900)
by NASA Installation: Percentage of NASA Total
(at end of fiscal year)

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	6.2	6.4	6.7	6.7	6.9	6.9	6.9	6.9	NA	NA
Electronics Research Center ^a	3.3	2.4	—	—	—	—	—	—	—	—
Flight Research Center ^b	1.4	1.4	1.5	1.4	1.5	1.5	1.5	1.6	NA	NA
Goddard Space Flight Center	13.5	14.0	14.8	15.0	14.7	14.9	15.1	15.0	NA	NA
Kennedy Space Center	9.6	9.7	9.8	10.1	10.4	10.4	10.6	10.7	NA	NA
Langley Research Center	11.3	11.5	12.1	12.0	12.0	12.5	12.4	12.3	NA	NA
Lewis Research Center	12.6	12.7	13.0	12.9	12.0	11.9	11.5	11.6	NA	NA
Manned Spacecraft Center ^c	17.9	17.9	18.2	17.9	18.4	18.5	19.1	19.0	NA	NA
Marshall Space Flight Center	18.7	18.5	19.0	19.2	19.4	19.0	18.3	18.4	NA	NA
National Space Technology Laboratories ^d	—	—	—	—	—	—	0.2	0.2	NA	NA
Space Nuclear Propulsion Office ^e	0.4	0.4	0.4	0.2	—	—	—	—	—	—
Wallops Station ^f	0.6	0.7	0.8	0.8	0.8	0.8	0.8	0.8	NA	NA
NASA Headquarters	4.3	4.3	3.7	3.6	3.9	3.6	3.5	3.4	NA	NA
TOTAL ^g	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

^aAs of 31 May 1974.

^bDisestablished in 1970.

^cRenamed Dryden Flight Research Center in 1976.

^dRenamed Johnson Space Center in 1973.

^eEstablished as an independent NASA field installation in 1974.

^fRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^gRenamed Wallops Flight Center in 1974.

^hFigures may not add to total because of rounding.

NA = Not available.

Source: Table 3-16.

**Table 3-18. Technical Support Paid Employees (Occupational Code Group 300)
by NASA Installation: Number on Board
(at end of fiscal year)**

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	238	343	319	299	248	239	217	180	NA	NA
Electronics Research Center ^a	116	68	-	-	-	-	-	-	-	-
Flight Research Center ^b	103	99	107	261	240	215	213	208	NA	NA
Goddard Space Flight Center	925	1,026	941	842	731	695	657	634	NA	NA
Kennedy Space Center	490	479	426	406	389	310	266	246	NA	NA
Langley Research Center	1,466	1,450	1,530	1,460	1,354	1,294	1,288	1,219	NA	NA
Lewis Research Center	346	357	351	352	285	267	271	246	NA	NA
Manned Spacecraft Center ^c	569	616	536	448	483	409	389	362	NA	NA
Marshall Space Flight Center	1,162	1,488	1,490	1,318	1,218	1,002	683	647	NA	NA
National Space Technology Laboratories ^d	-	-	-	-	-	-	0	0	NA	NA
Space Nuclear Propulsion Office ^e	0	0	0	0	-	-	-	-	-	-
Wallops Station ^f	215	203	192	182	172	177	167	158	NA	NA
NASA Headquarters	11	10	7	5	2	3	3	4	NA	NA
TOTAL	5,641	6,139	5,899	5,573	5,122	4,611	4,154	3,904	3,689	3,482

^aAs of 31 May 1974.

^bDisestablished in 1970.

^cRenamed Dryden Flight Research Center in 1976.

^dRenamed Johnson Space Center in 1973.

^eEstablished as an independent NASA field installation in 1974.

^fRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^gRenamed Wallops Flight Center in 1974.

NA = Not available.

Source: NASA Pocket Statistics.

**Table 3-19. Technical Support Paid Employees (Occupational Code Group 300)
by NASA Installation: Percentage of NASA Total
(at end of fiscal year)**

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	4.2	5.6	5.4	5.4	4.8	5.2	5.2	4.6	NA	NA
Electronics Research Center ^a	2.1	1.1	—	—	—	—	—	—	—	—
Flight Research Center ^b	1.8	1.6	1.8	4.9	4.7	4.7	5.1	5.3	NA	NA
Goddard Space Flight Center	16.4	16.7	16.0	15.1	14.3	15.1	15.8	16.2	NA	NA
Kennedy Space Center	8.7	7.8	7.2	7.3	7.6	6.7	6.4	6.3	NA	NA
Langley Research Center	26.0	23.6	25.9	26.2	26.4	28.1	31.0	31.2	NA	NA
Lewis Research Center	6.1	5.8	6.0	6.3	5.6	5.8	6.5	6.3	NA	NA
Manned Spacecraft Center ^c	10.1	10.0	9.1	8.0	9.4	8.9	9.4	9.3	NA	NA
Marshall Space Flight Center	20.6	24.2	25.3	23.6	23.8	21.7	16.4	16.6	NA	NA
National Space Technology Laboratories ^d	—	—	—	—	—	—	0	0	NA	NA
Space Nuclear Propulsion Office ^e	0	0	0	0	—	—	—	—	—	—
Wallops Station ^f	3.8	3.3	3.3	3.3	3.4	3.8	4.0	4.0	NA	NA
NASA Headquarters	0.2	0.2	0.1	0.1	*	0.1	0.1	0.1	NA	NA
TOTAL ^g	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

^aAs of 31 May 1974.

^bDisestablished in 1970.

^cRenamed Dryden Flight Research Center in 1976.

^dRenamed Johnson Space Center in 1973.

^eEstablished as an independent NASA field installation in 1974.

^fRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^gRenamed Wallops Flight Center in 1974.

*Figures may not add to total because of rounding.

NA = Not available.

Source: Table 3-18.

**Table 3-20. Trades and Labor Paid Employees (Occupational Code Group 100)
by NASA Installation: Number on board
(at end of fiscal year)**

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	603	382	345	279	269	261	261	260	NA	NA
Electronics Research Center ^a	58	11	—	—	—	—	—	—	—	—
Flight Research Center ^b	204	177	174	3	3	3	2	2	NA	NA
Goddard Space Flight Center	239	181	177	167	156	159	154	159	NA	NA
Kennedy Space Center	59	3	3	4	4	4	5	4	NA	NA
Langley Research Center	390	269	92	60	35	54	42	46	NA	NA
Lewis Research Center	1,639	1,513	1,424	1,310	1,105	1,059	947	955	NA	NA
Manned Spacecraft Center ^c	222	48	41	34	27	25	26	26	NA	NA
Marshall Space Flight Center	824	248	53	44	42	40	29	32	NA	NA
National Space Technology Laboratories ^d	—	—	—	—	—	—	0	0	NA	NA
Space Nuclear Propulsion Office ^e	0	0	0	0	—	—	—	—	—	—
Wallops Station ^f	106	92	79	63	53	48	49	47	NA	NA
NASA Headquarters	78	20	16	13	12	9	8	7	NA	NA
TOTAL	4,422	2,944	2,404	1,977	1,706	1,662	1,523	1,538	1,483	1,452

^aAs of 31 May 1974.

^bDisestablished in 1970.

^cRenamed Dryden Flight Research Center in 1976.

^dRenamed Johnson Space Center in 1973.

^eEstablished as an independent NASA field installation in 1974.

^fRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^gRenamed Wallops Flight Center in 1974.

NA = Not available.

Source: NASA Pocket Statistics.

**Table 3-21. Trades and Labor Paid Employees (Occupational Code Group 100)
by NASA Installation: Percentage of NASA Total
(at end of fiscal year)**

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	13.6	13.0	14.4	14.1	15.8	15.7	17.1	16.9	NA	NA
Electronics Research Center ^a	1.3	0.4	—	—	—	—	—	—	NA	NA
Flight Research Center ^b	4.6	6.0	7.2	0.2	0.2	0.2	0.1	0.1	NA	NA
Goddard Space Flight Center	5.4	6.1	7.4	8.4	9.1	9.6	10.1	10.3	NA	NA
Kennedy Space Center	1.3	0.1	0.1	0.2	0.2	0.2	0.3	0.3	NA	NA
Langley Research Center	8.8	9.1	3.8	3.0	2.1	3.2	2.8	3.0	NA	NA
Lewis Research Center	37.1	51.4	59.2	66.3	64.8	63.7	62.2	62.1	NA	NA
Manned Spacecraft Center ^c	5.0	1.6	1.7	1.7	1.6	1.5	1.7	1.7	NA	NA
Marshall Space Flight Center	18.6	8.4	2.2	2.2	2.5	2.4	1.9	2.1	NA	NA
National Space Technology Laboratories ^d	—	—	—	—	—	—	0	0	NA	NA
Space Nuclear Propulsion Office ^e	0	0	0	0	—	—	—	—	—	—
Wallops Station ^f	2.4	3.1	3.3	3.2	3.1	2.9	3.2	3.1	NA	NA
NASA Headquarters	1.8	0.7	0.7	0.7	0.7	0.5	0.5	0.5	NA	NA
TOTAL ^g	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

^aAs of 31 May 1974.

^bDisestablished in 1970.

^cRenamed Dryden Flight Research Center in 1976.

^dRenamed Johnson Space Center in 1973.

^eEstablished as an independent NASA field installation in 1974.

^fRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^gRenamed Wallops Flight Center in 1974.

^hFigures may not add to total because of rounding.

NA = Not available.

Source: Table 3-20.

**Table 3-22. Clerical and Professional Administrative Paid Employees (Occupational Code Groups 600 and 500)
by NASA Installation: Number on Board
(at end of fiscal year)***

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	394	406	416	412	390	377	390	402	NA	NA
Electronics Research Center ^a	307	175	—	—	—	—	—	—	—	—
Flight Research Center ^b	97	108	102	93	87	87	88	91	NA	NA
Goddard Space Flight Center	1,215	1,318	1,364	1,264	1,180	1,210	1,174	1,145	NA	NA
Kennedy Space Center	1,144	1,061	963	877	861	754	749	763	NA	NA
Langley Research Center	635	635	597	550	540	538	544	542	NA	NA
Lewis Research Center	628	590	570	569	518	489	481	476	NA	NA
Manned Spacecraft Center ^c	1,427	1,373	1,294	1,178	1,157	1,060	1,012	1,015	NA	NA
Marshall Space Flight Center	2,001	1,993	1,978	1,751	1,676	1,488	1,255	1,238	NA	NA
National Space Technology Laboratories ^d	—	—	—	—	—	—	45	46	NA	NA
Space Nuclear Propulsion Office ^e	46	46	37	15	—	—	—	—	—	—
Wallops Station ^f	142	126	120	117	113	104	105	105	NA	NA
NASA Headquarters	1,676	1,625	1,427	1,320	1,290	1,187	1,148	1,162	NA	NA
TOTAL	9,712	9,456	8,868	8,146	7,812	7,294	6,991	6,985	6,853	6,770

*As of 31 May 1974.

^aDisestablished in 1970.

^bRenamed Dryden Flight Research Center in 1976.

^cRenamed Johnson Space Center in 1973.

^dEstablished as an independent NASA field installation in 1974.

^eRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^fRenamed Wallops Flight Center in 1974.

NA = Not available.

Source: NASA Pocket Statistics.

Table 3-23. Clerical and Professional Administrative Paid Employees (Occupational Code Groups 600 and 500) by NASA Installation: Percentage of NASA Total (at end of fiscal year)

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	4.1	4.3	4.7	5.1	5.0	5.2	5.6	5.8	NA	NA
Electronics Research Center ^a	3.2	1.9	—	—	—	—	—	—	—	—
Flight Research Center ^b	1.0	1.1	1.2	1.1	1.1	1.2	1.3	1.3	NA	NA
Goddard Space Flight Center	12.5	13.9	15.4	15.5	15.1	16.6	16.8	16.4	NA	NA
Kennedy Space Center	11.8	11.2	10.6	10.8	11.0	10.3	10.7	10.9	NA	NA
Langley Research Center	6.5	6.7	6.7	6.8	6.9	7.4	7.8	7.8	NA	NA
Lewis Research Center	6.5	6.2	6.4	7.0	6.6	6.7	6.9	6.8	NA	NA
Manned Spacecraft Center ^c	14.7	14.5	14.6	14.5	14.8	14.5	14.5	14.5	NA	NA
Marshall Space Flight Center	20.6	21.1	22.3	21.5	21.5	20.4	18.0	17.7	NA	NA
National Space Technology Laboratories ^d	—	—	—	—	—	—	0.6	0.7	NA	NA
Space Nuclear Propulsion Office ^e	0.5	0.5	0.4	0.2	—	—	—	—	—	—
Wallops Station ^f	1.5	1.3	1.4	1.4	1.4	1.4	1.5	1.5	NA	NA
NASA Headquarters	17.3	17.2	16.1	16.2	16.5	16.3	16.4	16.6	NA	NA
TOTAL ^g	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

^aAs of 31 May 1974.

^bDisestablished in 1970.

^cRenamed Dryden Flight Research Center in 1976.

^dRenamed Johnson Space Center in 1973.

^eEstablished as an independent NASA field installation in 1974.

^fRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^gRenamed Wallops Flight Center in 1974.

^hFigures may not add to total because of rounding.

NA = Not available.

Source: Table 3-22.

Table 3-24. Scientific and Technological Permanent Employees (Occupational Code Groups 200, 700, and 900) by NASA Installation: Number on Board (at end of fiscal year)

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	NA	882	872	841	824	817	810	804	801	832
Electronics Research Center ^a	NA	338	—	—	—	—	—	—	—	—
Flight Research Center ^b	NA	196	195	182	177	181	180	191	191	185
Goddard Space Flight Center	NA	1,956	1,975	1,891	1,784	1,766	1,765	1,738	1,718	1,757
Kennedy Space Center	NA	1,338	1,308	1,278	1,259	1,241	1,239	1,237	1,232	1,216
Langley Research Center	NA	1,610	1,606	1,515	1,459	1,468	1,441	1,426	1,400	1,360
Lewis Research Center	NA	1,778	1,736	1,628	1,458	1,363	1,343	1,348	1,339	1,314
Manned Spacecraft Center ^c	NA	2,462	2,389	2,259	2,215	2,198	2,233	2,210	2,188	2,187
Marshall Space Flight Center	NA	2,561	2,511	2,442	2,350	2,215	2,133	2,142	2,114	2,046
National Space Technology Laboratories ^d	—	—	—	—	—	—	24	23	43	48
Space Nuclear Propulsion Office ^e	NA	57	52	30	—	—	—	—	—	—
Wallops Station ^f	NA	101	106	103	96	95	94	94	102	107
NASA Headquarters	NA	558	477	447	463	426	403	399	416	413
TOTAL	NA	13,837	13,227	12,616	12,085	11,770	11,665	11,612	11,544	11,465

^aDisestablished in 1970.

^bRenamed Dryden Flight Research Center in 1976.

^cRenamed Johnson Space Center in 1973.

^dEstablished as an independent NASA field installation in 1974.

^eRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^fRenamed Wallops Flight Center in 1974.

NA = Not available.

Source: *The Civil Service Work Force*, NASA Personnel Analysis and Planning Office.

**Table 3-25. Technical Support Permanent Employees (Occupational Code Group 300)
by NASA Installation: Number on Board
(at end of fiscal year)**

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	NA	323	297	268	245	231	217	180	174	153
Electronics Research Center ^a	NA	68	—	—	—	—	—	—	—	—
Flight Research Center ^b	NA	71	72	224	214	214	213	208	214	201
Goddard Space Flight Center	NA	990	912	796	704	694	657	634	584	513
Kennedy Space Center	NA	426	381	354	334	308	266	246	232	209
Langley Research Center	NA	1,401	1,480	1,352	1,287	1,306	1,288	1,219	1,139	1,114
Lewis Research Center	NA	345	338	324	273	272	271	246	244	236
Manned Spacecraft Center ^c	NA	570	496	427	398	406	389	362	343	327
Marshall Space Flight Center	NA	1,323	1,358	1,208	1,080	793	683	647	601	570
National Space Technology Laboratories ^d	—	—	—	—	—	—	0	0	0	0
Space Nuclear Propulsion Office ^e	NA	0	0	0	—	—	—	—	—	—
Wallops Station ^f	NA	186	182	177	166	176	167	158	154	154
NASA Headquarters	NA	6	2	0	2	3	3	4	4	5
TOTAL	NA	5,709	5,518	5,130	4,703	4,403	4,154	3,904	3,689	3,482

^aDisestablished in 1970.

^bRenamed Dryden Flight Research Center in 1976.

^cRenamed Johnson Space Center in 1973.

^dEstablished as an independent NASA field installation in 1974.

^eRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^fRenamed Wallops Flight Center in 1974.

NA = Not available.

Source: *The Civil Service Work Force*, NASA Personnel Analysis and Planning Office.

**Table 3-26. Trades and Labor Permanent Employees (Occupational Code Group 100)
by NASA Installation: Number on Board
(at end of fiscal year)**

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	NA	375	345	279	265	255	261	260	240	277
Electronics Research Center ^a	NA	11	—	—	—	—	—	—	—	—
Flight Research Center ^b	NA	173	171	3	3	3	2	2	2	2
Goddard Space Flight Center	NA	181	177	167	156	154	154	159	156	146
Kennedy Space Center	NA	3	3	3	4	4	5	4	3	3
Langley Research Center	NA	264	92	60	35	51	42	46	41	43
Lewis Research Center	NA	1,504	1,420	1,299	1,103	974	947	955	925	874
Manned Spacecraft Center ^c	NA	48	40	33	27	25	26	26	26	23
Marshall Space Flight Center	NA	246	51	43	41	31	29	32	41	40
National Space Technology Laboratories ^d	—	—	—	—	—	—	0	0	0	0
Space Nuclear Propulsion Office ^e	NA	0	0	0	—	—	—	—	—	—
Wallops Station ^f	NA	84	77	62	53	48	49	47	43	36
NASA Headquarters	NA	19	16	12	11	9	8	7	6	8
TOTAL	NA	2,908	2,392	1,961	1,698	1,554	1,523	1,538	1,483	1,452

^aDisestablished in 1970.

^bRenamed Dryden Flight Research Center in 1976.

^cRenamed Johnson Space Center in 1973.

^dEstablished as an independent NASA field installation in 1974.

^eRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^fRenamed Wallops Flight Center in 1974.

NA = Not available.

Source: *The Civil Service Work Force, NASA Personnel Analysis and Planning Office.*



Richard B. Hoover, left, of Marshall Space Flight Center, and Dr. Ian Tuohy of the Mullard Space Science Laboratory in the United Kingdom check out an X-ray telescope to be used in a joint rocket mission by the United States and Great Britain.



Overall view of the Mission Control Center, Manned Spacecraft Center, showing the flight controllers celebrating the successful conclusion of the Apollo 11 lunar landing mission.

**Table 3-27. Clerical and Professional Administrative Permanent Employees (Occupational Code Groups 600 and 500)
by NASA Installation: Number on Board
(at end of fiscal year)**

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	NA	2,373	2,376	2,378	2,374	2,380	2,390	2,402	2,388	2,400
Electronics Research Center ^d	NA	175	—	—	—	86	88	—	—	—
Flight Research Center ^b	NA	94	94	84	76	86	88	91	103	101
Goddard Space Flight Center	NA	1,284	1,340	1,207	1,158	1,194	1,174	1,145	1,149	1,154
Kennedy Space Center	NA	995	908	828	806	756	749	763	748	754
Langley Research Center	NA	578	562	528	524	530	544	542	538	548
Lewis Research Center	NA	573	542	545	509	479	481	476	486	475
Manned Spacecraft Center ^c	NA	1,190	1,222	1,098	1,077	1,047	1,012	1,015	991	986
Marshall Space Flight Center	NA	1,864	1,840	1,721	1,644	1,361	1,255	1,238	1,166	1,104
National Space Technology Laboratories ^d	—	—	—	—	—	—	45	46	47	54
Space Nuclear Propulsion Office ^e	NA	44	37	15	—	—	—	—	—	—
Wallops Station ^f	NA	118	115	107	105	104	105	105	107	108
NASA Headquarters	NA	1,481	1,305	1,210	1,196	1,190	1,148	1,162	1,130	1,086
TOTAL	NA	8,769	8,341	7,721	7,469	7,127	6,991	6,985	6,853	6,770

^aDisestablished in 1970.

^bRenamed Dryden Flight Research Center in 1976.

^cRenamed Johnson Space Center in 1973.

^dEstablished as an independent NASA field installation in 1974.

^eRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^fRenamed Wallops Flight Center in 1974.

NA = Not available.

Source: *The Civil Service Work Force*, NASA Personnel Analysis and Planning Office.

Table 3-28. Minority Permanent Employees: Number on Board and Percentage of NASA Total (at end of fiscal year)

MINORITY	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Black	NA	1,018 3.1%	985 3.2%	894 3.3%	912 3.5%	1,016 4.1%	1,116 4.6%	1,222 5.1%	1,288 5.5%	1,333 5.8%
Hispanic	NA	239 0.7%	218 0.7%	199 0.7%	236 0.9%	270 1.1%	304 1.2%	330 1.4%	370 1.6%	396 1.7%
Asian	NA	211 0.7%	198 0.6%	176 0.6%	177 0.7%	182 0.7%	203 0.8%	229 1.0%	252 1.1%	278 1.2%
American Indian	NA	26 0.1%	25 0.1%	21 0.1%	21 0.1%	27 0.1%	37 0.2%	39 0.2%	48 0.2%	54 0.2%
TOTAL	NA	1,494 4.6%	1,426 4.6%	1,290 4.7%	1,346 5.2%	1,495 6.0%	1,660 6.8%	1,820 7.6%	1,958 8.3%	2,061 8.9%

*Figures for 1970 and 1971 are for full-time minority employees; other figures include full-time and part-time minority employees.

NA = Not available.

Source: *The Civil Service Work Force*, NASA Personnel Analysis and Planning Office.

**Table 3-29. Minority Permanent Employees, by NASA Occupational Code Group:
Number on Board and Percentage of NASA Total
(at end of fiscal year)**

Occupational Code Group	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
500 (Clerical)	NA	433 9.9%	431 10.2%	379 9.7%	432 11.3%	479 13.2%	535 15.3%	588 16.9%	623 18.6%	659 20.0%
100 (Trades and labor)	NA	329 11.3%	270 11.3%	207 10.6%	180 10.6%	173 11.1%	169 11.1%	186 12.1%	201 13.6%	204 14.0%
600 Professional administrative	NA	100 2.3%	114 2.8%	114 3.0%	134 3.7%	188 5.4%	236 6.7%	277 7.9%	311 8.9%	342 9.8%
200, 700, and 900 (Scientists and engineers)	NA	463 3.3%	434 3.3%	434 3.4%	431 3.6%	463 3.9%	512 4.4%	558 4.8%	621 5.4%	649 5.7%
300 (Technical support)	NA	169 3.0%	177 3.2%	156 3.0%	169 3.6%	192 4.4%	208 5.0%	211 5.4%	202 5.5%	207 5.9%
TOTAL	NA	1,494 4.7%	1,426 4.8%	1,290 4.7%	1,346 5.2%	1,495 6.0%	1,660 6.8%	1,820 7.6%	1,958 8.3%	2,061 8.9%

NA = Not available.

Sources: Source: *The Civil Service Work Force*, NASA Personnel Analysis and Planning Office and Table 3-7.

C-2.

**Table 3-30. Minority Permanent Employees by Grade Range:
Number on Board and Percentage of NASA Total
(at end of fiscal year)**

TYPE OF EMPLOYEE	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
GS 1-6	NA	NA	NA	358 10.3%	426 12.1%	493 14.5%	558 17.1%	601 18.7%	616 20.3%	660 21.9%
GS 7-12	NA	NA	NA	466 4.3%	467 4.7%	531 5.7%	612 6.9%	683 7.8%	763 9.0%	803 9.8%
GS 13-15	NA	NA	NA	257 2.4%	270 2.6%	293 2.9%	313 3.1%	339 3.4%	366 3.6%	382 3.8%
GS 16-Excepted	NA	NA	NA	2 0.3%	3 0.5%	5 1.0%	8 1.7%	11 2.4%	12 2.6%	12 2.7%
Wage System	NA	NA	NA	207 NA	180 NA	173 NA	169 NA	186 NA	201 NA	204 NA
TOTAL	NA	1,494 4.7%	1,426 4.8%	1,290 4.7%	1,346 5.2%	1,495 6.0%	1,660 6.8%	1,820 7.6%	1,958 8.3%	2,061 8.9%

NA = Not available.

Source: *The Civil Service Work Force*, NASA Personnel Analysis and Planning Office.

Table 3-31. Average GS Grade Level of Minority and Non-Minority Permanent Employees by NASA Occupational Code Group, 1972-1978 (at end of fiscal year)

Occupational Code Group	1972		1973		1974		1975		1976		1977		1978	
	Minority	Non-Minority	Minority	Non-Minority	Minority	Non-Minority	Minority	Non-Minority	Minority	Non-Minority	Minority	Non-Minority	Minority	Non-Minority
Scientists and engineers	12.2	13.1	12.3	13.1	12.1	13.1	11.8	13.1	11.7	13.1	11.7	13.2	11.8	13.2
Professional administrative	11.0	12.0	10.8	11.9	10.6	11.9	10.3	11.8	10.4	11.8	10.4	11.8	10.3	11.8
Technical support	8.4	10.0	8.1	9.9	7.6	10.0	7.5	10.0	7.6	10.1	8.0	10.1	7.7	10.1
Clerical	5.0	5.3	4.7	5.2	4.6	5.2	4.6	5.3	4.4	5.3	4.5	5.4	4.6	5.4
All NASA	9.0	11.2	8.7	11.1	8.5	11.2	8.3	11.2	8.3	11.3	8.5	11.4	8.5	11.4

Source: *The Civil Service Work Force*, NASA Personnel Analysis and Planning Office.

**Table 3-32. Minority Permanent Employees by NASA Installation: Number on Board
(at end of fiscal year)**

Installation	1969	1970*	1971*	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	NA	148	183	166	172	175	201	207	215	243
Electronics Research Center ^a	NA	20	—	—	—	—	—	—	—	—
Flight Research Center ^b	NA	34	39	32	30	33	39	45	55	59
Goddard Space Flight Center	NA	290	253	247	234	269	282	300	352	382
Kennedy Space Center	NA	55	53	48	59	72	93	120	135	140
Langley Research Center	NA	179	157	148	160	191	213	229	231	248
Lewis Research Center	NA	205	164	144	129	126	127	143	157	159
Manned Spacecraft Center ^c	NA	179	220	188	216	252	290	296	337	352
Marshall Space Flight Center	NA	112	103	89	95	97	108	139	137	130
National Space Technology Laboratories ^d	NA	—	—	—	—	—	5	5	3	7
Space Nuclear Propulsion Office ^e	NA	1	1	2	—	—	—	—	—	—
Wallops Station ^f	NA	12	12	13	13	15	22	25	32	35
NASA Headquarters	NA	259	241	213	238	265	280	311	304	306
TOTAL	NA	1,494	1,426	1,290	1,346	1,495	1,660	1,820	1,958	2,061

*Figures for 1970 and 1971 are for full-time minority employees; other figures include full-time and part-time minority employees.

^aDisestablished in 1970.

^bRenamed Dryden Flight Research Center in 1976.

^cRenamed Johnson Space Center in 1973.

^dEstablished as an independent NASA field installation in 1974.

^eRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^fRenamed Wallops Flight Center in 1974.

Source: *The Civil Service Work Force*, NASA Personnel Analysis and Planning Office.

**Table 3-33. Minorities as a Percentage of Permanent Employees
by NASA Installation, 1972-1978
(at end of fiscal year)**

Installation	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	9.4	10.1	10.4	12.0	12.6	13.4	14.6
Flight Research Center ^a	6.5	6.4	6.8	8.1	9.1	10.8	12.1
Goddard Space Flight Center	6.1	6.2	7.1	7.5	8.2	9.8	10.7
Kennedy Space Center	2.0	2.5	3.1	4.1	5.3	6.1	6.4
Langley Research Center	4.3	4.8	5.7	6.4	7.1	7.4	8.1
Lewis Research Center	3.8	3.9	4.1	4.2	4.7	5.2	5.5
Manned Spacecraft Center ^b	4.9	5.8	6.9	7.9	8.2	9.5	10.0
Marshall Space Flight Center	1.6	1.9	2.2	2.6	3.4	3.5	3.5
National Space Technology Laboratories ^c	—	—	—	7.2	7.2	3.3	6.9
Space Nuclear Propulsion Office ^d	4.4	—	—	—	—	—	—
Wallops Station ^e	2.9	3.1	3.5	5.3	6.2	7.9	8.6
NASA Headquarters	12.7	14.2	16.3	17.9	19.8	19.5	20.2
ALL NASA	4.7	5.2	6.0	6.8	7.6	8.3	8.9

^aRenamed Dryden Flight Research Center January 8, 1976.

^bRenamed Johnson Space Center in 1973.

^cEstablished as an independent NASA field installation in 1974.

^dRenamed Space Nuclear Systems Office in 1973.

^eRenamed Wallops Flight Center in 1974.

Sources: Tables 3-11 and 3-28.

**Table 3-34. Female Permanent Employees, by NASA Occupational Code Group:
Number on Board and Percentage of Total Occupational Code Group
(at end of fiscal year)**

CATEGORY OF EMPLOYEE	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Clerical	4,260 NA	3,877 88.9%	NA NA	3,463 88.3%	3,393 88.6%	3,288 90.3%	3,165 90.8%	3,187 91.4%	3,083 91.9%	3,036 92.1%
Trades and labor	51 NA	45 1.5%	NA NA	23 1.2%	15 0.9%	17 1.1%	15 1.0%	19 1.2%	22 1.5%	24 1.7%
Professional administrative	611 NA	648 14.7%	NA NA	535 14.1%	519 14.3%	545 15.6%	644 18.4%	690 19.7%	750 21.4%	809 23.3%
Scientists and engineers	411 NA	388 2.8%	NA NA	314 2.5%	293 2.4%	310 2.6%	338 2.9%	364 3.1%	403 3.5%	439 3.8%
Technical support	208 NA	190 3.3%	NA NA	114 2.2%	95 2.0%	99 2.2%	96 2.3%	96 2.5%	87 2.4%	92 2.6%
TOTAL	5,541 17.5%	5,418* 16.5%	4,901 16.6%	4,449 16.2%	4,315 16.6%	4,259 17.1%	4,258 17.5%	4,356 18.1%	4,345 18.4%	4,400 19.0%

*Figure as published.

NA = Not available.

Source: *The Civil Service Work Force*, NASA Personnel Analysis and Planning Office and Table 3-7.

Table 3-35. Female Permanent Employees by Grade Range: Number on Board and Percentage of NASA Total
(at end of fiscal year)

TYPE OF EMPLOYEE	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
GS 1-6	3,853 90.4%	3,407 88.4%	3,233 85.8%	2,987 85.6%	2,950 83.7%	2,858 84.3%	2,724 83.5%	2,727 84.9%	2,615 86.3%	2,601 86.4%
GS 7-12	1,520 12.7%	1,566 12.8%	1,508 13.2%	1,322 12.3%	1,237 12.5%	1,247 13.5%	1,368 15.3%	1,443 16.5%	1,521 18.0%	1,580 19.4%
GS 13-15 ^a	117 1.0%	130 1.1%	123 1.0%	114 1.0%	110 1.1%	133 1.3%	146 1.4%	162 1.6%	181 1.8%	188 1.9%
GS 16-Excepted ^a	NA NA	NA NA	NA NA	3 NA	3 0.5%	4 0.8%	5 1.1%	5 1.1%	6 1.3%	7 1.6%
Wage System	51 NA	315 NA	37 NA	23 NA	15 NA	17 NA	15 NA	19 NA	22 NA	24 NA
Total	5,541 17.5%	5,418 16.5%	4,901 16.6%	4,449 16.2%	4,315 16.6%	4,259 17.1%	4,258 17.5%	4,356 18.1%	4,345 18.4%	4,400 19.0%

^aFor FY 1969-FY 1971, GS 16-Excepted employees are included with GS 13-15 employees.

NA = Not available.

Source: *The Civil Service Work Force*, NASA Personnel Analysis and Planning Office.

**Table 3-36. Average GS Grade Level of Male and Female Employees
by NASA Occupational Code Group, 1972-1978**
(at end of fiscal year)

Occupational Code Group	FY-1972		FY-1973		FY-1974		FY-1975		FY-1976		FY-1977		FY-1978	
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
Scientists and engineers	NA	NA	NA	NA	13.2	11.1	13.1	10.9	13.1	10.9	13.2	11.0	13.2	11.1
Professional administrative	12.3	9.8	12.2	9.6	12.2	9.6	12.2	9.5	12.3	9.6	12.3	9.7	12.3	9.7
Technical support	10.1	7.3	10.0	7.2	9.9	6.9	9.9	7.1	10.0	6.9	10.1	7.0	10.1	6.8
Clerical	5.9	5.2	5.8	5.1	5.9	5.0	6.0	5.1	6.1	5.1	6.1	5.2	6.1	5.2
All NASA	NA	NA	NA	NA	12.1	6.1	12.2	6.3	12.2	6.3	12.3	6.5	12.3	6.6

NA = Not available.

Source: *The Civil Service Work Force*, NASA Personnel Analysis and Planning Office.

**Table 3-37. Female Permanent Employees by NASA Installation: Number on Board
(at end of fiscal year)**

Installation	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	NA	NA	NA	311	301	299	303	313	297	320
Electronics Research Center ^a	NA	NA	—	—	—	—	—	—	—	—
Flight Research Center ^b	NA	NA	NA	52	46	55	59	65	69	68
Goddard Space Flight Center	NA	NA	NA	701	654	714	706	694	720	750
Kennedy Space Center	NA	NA	NA	427	420	407	402	426	424	435
Langley Research Center	NA	NA	NA	472	463	481	490	495	490	500
Lewis Research Center	NA	NA	NA	392	351	344	346	352	370	374
Manned Spacecraft Center ^c	NA	NA	NA	627	638	626	617	641	640	658
Marshall Space Flight Center	NA	NA	NA	828	805	672	654	671	651	619
National Space Technology Laboratories ^d	—	—	—	—	—	—	19	19	23	26
Space Nuclear Propulsion Office ^e	NA	NA	NA	7	—	—	—	—	—	—
Wallops Station ^f	NA	NA	NA	54	55	56	62	64	69	73
NASA Headquarters	NA	NA	NA	578	582	593	600	616	592	577
TOTAL	5,341	5,418*	4,901	4,449	4,315	4,259*	4,258	4,356	4,345	4,400

*Figures are given as published.

^aDisestablished in 1970.

^bRenamed Dryden Flight Research Center in 1976.

^cRenamed Johnson Space Center in 1973.

^dEstablished as an independent NASA field installation in 1974.

^eRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^fRenamed Wallops Flight Center in 1974.

NA = Not available.

Source: *The Civil Service Work Force, NASA Personnel Analysis and Planning Office.*

Table 3-38. Females as a Percentage of Permanent Employees by NASA Installation, 1972-1978
(at end of fiscal year)

Installation	1972	1973	1974	1975	1976	1977	1978
Ames Research Center	17.6	17.6	17.8	18.1	19.0	18.5	19.3
Flight Research Center ^a	10.5	9.8	11.4	12.2	13.2	13.5	13.9
Goddard Space Flight Center	17.3	17.2	18.8	18.8	18.9	20.0	21.0
Kennedy Space Center	17.3	17.5	17.6	17.8	18.9	19.1	19.9
Langley Research Center	13.7	14.0	14.3	14.8	15.3	15.7	16.3
Lewis Research Center	10.3	10.5	11.1	11.4	11.6	12.4	12.9
Manned Spacecraft Center ^b	16.4	17.2	17.0	16.9	17.7	18.0	18.8
Marshall Space Flight Center	15.3	15.7	15.3	16.0	16.5	16.6	16.5
National Space Technology Laboratories ^c	—	—	—	27.5	27.5	25.5	25.2
Space Nuclear Propulsion Office ^d	15.5	—	—	—	—	—	—
Wallops Station ^e	12.0	13.1	13.2	14.9	15.8	17.0	18.0
NASA Headquarters	34.6	34.8	36.4	38.4	39.2	38.0	38.2
All NASA	16.2	16.6	17.1	17.5	18.1	18.4	19.0

^aRenamed Dryden Flight Research Center in 1976.

^bRenamed Johnson Space Center in 1973.

^cEstablished as an independent NASA field installation in 1974.

^dRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^eRenamed Wallops Flight Center in 1974.

Sources: Tables 3-11 and 3-29.

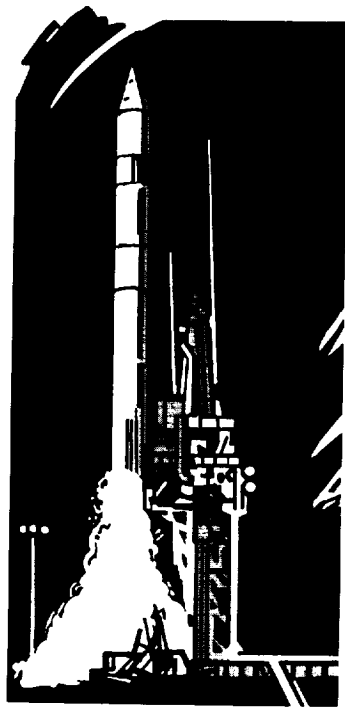
Table 3-39. Age Profile of Permanent Employees: Number on Board and Percentage of NASA Total
(at end of fiscal year)*

Age	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Under 25	1,885 5.9%	1,510 4.8%	1,278 4.3%	833 3.0%	773 3.0%	858 3.5%	914 3.8%	947 3.9%	871 3.7%	804 3.4%
25-29	3,418 10.8%	3,084 9.9%	2,617 8.9%	2,161 7.9%	1,750 6.7%	1,544 6.2%	1,480 6.1%	1,443 6.0%	1,285 5.5%	1,396 6.0%
30-34	4,446 14.0%	4,208 13.5%	3,828 13.0%	3,406 12.4%	3,130 12.1%	2,853 11.5%	2,553 10.5%	2,305 9.6%	2,119 9.0%	1,873 8.1%
35-39	5,330 16.8%	5,257 16.8%	4,860 16.5%	4,508 16.4%	4,125 15.9%	3,889 15.6%	3,697 15.2%	3,487 14.5%	3,248 13.8%	3,101 13.4%
40-44	4,914 15.5%	4,917 15.7%	4,764 16.2%	4,776 17.4%	4,863 18.7%	4,735 19.1%	4,588 18.9%	4,470 18.6%	4,145 17.6%	3,958 17.1%
45-49	5,724 18.0%	5,587 18.1%	5,260 17.8%	4,801 17.5%	4,448 17.1%	4,124 16.6%	4,146 17.0%	4,207 17.5%	4,490 19.1%	4,546 19.6%
50-54	3,436 10.8%	3,834 12.3%	4,099 13.9%	4,290 15.6%	4,377 16.9%	4,304 17.3%	4,141 17.0%	4,046 16.8%	3,851 16.3%	3,678 15.9%
55-59	1,710 5.4%	1,889 6.1%	1,856 6.3%	1,802 6.6%	1,805 7.0%	1,847 7.4%	2,075 8.5%	2,324 9.7%	2,664 11.3%	2,797 12.1%
60 and over	870 2.7%	937 3.0%	916 3.1%	853 3.1%	684 2.6%	700 2.8%	739 3.0%	810 3.7%	896 3.8%	1,016 4.4%
Average age	40.2	41.0	41.5	42.2	42.5	42.7	43.0	43.3	43.9	44.2

* Figures may not add to total because of rounding.

Sources: *The Civil Service Work Force*, NASA Personnel Analysis and Planning Office and Table 3-11.





CHAPTER FOUR

NASA FINANCES

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CHAPTER FOUR

NASA FINANCES

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CHAPTER FOUR

NASA FINANCES

This chapter presents, in tabular form, a very brief overview of NASA financing from 1969 through 1978. Summary financial data for the decade—budget requests, congressional authorizations, congressional appropriations, obligations, and expenditures—are presented in Tables 4-1 through 4-7. The data are further broken down by dollar amounts allocated annually to administrative operations (renamed research and program management in 1970), research and development, and construction of facilities. The annual budget process, listing the transfer of funds among these three categories, is presented in more detail in Tables 4-8 through 4-17. Tables 4-18 through 4-20 show annual appropriations for administrative operations, research and development, and construction of facilities by installation. Tables 4-21 and 4-22 focus on the appropriation of funds for research and development for NASA's programs. Figure 4-1 shows, in graphic form, the changes in the offices and programs under which NASA's research and development was carried out between 1969 and 1978.

During the first decade of its existence, NASA's appropriations amounted to almost \$32.4 billion. They rose only slightly in the next decade, totaling \$36.4 billion for the 1969–78 period. The funds were appropriated predominantly for research and development: 81.5 percent in the first decade and 76.5 percent in the second decade. Administrative operations commanded an increasingly large slice of the appropriated funds, growing from 10.9 percent of the total in the first decade to 21.2 percent of the total in the second decade. As expected, there was a considerable difference in the allocation of funds for the construction of facilities in the two decades. During the first decade, when most of the construction took place, 7.6 percent of NASA's appropriation was allocated to this category. During the second decade, only 2.3 percent was allocated to this category.

The information presented in this chapter provides only a small portion of the financial data accumulated between 1969 and 1978. An analysis of the entire budgeting and financial management process is beyond the scope of this volume.

Stages in the NASA Financing Process

*Long-Range Financial Planning.*¹ NASA's financial planning function flowed from its project planning efforts. These complex efforts are beyond the scope of this volume and are not summarized here.

Preparing NASA's Annual Budget. This step includes the preparation of spending proposals by NASA's field installations, the aggregation and winnowing of these proposals by NASA Headquarters, the receiving of Presidential guidelines from the Bureau of the Budget, and the subsequent reconciliation of differences between NASA and the Bureau. (Little data are available on what NASA stood ready to spend if resources had been made available. The general assumption is that agencies always want more and ask for more than they eventually get.)

President's Budget Submitted to Congress. The President's January budget submission to Congress publicly reveals NASA's portion of the overall national budget and constitutes the basis for subsequent congressional action. (The President's requests for NASA, hereafter referred to as NASA's budget requests, have been summarized in this chapter. The total for the agency is comparable over time, but any breakdowns of the total are subject to changing definitions, as indicated in the footnotes.)

Congressional Authorization. The President's budget is primarily a request for congressional appropriations. In addition, for certain agencies and programs, it is necessary for Congress to enact a law authorizing the appropriation. This two-step process applies to NASA.² The authorization law is largely the product of the House Committee on Science, Space, and Technology and the Senate Committee on Commerce, Science, and Transportation, although it may be altered on the House and Senate floors and in the House-Senate Conference Committee.

Congressional Appropriation. It is at this point that Congress makes its chief input as to the amount of national resources allocated to NASA. The President's request may be modified at five principal points—the House Committee on Appropriations subcommittee, the House floor, the Senate Committee on Appropriations subcommittee, the Senate floor, and the compromising conference committees. It is possible that the full appropriations committees of the House and Senate may become involved as well.

Bureau of the Budget Apportionment. The Bureau of the Budget establishes certain controls on the release of appropriated funds to the various agencies.

NASA Programming. Once NASA has obtained primary jurisdiction over the funds appropriated to it by Congress, a detailed pie-cutting operation takes place. Funds are earmarked for various programs, projects, and places, setting the stage for the ongoing spending.

¹See Rosholt, *Administrative History of NASA*, pp. 211–17, and Levine, *Managing NASA in the Apollo Era*, pp. 182–202.

²*Ibid.*, p. 60, gives the origin of this requirement.

Committing, Obligating, Costing, and Disbursing. The flow of financial activity is complex and is beyond the scope of this volume. Only summaries can be shown in the tables. NASA carries out most of its program by contract. Whenever a contract is entered into, an appropriate amount of money is obligated to fulfill the terms of the contract. At some later point, the money actually changes hands and thus is disbursed or expended.

Auditing. The financial activities described above are eventually reviewed or audited both by NASA and by the congressional General Accounting Office to determine the legality of all actions and in some cases the quality of agency procedures and performance.

**Figure 4-1. Research and Development Programs by Office
(by fiscal year)**

1969	1970	1971	1972	1973
MANNED SPACE FLIGHT Apollo Space flight operations Advanced missions	MANNED SPACE FLIGHT Apollo Space flight operations Advanced missions	MANNED SPACE FLIGHT Apollo Space flight operations Advanced missions	MANNED SPACE FLIGHT Apollo Space flight operations Advanced missions Space shuttle	MANNED SPACE FLIGHT Apollo Space flight operations Advanced missions Space shuttle
SPACE SCIENCE AND APPLICATIONS Physics and astronomy Lunar and planetary exploration Bioscience Space applications Launch vehicle procurement	SPACE SCIENCE AND APPLICATIONS Physics and astronomy Lunar and planetary exploration Bioscience Space applications Launch vehicle procurement	SPACE SCIENCE Physics and astronomy Lunar and planetary exploration Bioscience Launch vehicle procurement	SPACE SCIENCE Physics and astronomy Lunar and planetary exploration Launch vehicle procurement	SPACE SCIENCE Physics and astronomy Lunar and planetary exploration Launch vehicle procurement
UNIVERSITY AFFAIRS Sustaining university program	UNIVERSITY AFFAIRS Sustaining university program	UNIVERSITY AFFAIRS Sustaining university program	UNIVERSITY AFFAIRS Sustaining university program	UNIVERSITY AFFAIRS Sustaining university program
ADVANCED RESEARCH AND TECHNOLOGY Basic research Space vehicle systems Electronics systems Human factor systems Space power and electric propulsion systems Nuclear rockets Chemical propulsion Aeronautical vehicles	ADVANCED RESEARCH AND TECHNOLOGY Aeronautical research and technology Space research and technology Nuclear power and propulsion	ADVANCED RESEARCH AND TECHNOLOGY Aeronautical research and technology Space research and technology Nuclear power and propulsion	ADVANCED RESEARCH AND TECHNOLOGY Aeronautical research and technology Space research and technology Nuclear power and propulsion	ADVANCED RESEARCH AND TECHNOLOGY Aeronautical research and technology Space research and technology Nuclear power and propulsion
				AERONAUTICS AND SPACE TECHNOLOGY Aeronautical research and technology Space and nuclear research and technology
TRACKING AND DATA ACQUISITION				
TECHNOLOGY UTILIZATION				

Figure 4-1. Research and Development Programs by Office (Continued)
(by fiscal year)

	1975	1976	1977	1978
1974				
MANNED SPACE FLIGHT Space flight operations Advanced missions Space shuttle	SPACE FLIGHT Space flight operations Expendable launch vehicles Space shuttle			SPACE TRANSPORTATION SYSTEMS Space flight operations Expendable launch vehicles Space shuttle
SPACE SCIENCE Physics and astronomy Lunar and planetary exploration Launch vehicle procurement	SPACE SCIENCE Physics and astronomy Lunar and planetary exploration Life sciences			
APPLICATIONS Space applications				
			SPACE AND TERRESTRIAL APPLICATIONS Space applications Technology utilization	
AERONAUTICS AND SPACE TECHNOLOGY Aeronautical research and technology Space research and technology	AERONAUTICS AND SPACE TECHNOLOGY Aeronautical research and technology Space research and technology			AERONAUTICS AND SPACE TECHNOLOGY Aeronautical research and technology Space research and technology Energy technology applications
ENERGY PROGRAMS		ENERGY TECHNOLOGY APPLICATIONS		
		TRACKING AND DATA ACQUISITION		
		TECHNOLOGY UTILIZATION		

Table 4-1. NASA Appropriations by Appropriation Title and Fiscal Year
(in thousands of dollars)

Fiscal Year	Administrative Operations*	Research and Development	Construction of Facilities	Total
1969	603,173	3,370,300	21,800	3,995,273
1970	689,983	3,006,000	53,233	3,749,216
1971	722,669	2,565,000	24,950	3,312,619
1972	734,722	2,522,700	52,700	3,310,122
1973	729,450	2,600,900	77,300	3,407,650
1974	744,600	2,194,000	101,100	3,039,700
1975	759,975	2,331,015	140,155	3,231,145
1976	792,312	2,677,380	82,130	3,551,822
TQ	220,795	700,600	10,750	932,145
1977	844,575	2,856,425	118,090	3,819,090
1978	889,761	3,013,000	160,940	4,063,701
TOTAL	7,732,015	27,837,320	843,148	36,412,483

*Renamed Research and Program Management (R&PM) in 1970.

Source: Tables 4-8 through 4-17.

Table 4-2. Adjusted Appropriations as of June 30, 1978
(in thousands of dollars)

Fiscal Year	Total		Administrative Operations ^a		Research and Development		Construction of Facilities	
	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage
1969	3,994,993	100.0	648,111	16.2	3,313,942	83.0	32,940	0.8
1970	3,748,742	100.0	702,555	18.8	2,992,954	79.8	53,233	1.4
1971	3,312,473	100.0	730,398	22.0	2,555,925	77.2	26,150	0.8
1972	3,307,991	100.0	732,591	22.1	2,522,700	76.3	52,700	1.6
1973	3,407,635	100.0	729,435	21.4	2,599,475	76.3	78,725	2.3
1974	3,039,700	100.0	744,600	24.5	2,194,000	72.2	101,100	3.3
1975	3,231,093	100.0	764,875	23.7	2,323,563	71.9	142,655	4.4
1976	3,551,822	100.0	792,312	22.3	2,677,380	75.4	82,130	2.3
TQ	932,145	100.0	220,795	23.7	700,600	75.2	10,750	1.1
1977	3,819,090	100.0	844,575	22.1	2,856,425	74.8	118,090	3.1
1978	4,063,701	100.0	889,761	21.9	3,011,600	74.1	162,340	4.0
TOTAL	36,409,385		7,800,008		27,748,564		860,813	

^aRenamed Research and Program Management (R&PM) in 1970.

Source: Tables 4-8 through 4-17.

Table 4-3. Authorizations and Appropriations Compared with Budget Requests^a
(in millions of dollars)

Action	Amounts and Percentages Cut (or added) by Congress										
	Administrative Operations ^b		Research and Development		Construction of Facilities		Total				
	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage	
FY 1969											
Auth.	45.0	6.9	306.9	8.3	5.4	12.0	357.3	8.2			
Appr.	45.0	6.9	306.9	8.3	23.2	51.6	375.1	8.6			
FY 1970											
Auth.	17.3	2.4	31.5	1.0	0.0	0.0	48.8	1.3			
Appr.	17.3	2.4	45.4	1.5	5.0	8.5	67.7	1.8			
FY 1971											
Auth.	9.0	1.2	(87.0)	(3.3)	0.1	0.4	(77.9)	(2.3)			
Appr.	13.6	1.8	41.1	1.6	9.6	2.8	64.3	1.9			
FY 1972											
Auth.	4.0	0.5	(85.5)	(3.4)	(2.1)	(3.7)	(83.6)	(2.5)			
Appr.	4.0	0.5	(5.0)	(0.2)	3.6	6.4	2.6	0.1			
FY 1973											
Auth.	0.0	0.0	(36.5)	(1.4)	0.0	0.0	(36.5)	(1.1)			
Appr.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
FY 1974											
Auth.	0.2	*	(48.5)	(2.2)	0.0	0.0	(48.3)	(1.6)			
Appr.	0.2	*	3.0	0.1	10.9	9.7	14.1	0.5			

Table 4-3. Authorizations and Appropriations Compared with Budget Requests^a (Continued)
(in millions of dollars)

Action	Amounts and Percentages Cut (or added) by Congress									
	Administrative Operations ^b		Research and Development		Construction of Facilities		Total			
	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage
FY 1975										
Auth.	0.0	0.0	(26.8)	(1.1)	7.0	4.6	(19.8)	(0.6)		
Appr.	9.6	1.3	15.0	0.6	11.3	7.5	35.9	1.1		
FY 1976										
Auth.	32.2	0.4	(8.8)	(0.3)	(14.5)	(17.1)	(20.1)	(0.6)		
Appr.	3.8	0.5	1.0	*	2.5	2.9	7.3	0.2		
TQ										
Auth.	0.0	0.0	30.0	4.1	3.8	25.9	33.8	3.5		
Appr.	0.1	0.1	30.0	4.1	3.8	25.9	33.9	3.5		
FY 1977										
Auth.	0.8	0.1	(97.5)	(3.5)	3.7	3.0	(93.0)	(2.5)		
Appr.	1.3	0.1	(97.5)	(3.5)	5.9	4.8	(90.3)	(2.4)		
FY 1978										
Auth.	0.4	*	(15.5)	(0.5)	0.9	0.5	(14.2)	(0.3)		
Appr.	3.4	0.4	13.0	0.4	0.9	0.5	17.3	0.4		
TOTAL										
Auth.	79.9	1.0	(37.7)	(0.1)	4.3	0.5	46.5	*		
Appr.	98.3	1.3	352.9	1.3	76.7	8.3	527.9	0.8		

*Less than 0.05 percent.

^aDue to rounding, figures may not add to totals.

^bRenamed Research and Program Management (R&PM) in 1970.

Source: Table 4-8 through Table 4-17.

Table 4-4. Budget Requests, Authorizations, Appropriations, Obligations, and Expenditures
(in millions of dollars)

Fiscal Year	Budget Request	Authorization	Appropriation	Obligations ^a	Expenditures ^a
1969	4,370.4	4,013.1	3,995.3	4,045.2	4,251.7
1970	3,816.9	3,768.1	3,749.2	3,858.9	3,753.1
1971	3,376.9	3,454.8	3,312.6	3,324.0	3,381.9
1972	3,312.7	3,396.3	3,310.1	3,228.6	3,422.9
1973	3,407.7	3,444.2	3,407.6	3,154.0	3,315.2
1974	3,053.8	3,102.1	3,039.7	3,122.4	3,256.2
1975	3,267.1	3,286.9	3,231.1	3,265.9	3,266.5
1976	3,559.0	3,579.1	3,551.8	3,604.8	3,669.0
TQ	966.0	932.3	932.2	918.8	951.4
1977	3,728.8	3,821.7	3,819.1	3,858.1	3,945.3
1978	4,081.0	4,095.2	4,063.7	4,000.3	3,983.1
TOTAL	36,940.3	36,893.8	36,412.4	36,381.0	37,196.3

^aActual obligations and expenditures during the fiscal year.

Source: Table 4-8 through Table 4-17 and NASA *Pocket Statistics*.

Table 4-5. Budget Requests, Authorizations, Appropriations, and Expenditures—Administrative Operations^a
(in millions of dollars)

Fiscal Year	Budget Request	Authorization	Appropriation	Expenditures ^b
1969	648.2	603.2	603.2	656.2
1970	707.3	690.0	690.0	707.2
1971	736.2	727.2	722.7	707.8
1972	738.7	734.7	734.7	749.4
1973	729.5	729.5	729.5	729.1
1974	744.8	744.6	744.6	759.5
1975	769.6	769.6	760.0	760.8
1976	796.0	792.8	792.3	799.3
TQ	220.9	220.9	220.8	194.9
1977	845.8	845.0	844.6	859.6
1978	893.2	892.8	889.8	870.2
TOTAL	7,830.2	7,750.3	7,732.2	7,794.0

^aAdministrative Operations renamed Research and Program Management in 1970.

^bActual expenditures during the fiscal year.

Source: Table 4-8 through Table 4-17 and NASA Pocket Statistics.

Table 4-6. Budget Requests, Authorizations, Appropriations, and Expenditures—Research and Development
(in millions of dollars)

Fiscal Year	Budget Request	Authorization	Appropriation	Expenditures ^a
1969	3,677.2	3,370.3	3,370.3	3,530.2
1970	3,051.4	3,019.9	3,006.0	2,991.6
1971	2,606.1	2,693.1	2,565.0	2,630.4
1972	2,517.7	2,603.2	2,522.7	2,623.2
1973	2,600.9	2,637.4	2,600.9	2,541.4
1974	2,197.0	2,245.5	2,194.0	2,421.6
1975	2,346.0	2,372.8	2,331.0	2,420.4
1976	2,678.4	2,687.2	2,677.4	2,748.8
TQ	730.6	700.6	700.6	730.7
1977	2,758.9	2,856.4	2,856.4	2,980.7
1978	3,026.0	3,041.5	3,013.0	2,988.7
TOTAL	28,190.2	28,227.9	27,837.3	28,607.7

^aActual expenditures during the fiscal year.

Source: Table 4-8 through Table 4-17 and NASA Pocket Statistics.

Table 4-7. Budget Requests, Authorizations, Appropriations, and Expenditures—Construction of Facilities
(in millions of dollars)

Fiscal Year	Budget Request	Authorization	Appropriation	Expenditures ^a
1969	45.0	39.6	21.8	65.3
1970	58.2	58.2	53.2	54.3
1971	34.6	34.5	25.0	43.7
1972	56.3	58.4	52.7	50.3
1973	77.3	77.3	77.3	44.7
1974	112.0	112.0	101.1	75.1
1975	151.5	144.5	140.2	85.3
1976	84.6	99.1	82.1	120.9
TQ	14.5	10.8	10.8	25.8
1977	124.0	120.3	118.1	105.0
1978	161.8	160.9	160.9	124.2
TOTAL	919.8	915.6	843.2	794.6

^aActual expenditures during the fiscal year.

Source: Table 4-8 through Table 4-17 and NASA Pocket Statistics.

Table 4-8. Funding NASA's Program for FY 1969

Action	AO ^a	R&D ^a	CoF ^a	Total
Budget request	648,200,000	3,677,200,000	45,000,000	4,370,400,000
Authorization ^b	603,173,000	3,370,300,000	39,600,000	4,013,073,000
Appropriation ^c	603,173,000	3,370,300,000	21,800,000	3,995,273,000
Later transfers ^d				
From R&D to AO	+ 45,218,000	- 45,218,000		
From R&D to CoF		- 11,140,000	+ 11,140,000	
From AO to GSA	- 280,000			- 280,000
Actual appropriations	648,111,000	3,313,942,000	32,940,000	3,994,993,000

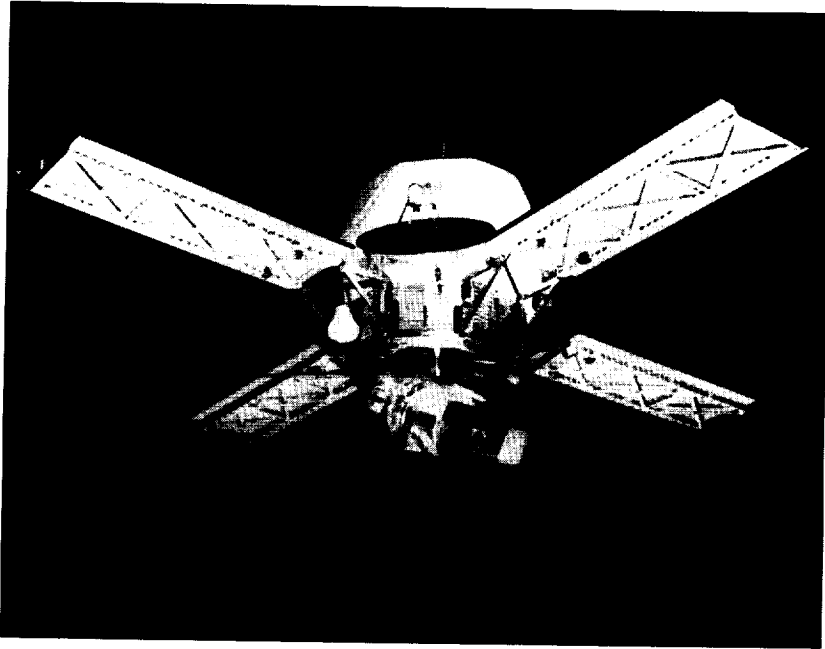
^aAO = Administrative Operations; R&D = Research and Development; CoF = Construction of Facilities; GSA = General Services Administration.

^bP. L. 90-373, July 3, 1968.

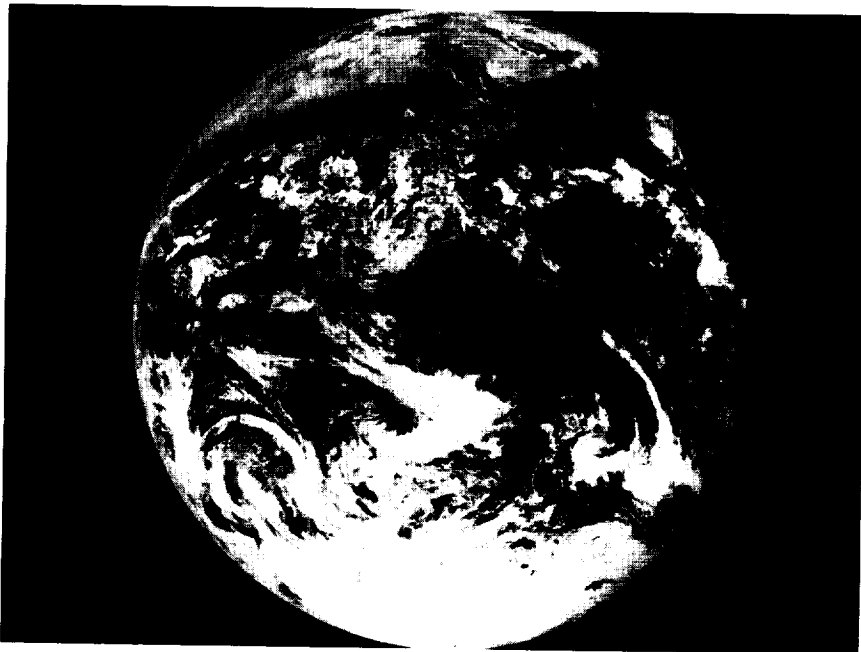
^cP. L. 90-550, October 4, 1968.

^dBased on provision of public law. Figures as of June 30, 1969.

Source: *The Budget of the U.S. Government, Fiscal Year 1971*, Appendix, pp. 825-831; NASA, Office of Administration, Budget Operations Division, *Chronological History, Fiscal Year 1969 Budget Submission*, Oct. 4, 1968; information supplied by NASA, Budget Operations Division.



The Mariner Mars unmanned spacecraft which orbited that planet in 1971.



A view of the Earth as photographed from Apollo 17 during the final lunar landing mission in NASA's Apollo program.

Table 4-9. Funding NASA's Program for FY 1970

Action	R&PM ^a	R&D ^a	CoF ^a	Total
Budget request	707,250,000 ^e	3,051,427,000	58,200,000	3,816,877,000
Authorization ^b	689,983,000 ^f	3,019,927,000	58,200,000	3,768,110,000
Appropriation ^c	689,983,000 ^g	3,006,000,000	53,233,000	3,749,216,000
Later transfers ^d				
From R&D to R&PM	+ 13,046,000	- 13,046,000		- 474,000
From R&PM to GSA	- 474,000			
Actual appropriations	702,555,000	2,992,954,000	53,233,000	3,748,742,000

^aR&PM = Research and Program Management (formerly called Administrative Operations (AO)); R&D = Research and Development; CoF = Construction of Facilities; GSA = General Services Administration.

^bP.L. 91-119, November 18 1969.

^cP.L. 91-126, November 26, 1969.

^dBased on provision of public law. Figures as of June 30, 1970.

^eIncludes \$56,350 supplemental request.

^fIncludes \$52,583 supplemental authorization. P.L. 90-206 (December 16, 1967); P.L. 91-231 (April 15, 1970).

^gIncludes \$52,583 supplemental appropriation. P.L. 91-305 (July 6, 1970).

Source: *The Budget of the U.S. Government, Fiscal Year 1972*, Appendix, pp. 835-841; NASA, Office of Administration, Budget Operations Division, *Chronological History, Fiscal Year 1970 Budget Submission*, Oct. 12, 1970; information supplied by NASA, Budget Operations Division.

Table 4-10. Funding NASA's Program for FY 1971

Action	R&PM*	R&D*	CoF*	Total
Budget request	736,244,000 ^d	2,606,100,000	34,600,000	3,376,944,000
Authorization ^e	727,244,000 ^e	2,693,100,000	34,478,000	3,454,822,000
Appropriation ^b	722,669,000 ^f	2,565,000,000	24,950,000	3,312,619,000
Later transfers ^c				
From R&D to R&PM	+ 7,875,000	- 7,875,000		
From R&D to CoF		- 1,200,000	+ 1,200,000	
From R&PM to GSA ^g	- 146,000			- 146,000
Adjusted appropriations	730,398,000	2,555,925,000	26,150,000	3,312,473,000

*R&PM = Research and Program Management; R&D = Research and Development; CoF = Construction of Facilities; GSA = General Services Administration.

^aP.L. 91-303, July 2, 1970.

^bP.L. 91-556, December 17, 1970.

^cBased on provision of public law. Figures as of June 30, 1971.

^dIncludes \$43,944 supplemental request.

^eIncludes \$43,944 supplemental authorization.

^fIncludes \$43,944 supplemental appropriation. P.L. 92-18, May 25, 1971.

Source: *The Budget of the U.S. Government, Fiscal Year 1973*, Appendix, pp. 809-816; NASA, Office of Administration, Budget Operations Division, *Chronological History, Fiscal Year 1971 Budget Submission*, June 11, 1971; information supplied by NASA, Budget Operations Division.

Table 4-11. Funding NASA's Program for FY 1972

Action	R&PM*	R&D*	CoF*	Total
Budget request	738,722,000 ^d	2,517,700,000	56,300,000	3,312,722,000
Authorization ^a	734,722,000 ^d	2,603,200,000	58,400,000	3,396,322,000
Appropriation ^b	734,722,000 ^d	2,522,700,000	52,700,000	3,310,122,000
Later transfers ^c				
From R&PM to GSA ^c	- 2,131,000			- 2,131,000
Adjusted appropriations	732,591,000	2,522,700,000	52,700,000	3,307,991,000

R&PM = Research and Program Management; R&D = Research and Development; CoF = Construction of Facilities; GSA = General Services Administration.

^aP.L. 92-68, August 6, 1971.

^bP.L. 92-78, August 10, 1971.

^cBased on provision of public law. Figures as of June 30, 1972.

^dIncludes \$12,087,000 supplemental appropriations. P.L. 92-306, May 27, 1972.

Source: *The Budget of the U.S. Government, Fiscal Year 1974*, Appendix, pp. 809-816; NASA, Office of Administration, Budget Operations Division, *Chronological History, Fiscal Year 1972 Budget Submission*, Jul. 7, 1972; information supplied by NASA, Budget Operations Division.

Table 4-12. Funding NASA's Program for FY 1973

Action	R&PM*	R&D*	CoF*	Total
Budget request	729,450,000 ^d	2,600,900,000	77,300,000	3,407,650,000
Authorization ^a	729,450,000 ^d	2,637,400,000	77,300,000	3,444,150,000
Appropriation ^b	729,450,000 ^d	2,600,900,000	77,300,000	3,407,650,000
Later transfers ^c				
From R&D to CoF		- 1,425,000	+ 1,425,000	
From R&PM to GSA ^e	- 15,000			- 15,000
Adjusted appropriations	729,435,000	2,599,475,000	78,725,000	3,407,635,000

*R&PM = Research and Program Management; R&D = Research and Development; CoF = Construction of Facilities; GSA = General Services Administration.

^aP.L. 92-304, May 19, 1972.

^bP.L. 92-383, August 14, 1972.

^cBased on provision of public law. Figures as of June 30, 1973.

^dIncludes \$28,650,000 pay increase.

Source: *The Budget of the U.S. Government, Fiscal Year 1973*, Appendix, pp. 797-805; NASA, Office of Administration, Budget Operations Division, *Chronological History, Fiscal Year 1973 Budget Submission*, Sept. 5, 1972; information supplied by NASA, Budget Operations Division.

Table 4-13. Funding NASA's Program for FY 1974

Action	R&PM*	R&D*	CoF*	Total
Budget request	744,786,000 ^c	2,197,000,000	112,000,000	3,053,786,000
Authorization ^a	744,600,000 ^c	2,245,500,000	112,000,000	3,102,100,000
Appropriation ^b	744,600,000 ^c	2,194,000,000	101,100,000	3,039,700,000

*R&PM = Research and Program Management; R&D = Research and Development; CoF = Construction of Facilities.

^aP.L. 93-74, July 23, 1973.

^bP.L. 93-137, October 26, 1973.

^cIncludes \$37,600,000 supplemental pay increase to cover a pay increase.

Source: *The Budget of the U.S. Government, Fiscal Year 1976*, Appendix, pp. 799-806; NASA Comptroller, Office of Budget Operations, *Chronological History, Fiscal Year 1974 Budget Submission*, June 26, 1974; information supplied by NASA, Budget Operations Division.

Table 4-14. Funding NASA's Program for FY 1975

Action	R&PM*	R&D*	CoF*	Total
Budget request	769,599,000 ^d	2,346,015,000	151,490,000	3,267,104,000
Authorization ^a	769,599,000 ^d	2,372,815,000	144,490,000	3,286,904,000
Appropriation ^b	759,975,000 ^e	2,331,015,000	140,155,000	3,231,145,000
Later transfers ^c				
From R&D to R&PM	+ 4,952,000	- 4,952,000		
From R&D to CoF		- 2,500,000	+ 2,500,000	
From R&PM to GSA ^f	- 52,000			- 52,000
Adjusted appropriations	764,875,000	2,323,563,000	142,655,000	3,231,093,000

*R&PM = Research and Program Management; R&D = Research and Development; CoF = Construction of Facilities; GSA = General Services Administration.

^aP.L. 93-316, June 22, 1974.

^bP.L. 93-414, September 6, 1974.

^cBased on provision of public law. Figures as of June 30, 1975.

^dIncludes supplemental \$19,975,000 for pay increase. P.L. 94-32, June 12, 1975.

^eIncludes supplemental \$19,975,000 for pay increase and \$4,435,000 for special energy supplemental funds. P.L. 93-316.

Source: *The Budget of the U.S. Government, Fiscal Year 1977*, Appendix, pp. 661-667; NASA Comptroller, Office of Budget Operations, *Chronological History, Fiscal Year 1975 Budget Submission*, Aug. 13, 1975; information supplied by NASA, Budget Operations Division.

Table 4-15. Funding NASA's Program for FY 1976

Action	R&PM*	R&D*	CoF*	Total
Budget request	795,986,000 ^c	2,678,380,000	84,620,000	3,558,986,000
Authorization ^a	792,800,000 ^d	2,687,180,000	99,130,000	3,579,110,000
Appropriation ^b	792,312,000 ^d	2,677,380,000	82,130,000	3,551,822,000

*R&PM = Research and Program Management; R&D = Research and Development; CoF = Construction of Facilities.

^aP.L. 94-39, June 19, 1975.

^bP.L. 94-116, October 17, 1975.

^cIncludes \$19,986,000 supplemental funding request.

^dIncludes \$16,800,000 supplemental appropriation. P.L. 94-303, June 1, 1976.

Source: *The Budget of the U.S. Government, Fiscal Year 1978*, Appendix, pp. 655-661; NASA Comptroller, Office of Budget Operations, *Chronological History, Fiscal Year 1975 Budget Submission*, June 16, 1976; information supplied by NASA, Budget Operations Division.

Table 4-15a. Funding NASA's Program for TQ

Action	R&PM*	R&D*	CoF*	Total
Budget request	220,917,000 ^c	730,600,000	14,500,000	966,017,000
Authorization ^a	220,917,000 ^c	700,600,000	10,750,000	932,267,000
Appropriation ^b	220,795,000 ^c	700,600,000	10,750,000	932,145,000

*R&PM = Research and Program Management; R&D = Research and Development; CoF = Construction of Facilities.

^aP.L. 94-39, June 19, 1975.

^bP.L. 94-116, October 17, 1975.

^cIncludes \$7,117,000 supplemental funding request.

Source: *The Budget of the U.S. Government, Fiscal Year 1979, Appendix, pp. 787-793*; NASA Associate Administrator/Comptroller, Office of Budget Operations, *Chronological History, Fiscal Year 1977 Budget Submission, Aug. 23, 1977*; information supplied by NASA, Budget Operations Division.

Table 4-16. Funding NASA's Program for FY 1977

Action	R&PM*	R&D*	CoF*	Total
Budget request	845,832,000 ^c	2,758,925,000	124,020,000	3,728,777,000
Authorization ^a	845,030,000 ^d	2,856,425,000	120,290,000	3,821,745,000
Appropriation ^b	844,575,000 ^d	2,856,425,000	118,090,000	3,819,090,000

*R&PM = Research and Program Management; R&D = Research and Development; CoF = Construction of Facilities.

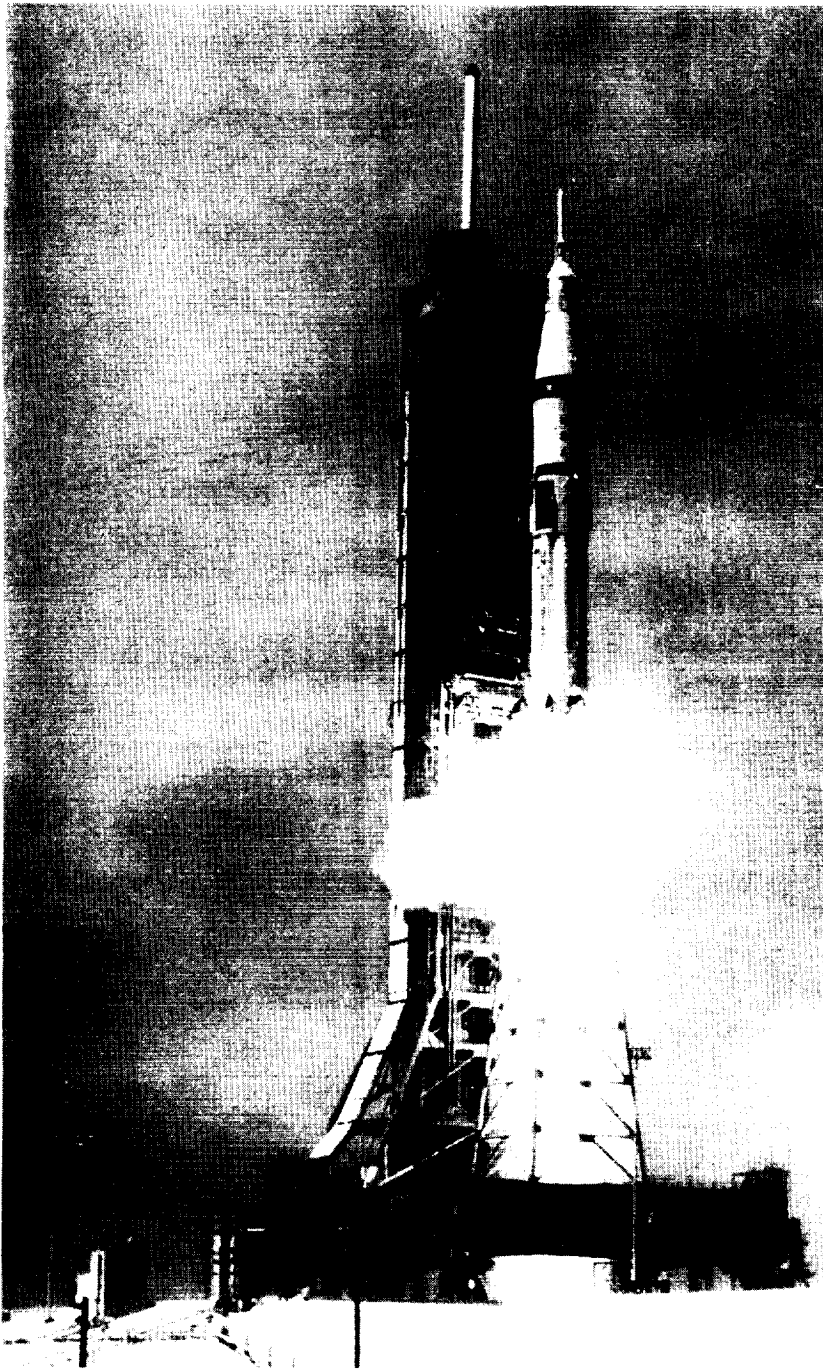
^aP.L. 94-307, June 4, 1976.

^bP.L. 94-378, August 9, 1976.

^cIncludes \$31,777,000 supplemental request.

^dIncludes \$31,575,000 supplemental appropriation. P.L. 95-26, May 4, 1977.

Source: *The Budget of the U.S. Government, Fiscal Year 1979*, Appendix, pp. 787-793; NASA Associate Administrator/Comptroller, Office of Budget Operations, *Chronological History, Fiscal Year 1977 Budget Submission*, Aug. 23, 1977; information supplied by NASA, Budget Operations Division.



A Saturn IB launch vehicle lifts into space on July 15, 1975 from Kennedy Space Center's Launch Complex with Astronauts Thomas Stafford, Vance Brand and Donald Slayton aboard the Apollo Command Module. The astronauts will dock in space with the Soyuz spacecraft, launched from the Soviet Union earlier that day.

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Table 4-17. Funding NASA's Program for FY 1978

Action	R&PM*	R&D*	CoF*	Total
Budget request	893,189,000 ^d	3,026,000,000	161,800,000	4,080,989,000
Authorization ^a	892,750,000	3,041,500,000	160,940,000	4,095,190,000
Appropriation ^b	889,761,000	3,013,000,000 ^c	160,940,000	4,063,701,000
Later transfers ^e				
From R&D to CoF		- 1,400,000	+ 1,400,000	
Adjusted appropriations	889,761,000	3,011,600,000	162,340,000	4,063,701,000

*R&PM = Research and Program Management; R&D = Research and Development; CoF = Construction of Facilities.

^aP.L. 95-76, July 30, 1977.

^bP.L. 95-119, October 4, 1977.

^cBased on provision of public law. Figures as of June 30, 1978.

^dIncludes \$46,200,000 supplemental request.

^eIncludes \$45,761,000 supplemental appropriation. P.L. 95-355, September 8, 1978.

Source: *The Budget of the U.S. Government, Fiscal Year 1980*, Appendix, pp. 819-828; NASA Associate Administrator/Comptroller, Office of Budget Operations, *Chronological History, Fiscal Year 1978 Budget Submission*, Oct. 19, 1978; information supplied by NASA, Budget Operations Division.

Table 4-18. Administrative Operations Appropriation by Installation*
(in millions of dollars; at end of fiscal year)

Installation	1969	1970	1971	1972	1973	1974	1975	1976 ^e	1977	1978
Ames Research Center	34.0	37.6	40.6	42.2	42.4	46.4	48.6	63.9	53.1	57.7
Electronics Research Center ^a	17.2	19.1	—	—	—	—	—	—	—	—
Flight Research Center ^b	9.7	10.3	11.1	11.7	11.7	12.2	13.2	19.7	17.2	18.2
Goddard Space Flight Center	73.2	86.4	93.1	96.5	95.7	97.3	104.8	136.6	114.3	123.5
Kennedy Space Center	95.8	97.6	98.3	92.6	92.4	94.4	95.9	128.0	110.1	116.3
Langley Research Center	63.0	69.8	75.3	80.2	78.6	83.3	88.6	115.7	94.7	100.7
Lewis Research Center	67.9	73.9	78.0	82.5	81.2	79.6	80.3	102.4	83.3	84.7
Manned Spacecraft Center ^c	98.9	106.6	111.1	113.0	110.6	117.6	121.3	165.2	139.1	146.2
Marshall Space Flight Center	116.3	125.7	145.1	138.9	137.2	137.5	129.1	170.0	140.2	143.6
Space Nuclear Propulsion Office ^d	2.1	2.3	2.4	2.2	—	1.1	—	—	—	—
Wallops Station ^e	9.1	9.7	10.3	10.9	10.8	11.6	12.4	17.0	13.3	15.1
NASA Headquarters	60.8	63.2	64.9	61.6	61.2	63.0	68.9	93.5	78.4	83.4
Appropriations, Transfers, and Adjustments	-44.8	-12.2	-7.5	2.4	7.6	0.6	-3.1	1.1	0.9	0.4
TOTAL	603.2	690.0	722.7	734.7	729.4	744.6	760.0	1,013.1	844.6	889.8

*Administrative Operations renamed Research & Program Management (R&PM) in 1970.

^e1976 and TQ

^dDisestablished in 1970.

^bRenamed Dryden Flight Research Center in 1976.

^cRenamed Johnson Space Center in 1973.

^dRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^eRenamed Wallops Flight Center in 1974.

Source: *NASA Pocket Statistics*.

Table 4-19. Research and Development Appropriation by NASA Installation
(in millions of dollars; at end of fiscal year)

Installation	1969	1970	1971	1972	1973	1974	1975	1976	TQ	1977	1978
Ames Research Center	66.4	70.4	91.9	75.1	73.5	83.2	112.6	138.3	33.2	113.1	115.5
Electronics Research Center ^a	21.9	7.2	—	—	—	—	—	—	—	—	—
Flight Research Center ^b	16.9	11.3	16.1	14.1	16.0	16.7	17.6	22.8	7.0	23.8	18.6
Goddard Space Flight Center	422.3	430.7	469.4	458.7	490.3	401.1	386.5	365.7	96.7	381.2	492.9
Jet Propulsion Laboratory	143.1	169.8	154.3	207.1	207.6	219.0	211.4	196.0	54.5	195.2	201.4
Kennedy Space Center	385.5	273.4	179.9	159.6	182.0	111.6	98.5	104.1	31.9	138.9	170.0
Langley Research Center	84.5	103.4	102.2	202.2	241.4	288.2	171.0	150.5	45.0	143.0	157.1
Lewis Research Center	109.1	113.9	128.7	138.3	198.4	182.1	129.9	166.4	38.1	148.6	133.6
Manned Spacecraft Center ^c	1,083.6	1,013.8	601.7	442.4	485.5	607.8	785.1	996.7	245.2	1,085.0	970.7
Marshall Space Flight Center	693.2	732.2	633.5	668.6	472.3	295.4	289.8	422.8	122.8	509.2	630.9
National Space Technology Laboratories ^d	—	—	—	—	0.3	—	1.7	8.0	2.8	7.7	10.0
Space Nuclear Propulsion Office ^e	30.3	32.1	33.3	7.9	2.2	—	—	—	—	—	—
Wallops Station ^f	7.9	10.2	11.3	13.3	15.5	15.1	14.6	15.4	4.4	17.6	15.9
NASA Headquarters	134.8	149.5	121.3	124.3	104.6	87.6	87.9	90.9	18.9	95.7	95.0
Undistributed	0.5	0.8	0.1	0.1	0.7	0.1	0.1	—	—	—	—
Appropriations, Transfers and Adjustments	170.3	-112.6	21.3	11.0	110.6	-113.9	24.3	-0.2	0.1	-2.6	1.4
TOTAL	3,370.3	3,006.0	2,565.0	2,522.7	2,600.9	2,194.0	2,331.0	2,677.4	700.6	2,856.4	3,153.4

^aDisestablished in 1970.

^bRenamed Dryden Flight Research Center in 1976.

^cRenamed Johnson Space Center in 1973.

^dEstablished as an independent NASA field installation in 1974.

^eRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^fRenamed Wallops Flight Center in 1974.

Source: Senate hearings for fiscal year 1980.

Table 4-20. Construction of Facilities Appropriation by Facility^a
(in millions of dollars; at end of fiscal year)

Facility	1969	1970	1971	1972	1973	1974	1975	1976 ^b	1977	1978
Ames Research Center	0.4	0.3	1.1	6.5	3.2	—	3.7	2.6	4.4	—
Flight Research Center ^c	—	0.9	—	—	—	—	—	—	0.8	0.4
Goddard Space Flight Center	—	0.7	1.4	0.7	0.6	1.3	1.9	—	—	4.5
Jet Propulsion Laboratory	—	—	1.9	—	0.5	1.3	9.2	—	—	3.1
Kennedy Space Center	7.4	10.5	0.3	15.6	9.7	—	—	—	2.6	1.7
Langley Research Center	—	5.6	0.6	—	4.3	4.0	3.2	1.6	6.1	1.6
Lewis Research Center	—	0.3	0.7	0.8	10.0	—	3.7	—	2.7	0.8
Manned Spacecraft Center ^d	0.9	—	1.1	—	0.6	—	0.7	—	2.2	2.0
Marshall Space Flight Center	—	—	1.3	—	—	—	3.8	—	—	—
Michoud Assembly Facility	0.4	—	—	—	—	—	—	—	—	—
Stennis Space Center	—	1.4	—	—	—	—	—	—	—	0.6
Wallops Station ^e	0.5	0.5	—	—	0.6	0.9	1.1	—	—	—
Various Locations	20.8	26.4	22.5	0.7	—	3.7	7.7	—	—	1.1
Facility Planning and Design	1.0	3.5	5.4	3.4	7.9	13.5	10.8	12.5	12.6	11.7
Rehabilitation and Modifications ^f	—	—	—	7.8	11.6	14.8	14.8	23.0	17.8	18.9
Shuttle Facilities	—	—	—	18.5	27.8	56.5	76.5	46.6	30.3	64.7
Shuttle Payload Facility	—	—	—	—	—	—	—	—	4.4	7.3
Large Aeronautical Facilities	—	—	—	—	—	—	—	—	31.0	37.0
Minor Construction	—	—	—	—	1.7	4.6	4.6	6.2	2.9	6.0
Appropriations, Transfers, and Adjustments	-9.6	3.1	-11.3	-1.3	-1.2	0.5	-1.5	0.4	0.3	-0.5
TOTAL	21.8	53.2	25.0	52.7	77.3	101.1	140.2	92.9	118.1	160.9

^aAs of September 30, 1989.
^b1976 and TO.
^cRenamed Dryden Flight Research Center in 1976.
^dRenamed Johnson Space Center in 1973.
^eRenamed Wallops Flight Center in 1974.
^fIncluded in Various Locations prior to FY 1972.
 Source: NASA Pocket Statistics.

Table 4-21. Research and Development Appropriation by Program
(in millions of dollars; at end of fiscal year)

Program	1969	1970	1971	1972	1973	1974	1975	1976	TQ	1977	1978	Total
Manned Space Flight	2,177.0	2,030.9	1,421.7	1,275.6	1,326.1	1,153.2	1,211.8	1,559.5	406.0	1,741.5	1,749.1	16,052.4
Space Science	356.6	396.9	398.7	553.7	481.7	504.3	415.9	434.8	116.4	363.1	407.1	4,429.2
Space Applications	98.7	128.3	166.9	186.3	189.4	159.1	176.2	178.0	47.7	210.1	232.1	1,772.8
Aeronautics and Space Technology	276.0	272.2	262.5	215.3	230.9	234.4	237.5	247.1	62.4	270.0	324.2	2,632.5
Tracking and Data Acquisition	279.7	278.0	289.9	264.0	248.3	244.0	247.0	240.8	63.4	253.3	276.3	2,684.7
Technology Utilization	3.8	5.0	4.0	5.0	4.0	4.5	5.5	7.5	2.0	8.1	9.1	58.5
Low Cost Systems/Standards and Practices	—	—	—	—	—	3.1	5.0	6.1	1.5	8.8	9.0	33.5
Operating Account	2.2	0.3	—	11.8	9.9	3.2	7.8	3.8	1.1	4.1	4.7	48.9
University Affairs	6.0	7.0	—	—	—	—	—	—	—	—	—	13.0
Energy Programs	—	—	—	—	—	2.1	—	—	—	—	—	2.1
Appropriations, Transfers, and Adjustments	170.3	-112.6	21.3	11.0	110.6	-113.9	24.3	-0.2	0.1	-2.6	1.4	109.7
TOTAL	3,370.3	3,006.0	2,565.0	2,522.7	2,600.9	2,194.0	2,331.0	2,677.4	700.6	2,856.4	3,013.0	27,837.3

Source: NASA Pocket Statistics.

Table 4-22. Research and Development Budget Plan by Program^a
(in thousands of dollars; at end of fiscal year)

Budget Line Item	1969	1970	1971	1972	1973	1974	1975	1976	TQ	1977	1978
Apollo	2,025,000	1,684,367	913,669	601,200	56,700	—	—	—	—	—	—
Space flight operations	150,000	343,100	507,300	582,775	879,000	523,400	298,800	188,674	48,000	199,200	267,800
Space shuttle	—	—	—	100,000	198,575	475,000	797,500	1,206,000	321,000	1,413,100	1,349,200
Advanced missions	2,500	2,500	1,500	1,500	1,500	1,500	—	—	—	—	—
Physics and astronomy	128,850	112,851	115,956	110,100	126,200	94,000	136,315	159,300	43,500	166,300	224,200
Lunar and planetary exploration	87,923	150,900	144,900	291,500	331,969	392,482	261,200	254,250	67,464	191,900	147,200
Bioscience	37,900	19,655	12,898	—	—	—	—	—	—	—	—
Launch vehicle procurement ^b	99,900	107,819	124,900	151,300	221,000	178,000	139,500	165,900	37,100	151,400	134,500
Life sciences	—	—	—	—	—	—	19,800	20,576	5,436	22,125	33,300
Space applications	98,665	128,304	166,960	187,500	188,700	159,000	174,748	178,230	47,700	198,200	234,800
Aeronautical research and technology	—	95,685	100,132	109,340	150,640	168,000	166,400	175,350	43,800	190,100	228,000
Space research and technology ^c	—	119,977	105,004	74,365	81,860	66,307	71,365	74,900	19,300	82,000	97,700
Energy programs ^d	—	—	—	—	—	4,693	4,435	5,900	1,500	6,000	7,500
Nuclear power and propulsion ^e	33,502	55,269	55,200	29,806	—	—	—	—	—	—	—
Basic research ^f	20,220	—	—	—	—	—	—	—	—	—	—
Space vehicle systems ^f	31,349	—	—	—	—	—	—	—	—	—	—
Electronics systems ^f	34,460	—	—	—	—	—	—	—	—	—	—
Human factor systems ^f	19,402	—	—	—	—	—	—	—	—	—	—
Space power and electric propulsion systems ^f	38,787	—	—	—	—	—	—	—	—	—	—
Chemical propulsion ^f	25,752	—	—	—	—	—	—	—	—	—	—
Aeronautical vehicles ^f	74,748	—	—	—	—	—	—	—	—	—	—
Tracking and data acquisition	279,672	278,000	289,943	264,000	248,331	244,000	248,000	240,800	63,400	255,000	278,300
Technology utilization	3,800	5,000	4,000	5,000	4,000	4,500	5,500	7,500	2,000	8,100	9,100
University affairs	9,000	7,000	—	—	—	—	—	—	—	—	—
TOTAL	3,201,430	3,110,427	2,542,362	2,508,386	2,488,475	2,310,882	2,323,563	2,677,380	700,600	2,883,425	3,011,600

^aIncludes funds transferred between appropriations, funds applied from and to other years, and unobligated funds available or lapsing.

^bRenamed Expendable launch vehicles in 1975.

^cCalled Space and nuclear research and technology from 1973 to 1974.

^dRenamed Energy technology in 1976.

^eCombined with Space research and technology in 1973.

^fAfter 1969 included in either Aeronautical research and technology or Space research and technology.

Source: NASA Budget Estimates, 1971-1980.

Table 4-23. Summary of Budget Plan by Program* (in thousands of dollars; at end of fiscal year)

OFFICE	1969	1970	1971	1972	1973
Research and Program Management	587,187	702,178	722,134	740,312	721,783
Research and Development					
Manned Space Flight	2,177,500	2,029,967	1,422,469	1,285,475	1,135,775
Space Science and Applications ^a	453,238	519,529	398,654	552,900	679,169
Applications	—	—	166,960	187,500	188,700
University Affairs	9,000	7,000	—	—	—
Aeronautics and Space Technology ^b	278,220	270,931	260,336	213,511	232,500
Tracking and Data Acquisition	279,672	278,000	289,943	264,000	248,331
Technology Utilization	3,800	5,000	4,000	5,000	4,000
TOTAL	3,201,430	3,110,427	2,542,362	2,508,386	2,488,475
Construction of Facilities	31,080	50,112	28,755	54,300	78,725
TOTAL	3,819,697	3,862,717	3,293,251	3,302,998	3,288,983

Table 4-23. Summary of Budget Plan by Program* (Continued)
(in thousands of dollars; at end of fiscal year)

OFFICE	1974	1975	1976	TQ	1977	1978
Research and Program Management	743,968	764,704	792,312	220,169	844,361	889,506
Research and Development						
Manned Space Flight/Space Flight/ Space Transportation Systems ^c	999,900	1,235,800	1,560,574	406,500	1,763,700	1,751,500
Space Science	664,482	417,315	434,126	116,400	380,325	404,700
Space and Terrestrial Applications ^d	159,000	174,748	178,230	47,700	206,300	243,900
Aeronautics and Space Technology	234,307	237,765	250,250	63,100	278,100	333,200
Energy Programs ^e	4,693	4,435	5,900	1,500	—	—
Tracking and Data Acquisition	244,000	248,000	240,800	63,400	255,000	278,300
Technology Utilization	4,500	5,500	7,500	2,000	—	—
TOTAL	2,310,882	2,323,563	2,677,380	700,600	2,883,425	3,011,600
Construction of Facilities	101,100	142,655	82,130	10,750	118,090	162,340
TOTAL	3,155,950	3,230,922	3,551,822	931,519	3,845,876	4,063,446

*Includes funds transferred between appropriations, funds applied from and to other years, and unobligated funds available or lapsing.

^aCalled Space Science and Applications until 1970, after which it was divided into two programs.

^bCalled Advanced Research and Technology until 1970.

^cRenamed Space Flight in 1975 and Space Transportation Systems in 1977.

^dCalled Applications until 1974.

^eCalled Energy Technology Applications during 1976.

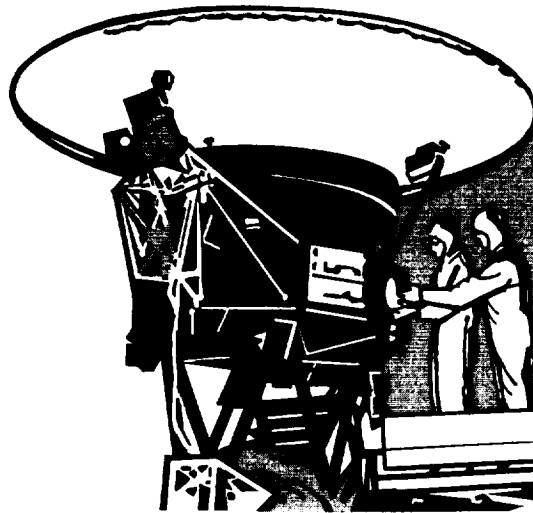
Source: NASA Budget Estimates, 1971-1980.

Table 4-24. NASA Outlays and Inflation Index
(in millions of current dollars and constant FY 1966 dollars)

Year	Outlays	Constant FY 1966 Dollars	NASA Inflation Index	
			Factor	Inflation
1969	4,252	3,361	1.194	6.3
1970	3,753	2,950	1.272	6.5
1971	3,382	2,520	1.342	5.5
1972	3,423	2,419	1.415	5.4
1973	3,315	2,219	1.494	5.6
1974	3,256	2,035	1.598	7.0
1975	3,267	1,879	1.739	8.8
1976	3,669	1,935	1.896	9.0
1977	3,945	1,878	2.101	10.8 ^a
1978	3,983	1,758	2.265	7.8

^aTQ and 1977.

Source: Senate hearings.



CHAPTER FIVE

NASA PROCUREMENT

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CHAPTER FIVE

NASA PROCUREMENT

NASA's policy of contracting for most of its goods and services was established by the Space Act of 1958. Large-scale procurement expanded rapidly, and between 1962 and 1968 more than 90 percent of NASA's annual expenditures were for payments to outside contractors for a wide range of products and services. Total payments to outside contractors for goods and services during the decade 1969-78 amounted to \$32,133.3 million, or 86.4 percent of NASA's total expenditures in that decade. The slight overall decline in the percentage of NASA's expenditures allocated to procurement during 1969-78 may be partially explained by the fact that construction of research facilities and installations had been almost completed in the previous decade and goods and services from outside contractors for this purpose were no longer needed. The annual net value of NASA procurement during this period ranged from a low of \$2,673.4 million in 1973 to a high of \$3,659.6 million in 1978. Because the number of procurement actions declined steadily from a high of 307,700 in 1969 to a low of 153,700 in 1978, the average value of a procurement action increased considerably during this decade.

Participants in the NASA procurement program consisted of business firms, educational institutions, private research organizations, and government agencies. Between 1969 and 1978, business firms received almost 80 percent of NASA's total procurement value, with large business firms receiving 92 percent of the total amount allotted to business firms. Of the total value of NASA procurement to business contractors, 65 percent represented competitive awards and 35 percent noncompetitive awards. Government agencies and the Jet Propulsion Laboratory, operated by the California Institute of Technology, were next with about 7 percent of the total value of NASA procurement each, followed by educational institutions with 3.9 percent, and nonprofit institutions and contractors from outside the United States with 1 percent each.

The Far West region of the United States consistently led in the total value of awards granted by NASA, ranging from a low of 23 percent in 1971 to a high of 53 percent in 1976. The Southeast region followed with a 20 percent average annual share of contracts awarded, the Mideast region came next with about 17 percent, and the Southwest region had about 10

percent. During the ten-year period, every state and the District of Columbia participated at one time or another in NASA's procurement program. California ranked first as the state consistently receiving the largest share of the total value of contracts awarded, its share being almost 52 percent of the total in 1976. Of the educational institutions participating in NASA's procurement program, the Massachusetts Institute of Technology ranked first nine times out of ten in the net value of awards granted annually by NASA to educational and nonprofit institutions.

From the very inception of the procurement program, NASA's policy has been to decentralize responsibility for the administration of the program. Field installations were given the right to oversee procurement that directly affected their own research and development work and that fell within certain dollar limits. Although the Administrator, the Deputy Administrator, and the Associate Deputy Administrator had final authority over the procurement process, day-to-day oversight of the procurement process rested in the early 1970s with the Associate Administrator for Organization and Management. In 1974 the Office of Procurement was established (headed by an Assistant Administrator), and in 1978 the position of Director of Procurement was created.

Stages in the NASA Procurement Process¹

Procurement Request. Once a project has been approved and a decision made as to the degree of external participation, the responsible organizational unit prepares a procurement request (PR). The PR, after approval by the proper operating officials, becomes the basic working document for the procurement specialist. The PR includes a description of what is wanted and what additional information is needed (suggested suppliers, security classification, etc.).

Procurement Plan. On the basis of the PR and other available information, the procurement specialist draws up a procurement plan. This plan outlines in detail each subsequent step to be taken to carry out the procurement action. It includes a description of the items to be procured, a list of all known sources, a schedule for completing each major phase of the action, the recommended kind of contract to be used, and special provisions to be included in the contract. If the items to be procured can be clearly and completely defined in specifications and drawings, formal advertising for competitive bids is possible. If the items cannot be well defined (and most work in research and development cannot), the negotiation route must be taken, whereby negotiations with potential suppliers (called "sources") are conducted on the basis of competitive technical and business proposals submitted to NASA. The "formal advertising" route usually results in a fixed-price contract, whereas the "negotiation route" usually involves a cost reimbursement contract—normally the cost-plus-a-fixed-

¹Rosholt, *Administrative History of NASA*, pp. 63–65.

fee (CPFF) variety. In NASA, 90 percent of the procurement dollar is spent via the negotiation route.

When the procurement plan has been approved by the proper authorities, the stage is set for solicitation.

Soliciting Proposals. At this stage an attempt is made to keep things as competitive as possible. When formal advertising is used, the procurement action is publicized as widely as possible, and an "Invitation for Bid" (IFB) is sent to each interested supplier. The IFB contains all the information needed to prepare a bid. It is the crucial instrument in bringing user and supplier together.

Negotiation is more complicated. An instrument called a "Request for Proposal" (RFP) is used instead of an IFB. Because a proposal is infinitely more complicated and expensive to prepare than a bid, NASA attempts to limit the sending of RFPs to parties known to be qualified. This necessitates a screening process, which may be done informally through letters and telephone calls or formally through a "pre-proposal conference" held with interested parties. After the screening, RFPs are sent to firms considered to have the required experience, facilities, and capabilities. A firm may submit a proposal even if it does not initially receive an RFP. All larger RFPs are announced in the Department of Commerce's *Business Daily*, and thus any firm may request them.

Bid and Proposal Evaluation. When formal advertising is used, it is necessary to make sure that the low bidder is qualified and that his bid meets all requirements. When negotiation is used, a much more elaborate evaluation process is necessary because cost figures are only one factor to be considered. Proposals are usually evaluated from three angles—the quality of the proposal (design, cost, schedules, etc.), the technical competence of the proposer (personnel, facilities, experience), and the managerial competence of the proposer (reporting system, accounting system, etc.). The RFP includes the criteria on which the evaluation is made. Administrative and legal personnel, as well as technical personnel, participate in proposal evaluation.

Source Selection, Contract Negotiation, and Contract Award. In formal advertising, a standard contract is awarded to the lowest qualified bidder. When negotiation is used, a decision is made, based on the evaluation described above, on the selection of the supplier to do the work. After selection, negotiations are begun to iron out the details of the contract. Because a CPFF contract is used in most cases, thorny problems of clarifying costs and determining the fee must be solved. When both sides agree, the actual contract award is made.

Contract Administration. The award of a contract is only part of the overall procurement process. What follows afterward may be even more significant. It is true that the contractor has primary responsibility for performance and that, for routine procurements, contract administration may consist of only taking delivery of the goods or services. In contracting for research and development, however, numerous interim problems arise in which NASA has a vital interest. In such cases, reviewing and evaluating

the contractor's progress is very important and may become a specialty in itself. Elaborate reporting techniques have been developed, which sometimes reveal the need for NASA to provide technical or administrative assistance to the contractor. NASA may approve certain contractor actions that require changes in costs. In certain cases, the contract may need to be modified or terminated.

Contract administration involves NASA operating technicians, procurement specialists, and people from such activities as safety, reporting, and security.

Definition of Terms

Advertised Award. Procurement action resulting from acceptance of bids made by contractors in response to formal advertising.

Award. See Procurement Action.

Competitive Negotiation. Procurement action resulting from soliciting proposals or obtaining bids from two or more sources.

Direct Action (Direct Award). Procurement action placed directly with business firms or nonprofit institutions or organizations. The term excludes procurement actions placed with or through other Federal agencies.

Intergovernmental Award. Procurement action placed with or through other Federal agencies.

Modification. Any written alteration in the specifications, delivery point, rate of delivery, contract period, price, quantity, or other contract provision of an existing contract, whether accomplished by unilateral action in accordance with a contract provision or by mutual action of the parties to the contract. It includes (a) bilateral actions, such as supplemental agreements, and (b) unilateral actions, such as change orders, notices of termination, and notices of the exercise of an option.

Negotiated Award. Procurement action resulting from negotiation procedures authorized under Title 10 U.S.C.2304(a).

Net Value. Net amount of obligations resulting from debit and credit procurement actions.

Noncompetitive Negotiation. Procurement action resulting from the solicitation of proposals from only one source.

Procurement Action (Award). Any of the following transactions that obligate or deobligate funds:

- a. Letter contracts or other preliminary notices of negotiated awards.
- b. Definitive contracts, including purchase orders.
- c. Orders against indefinite delivery contracts.
- d. Modifications.

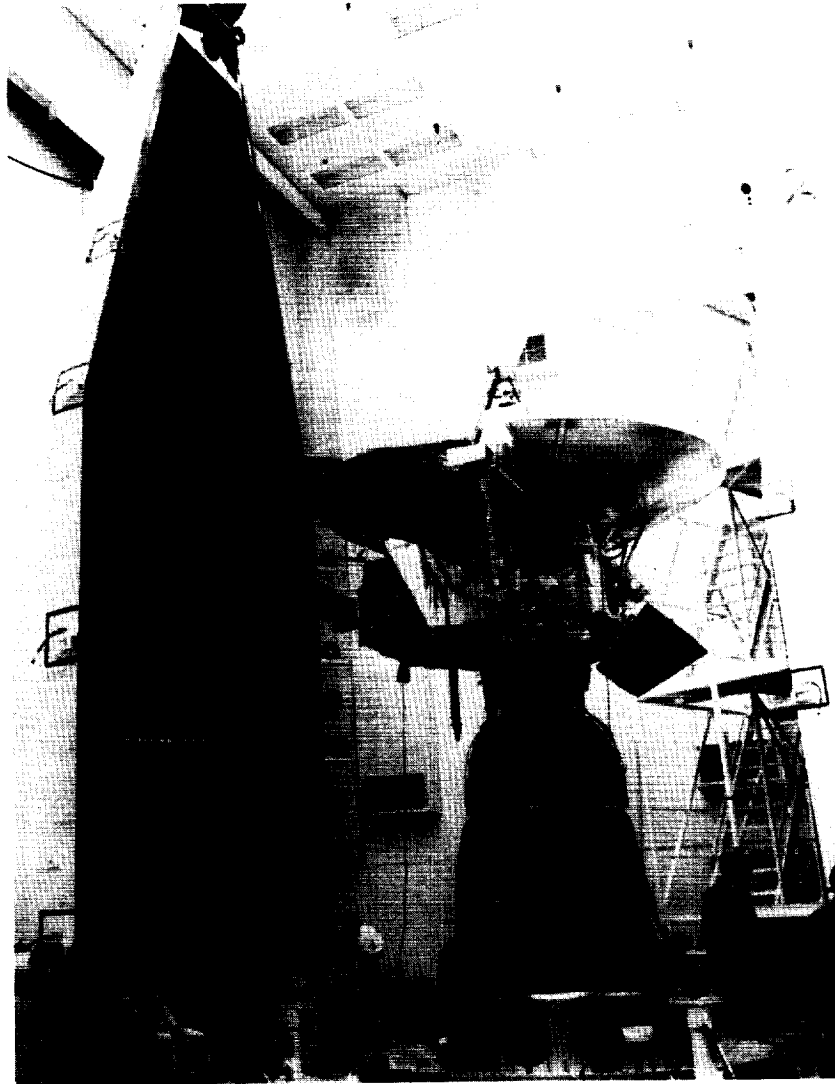
Small Business. A concern that meets the pertinent criteria established by the Small Business Administration and set forth in Paragraph 1.701 of the NASA Procurement Regulation. Generally, a small business concern

is one that is independently owned and operated, is not dominant in its field of operations, and with its affiliates does not employ more than a specified number of persons (usually not more than 500, 750, or 1,000), depending on the product called for by the contract. For construction and some service industries, the criterion is a specified annual dollar volume of sales or receipts instead of the number of employees.

**Table 5-1. Total Number of Procurement Actions by Kind of Contractor:
FY 1969–FY 1978
(in thousands)**

Kind of Contractor	Number	Percentage
Business firms	1,632.8	76.7
Small business firms	1,003.0	47.1
Large business firms	629.8	29.6
Nonprofit institutions	18.8	0.9
Educational institutions	37.5	1.8
Jet Propulsion Laboratory	9.6	0.4
Government agencies	426.6	20.0
Contractors outside United States	4.2	0.2
TOTAL	2,129.5	100.0

Source: Table 5-2.



A Pioneer spacecraft is checked out prior to its launching on a mission to the planet Jupiter by an Atlas-Centaur rocket on April 5, 1973.

**Table 5-2. Number of Procurement Actions by Kind of Contractor and Fiscal Year
(in thousands)**

Kind of Contractor	FY 1969		FY 1970		FY 1971		FY 1972		FY 1973	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Business firms	228.4	74	193.9	74	173.9	71	168.4	69	164.4	71
Nonprofit institutions	2.4	1	2.5	1	1.9	1	1.8	1	1.6	1
Educational institutions	5.2	2	4.9	2	3.2	1	3.2	1	3.2	1
Jet Propulsion Laboratory	0.4	*	0.4	*	0.3	*	0.3	*	0.6	*
Government agencies	70.9	23	60.0	23	66.2	27	70.7	29	62.8	27
Outside United States	0.4	*	0.4	*	0.4	*	0.5	*	0.5	*
TOTAL	307.7	100	262.1	100	245.9	100	244.9	100	233.1	100

Kind of Contractor	FY 1974		FY 1975		FY 1976		FY 1977		FY 1978	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Business firms	143.2	79	136.5	85	146.0	82	142.4	87	135.7	88
Nonprofit institutions	1.6	1	1.8	1	1.7	1	1.7	1	1.8	1
Educational institutions	3.0	2	3.1	2	4.4	3	3.7	2	3.6	3
Jet Propulsion Laboratory	1.2	1	1.3	1	1.7	1	1.8	1	1.6	1
Government agencies	31.3	17	17.6	11	22.8	13	13.6	9	10.7	7
Outside United States	0.4	*	0.5	*	0.4	*	0.4	*	0.3	*
TOTAL	180.7	100	160.8	100	177.0	100	163.6	100	153.7	100

Less than 0.05 %.

Source: NASA. *Annual Procurement Report* (Fiscal years 1969-1978).

Table 5-3. Number of Procurement Actions Awarded to Small and Large Business Firms by Fiscal Year
(in thousands)

Kind of Business	FY 1969		FY 1970		FY 1971		FY 1972		FY 1973	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Small business firms	140.7	62	116.6	60	103.8	60	103.2	61	101.1	61
Large business firms	87.7	38	77.3	40	70.1	40	65.2	39	63.3	39
TOTAL	228.4	100	193.9	100	173.9	100	168.4	100	164.4	100

Kind of Business	FY 1974		FY 1975		FY 1976		FY 1977		FY 1978	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Small business firms	88.0	61	84.4	62	91.1	62	89.3	63	84.8	62
Large business firms	55.2	39	52.1	38	54.9	38	53.1	37	50.9	38
TOTAL	143.2	100	136.5	100	146.0	100	142.4	100	135.7	100

Source: NASA, *Annual Procurement Report* (Fiscal years 1969-1978).

**Table 5-4. Total Procurement Award Value by Kind of Contractor:
FY 1969–FY 1978
(in millions of dollars)**

Kind of Contractor	Amount	Percentage
Business firms	25,632.9	79.8
Small business firms	2,038.7	8.0% of all business
Large business firms	23,594.2	92.0% of all business
Nonprofit institutions	335.7	1.0
Educational institutions	1,252.6	3.9
Jet Propulsion Laboratory	2,272.3	7.1
Government agencies	2,332.7	7.2
Outside United States	307.1	1.0
TOTAL	32,133.3	100.0

Method of Procurement (Business)	Amount	Percentage
Competitive awards	16,672.4	65.0
Noncompetitive awards	8,960.5	35.0
TOTAL	25,632.9	100.0

Source: Tables 5-5 and 5-6.

Table 5-5. Value of Awards by Kind of Contractor and Fiscal Year
(in millions of dollars)

Kind of Contractor	FY 1969		FY 1970		FY 1971		FY 1972	
	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage
Business firms	3,022.3	83	2,759.2	81	2,279.5	80	2,143.3	78
Nonprofit institutions	32.3	1	33.0	1	29.3	1	28.0	1
Educational institutions	131.3	4	134.3	4	133.9	5	118.8	4
Jet Propulsion Laboratory	156.3	4	179.8	5	173.3	6	210.8	8
Government agencies	279.0	7	265.8	8	212.5	7	207.8	8
Outside United States	30.8	1	33.5	1	29.7	1	29.1	1
TOTAL	3,652.0	100	3,405.6	100	2,858.2	100	2,737.8	100

Kind of Contractor	FY 1973		FY 1974		FY 1975		FY 1976	
	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage
Business firms	2,063.8	77	2,118.6	78	2,255.0	79	2,536.1	79
Nonprofit institutions	26.4	1	39.3	1	33.0	1	32.0	1
Educational institutions	111.7	4	97.8	4	111.4	4	123.0	4
Jet Propulsion Laboratory	202.3	8	215.2	8	234.5	8	263.7	8
Government agencies	235.2	9	208.6	8	198.3	7	222.4	7
Outside United States	34.0	1	34.1	1	34.2	1	27.4	1
TOTAL	2,673.4	100	2,713.6	100	2,866.4	100	3,204.6	100

Table 5-5. Value of Awards by Kind of Contractor and Fiscal Year (Continued)
(in millions of dollars)

Kind of Contractor	TQ		FY 1977		FY 1978	
	Amount	Percentage	Amount	Percentage	Amount	Percentage
	Business firms	663.2	80	2,838.1	80	2,953.8
Nonprofit institutions	7.6	1	32.0	1	42.8	1
Educational institutions	27.7	3	125.5	4	137.2	4
Jet Propulsion Laboratory	63.6	8	289.0	8	283.8	8
Government agencies	63.9	8	223.2	6	216.0	5
Outside United States	3.8	*	24.5	1	26.0	1
TOTAL	829.8	100	3,532.3	100	3,659.6	100

*Less than 0.5 %.

Source: NASA, *Annual Procurement Report* (Fiscal years 1969-1978).

Table 5-6. Value of Awards to Small and Large Business Firms by Fiscal Year
(in millions of dollars)

Kind of Business	FY 1969		FY 1970		FY 1971		FY 1972	
	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage
Small business firms	162.8	5	161.2	6	178.1	8	160.9	8
Large business firms	2,859.5	95	2,598.0	94	2,101.4	92	1,982.4	92
TOTAL	3,022.3	100	2,759.2	100	2,279.5	100	2,143.3	100

Kind of Business	FY 1973		FY 1974		FY 1975		FY 1976	
	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage
Small business firms	155.3	8	181.2	9	216.0	10	218.3	9
Large business firms	1,908.5	92	1,937.4	91	2,039.0	90	2,317.8	91
TOTAL	2,063.8	100	2,118.6	100	2,255.0	100	2,536.1	100

Kind of Contractor	TQ		FY 1977		FY 1978	
	Amount	Percentage	Amount	Percentage	Amount	Percentage
Small business firms	68.4	10	255.0	9	281.5	9
Large business firms	594.8	90	2,583.1	91	2,672.3	91
TOTAL	663.2	100	2,838.1	100	2,953.8	100

Source: NASA, *Annual Procurement Report* (Fiscal years 1969-1978).

Table 5-7. Value of Awards to Business Firms by Kind of Procurement by Fiscal Year
(in millions of dollars)

Kind of Procurement	FY 1969		FY 1970		FY 1971		FY 1972	
	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage
Competitive	1,632.7	54	1,628.7	59	1,331.8	58	1,311.8	61
Noncompetitive	1,389.6	46	1,130.5	41	947.7	42	831.5	39
TOTAL	3,022.3	100	2,759.2	100	2,279.5	100	2,143.3	100

Kind of Procurement	FY 1973		FY 1974		FY 1975		FY 1976	
	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage
Competitive	1,275.6	62	1,394.9	66	1,554.6	69	1,879.5	74
Noncompetitive	788.2	38	723.7	34	700.4	31	656.6	26
TOTAL	2,063.8	100	2,118.6	100	2,255.0	100	2,536.1	100

Kind of Procurement	TQ		FY 1977		FY 1978	
	Amount	Percentage	Amount	Percentage	Amount	Percentage
Competitive	490.9	73	2,060.4	73	2,111.5	72
Noncompetitive	172.3	27	777.7	27	842.3	28
TOTAL	663.2	100	2,838.1	100	2,953.8	100

Source: NASA, *Annual Procurement Report* (Fiscal years 1969-1978).

**Table 5-8. Value and Percentage^a of Direct Awards to Business Firms by Contract Pricing Provision:
FY 1969-FY 1978^b**
(in millions of dollars)

Pricing Provision	FY 1969		FY 1970		FY 1971		FY 1972	
	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage
Incentive	1,478.5	50.8	1,232.8	46.2	949.9	43.3	895.4	43.7
Fixed-price	48.7	1.7	50.5	1.9	53.6	2.4	75.3	3.7
Cost reimbursable	1,429.8	49.1	1,182.3	44.3	896.3	40.9	820.1	40.0
Other fixed-price	289.1	9.9	306.6	11.5	327.3	14.9	291.5	14.1
Firm	288.1	9.9	304.5	11.4	318.1	14.5	283.9	13.8
Redeterminable	0.7	*	0.6	*	0.1	*	0.1	*
Escalation	0.3	*	1.5	0.1	9.1	0.4	7.5	0.3
Other cost reimbursable	1,133.3	39.0	1,119.2	42.0	906.1	41.4	854.3	41.7
Cost-no-fee	4.9	0.2	5.1	0.2	3.8	0.2	22.3	1.1
Cost-plus-fixed-fee	1,123.9	38.6	1,110.8	41.7	898.5	41.0	830.0	40.5
Cost sharing	4.5	0.2	3.3	0.1	3.8	0.2	2.0	0.1
Labor hour	2.1	0.1	2.4	0.1	2.8	0.1	3.4	0.2
Time and materials	6.2	0.2	5.9	0.2	6.4	0.3	5.2	0.3
TOTAL	2,909.2	100.0	2,666.9	100.0	2,192.5	100.0	2,049.8	100.0

*Less than 0.05%.

^aPercentages may not add up to 100.0% due to rounding.

^bExcludes smaller procurements, generally those of less than \$10,000.

**Table 5-8. Value and Percentage^a of Direct Awards to Business Firms by Contract Pricing Provision:
FY 1969-FY 1978^b (Continued)**
(in millions of dollars)

Pricing Provision	FY 1973		FY 1974		FY 1975		FY 1976	
	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage
Incentive	1,143.0	57.7	1,319.0	64.9	1,486.4	68.8	1,721.3	70.6
Fixed-price	133.3	6.7	160.0	7.9	187.1	8.7	183.5	7.5
Cost reimbursable	1,009.7	51.0	1,159.0	57.0	1,299.3	60.1	1,537.8	63.1
Other fixed-price	228.3	11.5	305.3	15.0	327.2	15.1	365.4	15.0
Firm	226.9	11.4	302.5	14.9	326.5	15.1	364.3	14.9
Redeterminable	1.0	0.1	2.7	0.1	0.1	*	0.5	*
Escalation	0.4	*	0.1	*	0.6	*	0.6	*
Other cost reimbursable	601.4	30.4	399.0	19.6	336.5	15.6	343.7	14.1
Cost-no-fee	37.8	1.9	28.6	1.4	24.0	1.1	15.5	0.6
Cost-plus-fixed-fee	448.3	28.2	336.5	16.6	303.6	14.0	321.2	13.2
Cost sharing	5.3	0.3	33.9	1.6	8.9	0.5	7.0	0.3
Labor hour	2.8	0.1	3.1	0.2	5.1	0.2	3.7	0.2
Time and materials	5.8	0.3	5.4	0.3	6.7	0.3	5.1	0.2
TOTAL	1,981.3	100.0	2,031.8	100.0	2,161.9	100.0	2,439.2	100.0

*Less than 0.05%.

^aPercentages may not add up to 100.0% due to rounding.

^bExcludes smaller procurements, generally those of less than \$10,000.

**Table 5-8. Value and Percentage^a of Direct Awards to Business Firms by Contract Pricing Provision:
FY 1969-FY 1978^b (Continued)**
(in millions of dollars)

Pricing Provision	TQ		FY 1977		FY 1978	
	Amount	Percentage	Amount	Percentage	Amount	Percentage
Incentive	450.1	70.7	1,897.4	69.4	1,881.3	66.1
Fixed-price	43.0	6.8	153.9	5.6	134.5	4.7
Cost reimbursable	407.1	63.9	1,743.5	63.8	1,746.8	61.3
Other fixed-price	99.7	15.7	411.7	15.1	476.8	16.7
Firm	99.5	15.6	411.3	15.1	476.4	16.7
Redeterminable	0.2	0.1	0.3	*	0.1	*
Escalation	—	—	0.1	*	0.3	*
Other cost reimbursable	84.9	13.3	415.7	15.2	483.3	17.0
Cost-no-fee	3.1	0.5	40.1	1.5	53.9	1.9
Cost-plus-fixed-fee	80.3	12.6	344.5	12.6	382.2	13.4
Cost sharing	1.5	0.2	31.1	1.1	47.2	1.7
Labor hour	1.2	0.2	4.4	0.2	4.6	0.2
Time and materials	0.8	0.1	2.3	0.1	2.3	0.1
TOTAL	636.7	100.0	2,731.5	100.0	2,848.3	100.0

*Less than 0.05%.

^aPercentages may not add up to 100.0% due to rounding.

^bExcludes smaller procurements, generally those of less than \$10,000.

Source: NASA, *Annual Procurement Report* (Fiscal years 1969-1978).

**Table 5-9. Number of Procurement Actions in Direct Awards to Business Firms
by Contract Pricing Provision by Fiscal Year***
(in thousands)

Pricing Provision	FY 1969		FY 1970		FY 1971		FY 1972		FY 1973	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Incentive	1,259	12.6	1,092	13.2	1,072	12.8	1,047	13.0	1,969	14.4
Fixed price	122	1.2	77	0.9	75	0.9	71	0.9	128	0.9
Cost reimbursable	1,137	11.4	1,015	12.3	997	11.9	976	12.1	1,841	13.4
Other fixed price	4,872	48.6	3,521	42.5	3,700	44.2	3,581	44.5	6,519	47.6
Firm	4,842	48.3	3,502	42.3	3,686	44.0	3,568	44.4	6,510	47.5
Redeterminable	22	0.2	10	0.1	6	0.1	3	*	5	*
Escalation	8	0.1	9	0.1	8	0.1	10	0.1	4	*
Other cost reimbursable	3,538	35.3	3,377	40.7	3,346	39.9	3,215	40.0	2,412	17.6
Cost-no-fee	141	1.4	73	0.9	101	1.2	98	1.2	99	0.7
Cost-plus-fixed-fee	3,386	33.8	3,292	39.7	3,223	38.5	3,093	38.5	2,284	16.7
Cost sharing	11	0.1	12	0.1	22	0.3	24	0.3	29	0.2
Labor hour	22	0.2	36	0.4	43	0.5	47	0.6	995	7.2
Time and materials	329	3.3	262	3.2	219	2.6	149	1.9	1,808	13.2
TOTAL	10,020	100.0	8,288	100.0	8,380	100.0	8,039	100.0	13,703	100.0

Less than 0.05%.

*Percentages may not add up to 100% due to rounding.

**Table 5-9. Number of Procurement Actions in Direct Awards to Business Firms
by Contract Pricing Provision by Fiscal Year^a (Continued)**
(in thousands)

Pricing Provision	FY 1974		FY 1975		FY 1976		FY 1977		FY 1978	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Incentive	1,927	14.0	2,099	13.4	2,271	13.4	2,513	15.4	2,276	13.5
Fixed price	138	1.0	152	1.0	233	1.4	165	1.0	122	0.7
Cost reimbursable	1,789	13.0	1,947	12.4	2,038	12.0	2,348	14.4	2,154	12.8
Other fixed price	8,231	59.8	8,520	54.6	9,316	54.8	9,494	58.1	10,110	60.0
Firm	8,202	59.6	8,467	54.2	9,225	54.3	9,483	58.0	10,088	59.8
Redeterminable	18	0.1	7	*	6	*	5	*	4	*
Escalation	11	0.1	46	0.3	85	0.5	6	*	18	0.1
Other cost reimbursable	2,414	17.5	2,731	17.5	3,104	18.3	3,143	19.2	3,367	19.9
Cost-no-fee	201	1.5	145	1.0	143	0.8	114	0.7	191	1.1
Cost-plus-fixed-fee	2,155	15.6	2,534	16.2	2,917	17.2	2,955	18.1	3,110	18.4
Cost sharing	58	0.4	52	0.3	44	0.3	74	0.4	66	0.4
Labor hour	783	5.7	855	5.5	1,001	5.9	941	5.7	840	5.0
Time and materials	416	3.0	1,411	9.0	1,308	7.7	263	1.6	270	1.6
TOTAL	13,771	100.0	15,616	100.0	17,000	100.0	16,354	100.0	16,863	100.0

^aLess than 0.05%.

^bPercentages may not add up to 100% due to rounding.

Source: NASA, *Annual Procurement Report* (Fiscal years 1969-1978).

Table 5-10. Distribution of Prime Contract Awards by State: FY 1969—FY 1973*
(in thousands of dollars)

State	FY 1969		FY 1970		FY 1971		FY 1972		FY 1973	
	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage
Alabama	139,223	4.5	155,005	5.5	138,195	5.9	113,261	5.2	106,042	5.0
Alaska	798	*	295	*	2,135	0.1	1,397	0.1	1,718	0.1
Arizona	4,523	0.1	6,707	0.2	8,276	0.4	6,240	0.3	6,956	0.3
Arkansas	195	*	64	*	59	*	90	*	87	*
California	1,045,855	34.1	874,791	30.9	522,826	22.2	520,455	23.7	696,005	32.9
Colorado	68,660	2.2	119,579	4.2	118,325	5.0	214,165	9.8	194,400	9.2
Connecticut	29,593	1.0	26,213	0.9	26,435	1.1	18,959	0.9	21,711	1.0
Delaware	12,618	0.4	13,399	0.5	6,723	0.3	9,139	0.4	4,300	0.2
D.C.	36,561	1.2	31,061	1.1	24,471	1.2	21,014	1.0	11,671	0.6
Florida	403,632	13.2	295,379	10.4	246,707	10.5	212,741	9.7	215,112	10.2
Georgia	2,040	0.1	3,596	0.1	7,481	0.3	5,263	0.2	5,206	0.2
Hawaii	3,779	0.1	3,978	0.1	3,006	0.1	2,903	0.1	2,100	0.1
Idaho	—	—	150	*	11	*	—	—	34	*
Illinois	8,638	0.3	9,877	0.3	9,799	0.4	7,457	0.3	8,357	0.4
Indiana	3,174	0.1	4,427	0.2	4,960	0.2	4,545	0.2	5,601	0.3
Iowa	5,105	0.2	4,039	0.1	2,229	0.1	2,031	0.1	4,072	0.2
Kansas	928	*	1,100	*	1,730	0.1	2,105	0.1	1,600	0.1
Kentucky	387	*	325	*	313	*	350	*	147	*

* Less than 0.05 percent.

* Excludes smaller procurements, generally those of less than \$10,000; also excludes awards placed through other agencies, awards outside the United States, and actions on Jet Propulsion Laboratory contracts.

() = A negative value of contracts awarded because of subcontracting to other states.

Table 5-10. Distribution of Prime Contract Awards by State: FY 1969-FY 1973* (Continued)
(in thousands of dollars)

State	FY 1969		FY 1970		FY 1971		FY 1972		FY 1973	
	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage
Louisiana	136,611	4.5	109,092	3.9	50,803	2.2	58,590	2.7	49,812	2.4
Maine	8,680	0.3	4,490	0.2	2,485	0.1	—	—	(21)	*
Maryland	134,526	4.4	140,901	5.0	181,072	7.7	173,526	7.9	181,801	8.6
Massachusetts	74,933	2.4	82,341	2.9	74,587	3.2	62,849	2.9	47,164	2.2
Michigan	18,983	0.6	27,489	1.0	43,538	1.9	22,800	1.0	10,483	0.5
Minnesota	15,189	0.5	30,641	1.1	7,962	0.3	12,960	0.6	10,578	0.5
Mississippi	2,745	0.1	1,969	0.1	19,008	0.8	14,112	0.6	13,230	0.6
Missouri	25,576	0.8	103,412	3.7	205,482	8.7	227,031	10.3	111,855	5.3
Montana	23	*	—	—	(9)	*	95	*	104	*
Nebraska	—	—	111	*	66	*	639	*	286	*
Nevada	214	*	863	*	328	*	242	*	578	*
New Hampshire	3,977	0.1	3,647	0.1	1,495	0.1	990	*	979	*
New Jersey	67,743	2.2	53,786	1.9	77,735	3.3	58,122	2.7	36,065	1.7
New Mexico	11,384	0.4	9,491	0.3	6,656	0.3	4,568	0.2	4,260	0.2
New York	376,397	12.3	299,878	10.6	135,656	5.8	48,544	2.2	45,193	2.1
North Carolina	2,407	0.1	2,359	0.1	2,363	0.1	2,553	0.1	1,637	0.1
North Dakota	4	*	—	—	(3)	*	8	*	—	—
Ohio	30,327	1.0	37,950	1.3	37,588	1.6	29,313	1.3	21,278	1.0

*Less than 0.05 percent.

*Excludes smaller procurements, generally those of less than \$10,000; also excludes awards placed through other agencies, awards outside the United States, and actions on Jet Propulsion Laboratory contracts.

() = A negative value of contracts awarded because of subcontracting to other states.

Table 5-10. Distribution of Prime Contract Awards by State: FY 1969-FY 1973* (Continued)
(in thousands of dollars)

State	FY 1969		FY 1970		FY 1971		FY 1972		FY 1973	
	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage
Oklahoma	573	*	1,126	*	1,930	0.1	1,091	0.1	997	*
Oregon	524	*	579	*	597	*	866	*	1,107	0.1
Pennsylvania	66,143	2.2	44,069	1.6	87,306	3.7	68,083	3.1	46,926	2.2
Rhode Island	484	*	667	*	468	*	240	*	312	*
South Carolina	57	*	270	*	127	*	128	*	316	*
South Dakota	8	*	57	*	476	*	(8)	*	335	*
Tennessee	1,610	0.1	1,614	0.1	1,844	0.1	1,112	0.1	1,708	0.1
Texas	246,299	8.0	266,468	9.4	212,333	9.0	198,095	9.0	180,376	8.5
Utah	2,740	0.1	1,306	*	2,146	0.1	1,680	0.1	1,259	0.1
Vermont	249	*	171	*	112	*	121	*	153	*
Virginia	27,920	0.9	30,470	1.1	37,566	1.6	46,788	2.1	44,213	2.1
Washington	9,067	0.3	4,301	0.2	11,112	0.5	10,273	0.5	13,322	0.6
West Virginia	254	*	313	*	188	*	46	*	147	*
Wisconsin	34,251	1.1	21,054	0.7	21,773	0.9	6,943	0.3	3,854	0.2
Wyoming	315	*	118	*	71	*	101	*	218	*
TOTAL	3,065,922	100.0	2,830,988	100.0	2,351,542	100.0	2,194,616	100.0	2,115,644	100.0

* Less than 0.05 percent.

*Excludes smaller procurements, generally those of less than \$10,000; also excludes awards placed through other agencies, awards outside the United States, and actions on Jet Propulsion Laboratory contracts.

() = A negative value of contracts awarded because of subcontracting to other states.

Source: NASA, *Annual Procurement Report* (Fiscal years 1969-1973).

Table 5-10a. Distribution of Prime Contract Awards by State: FY 1974-FY 1978*
(in thousands of dollars)

State	FY 1974		FY 1975		FY 1976		TQ		FY 1977		FY 1978	
	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage
Alabama	80,399	3.7	77,018	3.3	69,185	2.7	20,100	3.0	74,231	2.6	78,716	2.6
Alaska	813	*	1,387	0.1	586	*	328	0.1	836	*	742	*
Arizona	5,881	0.3	10,315	0.4	15,396	0.6	2,076	0.3	12,475	0.4	13,437	0.4
Arkansas	171	*	189	*	180	*	26	*	242	*	116	*
California	849,319	39.2	1,081,905	47.1	1,334,663	51.6	329,784	49.2	1,417,181	49.2	1,280,268	42.4
Colorado	193,405	8.9	101,490	4.4	45,544	1.8	8,947	1.3	56,173	1.9	57,038	1.9
Connecticut	35,287	1.6	31,593	1.4	15,609	0.6	2,968	0.4	34,615	1.2	67,305	2.2
Delaware	1,957	0.1	548	*	197	*	161	*	650	*	308	*
D.C.	13,873	0.6	15,135	0.7	14,069	0.5	2,720	0.4	14,388	0.5	14,109	0.5
Florida	183,191	8.5	169,782	7.4	164,929	6.4	53,136	7.9	234,317	8.1	280,949	9.3
Georgia	5,598	0.3	4,615	0.2	3,289	0.1	604	0.1	5,761	0.2	3,536	0.1
Hawaii	3,130	0.1	2,303	0.1	7,880	0.3	818	0.1	2,581	0.1	2,152	0.1
Idaho	15	*	—	—	14	*	—	—	—	—	18	*
Illinois	7,480	0.3	7,156	0.3	9,085	0.4	2,008	0.3	11,263	0.4	13,895	0.5
Indiana	5,630	0.3	4,759	0.2	7,059	0.3	2,884	0.4	11,340	0.4	16,537	0.6
Iowa	3,398	0.2	2,923	0.1	2,534	0.1	441	0.1	1,790	0.1	3,611	0.1
Kansas	1,806	0.1	2,132	0.1	1,716	0.1	183	*	2,219	0.1	3,965	0.1
Kentucky	496	*	687	*	298	*	51	*	490	*	519	*

*Less than 0.05 percent.

*Excludes smaller procurements, generally those of less than \$10,000; also excludes awards placed through other agencies, awards outside the United States, and actions on Jet Propulsion Laboratory contracts.

() = A negative value of contracts awarded because of subcontracting to other states.

Table 5-10a. Distribution of Prime Contract Awards by State: FY 1974-FY 1978* (Continued)
(in thousands of dollars)

State	FY 1974		FY 1975		FY 1976		TQ		FY 1977		FY 1978	
	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage
Louisiana	38,428	1.8	57,098	2.5	84,701	3.3	27,395	4.1	87,369	3.0	101,027	3.4
Maine	69	*	1	*	42	*	10	*	137	*	595	*
Maryland	164,174	7.6	171,249	7.4	172,532	6.7	50,278	7.5	196,110	6.8	231,340	7.7
Massachusetts	46,037	2.1	45,451	2.0	54,474	2.1	12,983	1.9	45,468	1.6	46,741	1.6
Michigan	7,085	0.3	7,089	0.3	9,009	0.3	2,022	0.3	8,904	0.3	16,076	0.5
Minnesota	10,121	0.5	11,929	0.5	14,048	0.5	2,491	0.4	8,780	0.3	14,834	0.5
Mississippi	14,727	0.7	16,120	0.7	21,358	0.8	6,699	1.0	27,782	1.0	22,917	0.8
Missouri	31,591	1.5	3,169	0.1	2,408	0.1	(791)	0.1	4,780	0.2	6,108	0.2
Montana	45	*	20	*	16	*	—	—	34	*	23	*
Nebraska	423	*	309	*	199	*	132	*	208	*	183	*
Nevada	734	*	547	*	644	*	397	0.1	1,492	0.1	1,396	*
New Hampshire	719	*	692	*	1,022	*	236	*	2,210	0.1	2,295	0.1
New Jersey	32,579	1.5	37,223	1.6	44,722	1.7	9,526	1.4	41,655	1.4	51,268	1.7
New Mexico	6,351	0.3	8,565	0.4	8,140	0.3	3,242	0.5	14,531	0.5	18,408	0.6
New York	68,236	3.2	53,759	2.3	57,059	2.2	12,133	1.8	49,850	1.7	54,688	1.8
North Carolina	2,605	0.1	2,075	0.1	3,004	0.1	402	0.1	2,042	0.1	3,095	0.1
North Dakota	—	—	—	—	—	—	—	—	—	—	—	—
Ohio	35,807	1.7	40,317	1.8	41,923	1.6	10,296	1.5	43,769	1.5	52,020	1.7

*Less than 0.05 percent.

†Excludes smaller procurements, generally those of less than \$10,000; also excludes awards placed through other agencies, awards outside the United States, and actions on Jet Propulsion Laboratory contracts.

() = A negative value of contracts awarded because of subcontracting to other states.

Table 5-10a. Distribution of Prime Contract Awards by State: FY 1974-FY 1978* (Continued)
(in thousands of dollars)

State	FY 1974		FY 1975		FY 1976		TQ		FY 1977		FY 1978	
	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage
Oklahoma	1,223	0.1	1,145	*	605	*	61	*	731	*	446	*
Oregon	1,129	0.1	1,483	0.1	1,484	0.1	201	*	2,133	0.1	1,740	0.1
Pennsylvania	26,514	1.2	35,485	1.5	41,197	1.6	14,030	2.1	58,644	2.0	73,211	2.4
Rhode Island	354	*	521	*	532	*	108	*	947	*	859	*
South Carolina	296	*	442	*	339	*	74	*	200	*	171	*
South Dakota	139	*	243	*	146	*	200	*	250	*	230	*
Tennessee	1,877	0.1	2,862	0.1	3,348	0.1	1,447	0.2	3,718	0.1	4,392	0.1
Texas	202,945	9.4	203,549	8.9	197,777	7.6	54,144	8.1	237,035	8.2	278,397	9.2
Utah	9,258	0.4	18,513	0.8	36,098	1.4	12,287	1.8	52,073	1.8	61,252	2.0
Vermont	89	*	22	*	34	*	40	*	84	*	272	*
Virginia	47,971	2.2	52,208	2.3	65,172	2.5	18,469	2.8	78,109	2.7	96,683	3.2
Washington	19,096	0.9	9,440	0.4	28,766	1.1	3,540	0.5	27,504	1.0	35,184	1.2
West Virginia	139	*	600	*	179	*	86	*	59	*	64	*
Wisconsin	3,077	0.1	2,041	0.1	3,156	0.1	932	0.1	3,626	0.1	3,602	0.1
Wyoming	285	*	1,105	*	1,532	0.1	82	*	982	*	528	*
TOTAL	2,165,945	100.0	2,299,209	100.0	2,587,899	100.0	670,387	100.0	2,881,768	100.0	3,017,266	100.0

*Less than 0.05 percent.

^aExcludes smaller procurements, generally those of less than \$10,000; also excludes awards placed through other agencies, awards outside the United States, and actions on Jet Propulsion Laboratory contracts.

() = A negative value of contracts awarded because of subcontracting to other states.

Source: NASA, *Annual Procurement Report* (Fiscal years 1974-1978).

**Table 5-11. Distribution of Prime Contract Awards by Region:
FY 1969–FY 1978**

Region	FY 1969	FY 1970	FY 1971	FY 1972	FY 1973	Total FY 1969–1973
Net Value of Awards (in Millions of dollars)						
New England	118	118	106	83	70	495
Mideast	694	583	516	379	326	2,498
Southeast	717	600	504	455	437	2,713
Great Lakes	95	101	118	71	50	435
Plains	47	139	218	245	129	778
Southwest	263	284	229	210	193	1,179
Rocky Mountain	72	121	121	216	196	726
Far West	1,055	881	535	532	411	3,714
Alaska and Hawaii	5	4	5	4	4	22
TOTAL	3,066	2,831	2,352	2,195	2,116	12,560
Percentage of Total						
New England	4	4	5	4	3	4
Mideast	23	21	22	17	16	20
Southeast	23	21	21	21	21	22
Great Lakes	3	4	5	3	2	3
Plains	2	5	9	11	6	6
Southwest	9	10	10	10	9	9
Rocky Mountain	2	4	5	10	9	6
Far West	34	31	23	24	34	30
Alaska and Hawaii	*	*	*	*	*	*
TOTAL	100	100	100	100	100	100
Percentage Change over Previous Year						
New England	2	0	-10	-22	-16	
Mideast	-11	-16	-11	-27	-14	
Southeast	-12	-16	-16	-10	-4	
Great Lakes	-17	6	17	-40	-30	
Plains	15	196	57	12	-47	
Southwest	3	8	-19	-8	-8	
Rocky Mountain	95	68	0	79	-9	
Far West	-21	-16	-39	-1	34	
Alaska and Hawaii	67	-20	25	-20	0	
UNITED STATES	-12	-8	-17	-7	-4	

*Less than 0.05 percent.

*Excludes smaller procurements, generally those of less than \$10,000; also excludes awards placed through other Government agencies, awards outside the United States and actions on Jet Propulsion Laboratory contracts.

**Table 5-11. Distribution of Prime Contract Awards by Region:
FY 1969–FY 1978 (Continued)**

Region	FY 1974	FY 1975	FY 1976	FY 1977	FY 1978	Total FY 1974–1978
Net Value of Awards (in Millions of dollars)						
New England	83	78	72	83	118	434
Mideast	307	383	330	362	425	1,737
Southeast	376	384	416	514	592	2,282
Great Lakes	59	61	70	79	102	371
Plains	47	21	21	18	29	136
Southwest	216	224	222	265	311	1,238
Rocky Mountain	203	121	83	109	119	635
Far West	870	1,093	1,366	1,448	1,318	6,095
Alaska and Hawaii	4	4	8	4	3	23
TOTAL	2,165	2,299	2,588	2,882	3,017	12,951
Percentage of Total						
New England	4	3	3	3	4	3
Mideast	14	14	13	12	14	13
Southeast	18	17	16	18	20	18
Great Lakes	3	3	3	3	3	3
Plains	2	1	1	1	1	1
Southwest	10	10	8	9	10	10
Rocky Mountain	9	5	3	4	4	5
Far West	40	47	53	50	44	47
Alaska and Hawaii	*	*	*	*	*	*
TOTAL	100	100	100	100	100	100
Percentage Change over Previous Year						
New England	19	-6	-8	15	42	
Mideast	-6	2	5	10	17	
Southeast	-14	2	8	24	15	
Great Lakes	18	3	15	13	29	
Plains	-64	-55	0	-14	61	
Southwest	12	4	-1	19	17	
Rocky Mountain	4	-40	-3	31	9	
Far West	22	26	25	6	-9	
Alaska and Hawaii	0	0	100	-50	-25	
UNITED STATES	2	6	13	11	5	

*Less than 0.05 percent.

*Excludes smaller procurements, generally those of less than \$10,000; also excludes awards placed through other Government agencies, awards outside the United States and actions on Jet Propulsion Laboratory contracts.

Source: NASA, *Annual Procurement Report* (Fiscal years 1969–1978).

Table 5-12. Value of Awards by Installation
(in millions of dollars)

Installation	FY 1969		FY 1970		FY 1971		FY 1972		FY 1973	
	Amount	% of Total	Amount	% of Total	Amount	% of Total	Amount	% of Total	Amount	% of Total
NASA Headquarters	397.7	10.9	422.2	12.4	382.8	13.4	400.9	14.6	412.9	15.4
Ames Research Center	75.4	2.1	80.4	2.4	103.9	3.6	88.5	3.2	88.8	3.3
Electronics Research Center ^a	31.7	0.9	11.7	0.3	-	-	-	-	-	-
Flight Research Center ^b	12.3	0.3	18.1	0.5	16.7	0.6	18.7	0.7	14.7	0.5
Goddard Space Flight Center	435.6	11.9	401.5	11.8	480.0	16.8	433.9	15.8	405.1	15.2
Kennedy Space Center	456.6	12.5	327.9	9.6	237.1	8.3	215.0	7.9	217.7	8.1
Langley Research Center	90.4	2.5	119.2	3.5	122.9	4.3	220.6	8.1	248.2	9.3
Lewis Research Center	119.8	3.3	149.5	4.4	175.4	6.1	196.1	7.2	231.9	8.7
Manned Spacecraft Center ^c	1,156.0	31.6	1,059.0	31.2	609.0	21.3	449.4	16.4	492.4	18.4
Marshall Space Flight Center	802.3	22.0	740.4	21.7	671.3	23.5	670.5	24.5	536.0	20.1
Space Nuclear Propulsion Office ^d	62.2	1.7	61.3	1.8	45.5	1.6	27.9	1.0	5.5	0.2
Wallops Station ^e	12.0	0.3	14.4	0.4	13.6	0.5	16.3	0.6	20.2	0.8
TOTAL	3,652.0	100.0	3,405.6	100.0	2,858.2	100.0	2,737.8	100.0	2,673.4	100.0

^aDisestablished in 1970.

^bRenamed Dryden Flight Research Center in 1976.

^cRenamed Johnson Space Center in 1973.

^dRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^eRenamed Wallops Flight Center in 1974.

^fData comprises awards on contracts for operation of the Jet Propulsion Laboratory. Awards to the Jet Propulsion Laboratory for FY 1969-FY 1976 are included in the awards to NASA Headquarters.

^gEstablished as an independent NASA field installation in 1974.

Table 5-12. Value of Awards by Installation (Continued)
(in millions of dollars)

Installation	FY 1974		FY 1975		FY 1976		FY 1977		FY 1978	
	Amount	% of Total	Amount	% of Total	Amount	% of Total	Amount	% of Total	Amount	% of Total
NASA Headquarters	430.2	15.9	468.7	16.3	520.1	16.2	151.2	4.3	154.0	4.2
Ames Research Center	104.0	3.8	135.1	4.7	162.7	5.1	140.3	4.0	142.5	3.9
Flight Research Center ^b	19.5	0.7	21.8	0.8	26.9	0.8	32.1	0.9	23.5	0.6
Goddard Space Flight Center	363.6	13.4	393.3	13.7	394.3	12.3	520.7	14.7	594.6	16.2
Jet Propulsion Laboratory ^f	-	-	-	-	-	-	289.0	8.2	283.7	7.8
Kennedy Space Center	180.6	6.7	169.0	5.9	190.8	6.0	239.1	6.8	279.6	7.6
Langley Research Center	292.3	10.8	231.0	8.1	156.6	4.9	206.9	5.8	211.3	5.8
Lewis Research Center	259.1	9.5	243.4	8.5	237.1	7.4	242.5	6.9	237.0	6.5
Manned Spacecraft Center ^c	676.5	24.9	831.6	29.0	1,024.7	32.0	1,115.3	31.6	1,015.7	27.7
Marshall Space Flight Center	367.7	13.6	352.0	12.3	445.6	13.9	541.1	15.3	658.5	18.0
National Space Technology Laboratories ^g	0	0	0	0	22.8	0.7	28.4	0.8	35.1	1.0
Wallops Station ^e	20.1	0.7	20.5	0.7	23.0	0.7	25.7	0.7	24.1	0.7
TOTAL	2,713.6	100.0	2,866.4	100.0	3,204.6	100.0	3,532.3	100.0	3,659.6	100.0

^aDisestablished in 1970.

^bRenamed Dryden Flight Research Center in 1976.

^cRenamed Johnson Space Center in 1973.

^dRenamed Space Nuclear Systems Office in 1970. Disestablished in 1973.

^eRenamed Wallops Flight Center in 1974.

^fData comprises awards on contracts for operation of the Jet Propulsion Laboratory. Awards to the Jet Propulsion Laboratory for FY 1969-FY 1976 are included in the awards to NASA Headquarters.

^gEstablished as an independent NASA field installation in 1974.

Source: NASA, *Annual Procurement Report* (Fiscal years 1969-1978).

Table 5-13. Twenty Largest Contracts During FY 1978
(in millions of dollars)

Contractor	Contract Description	Contract Number	FY 1978 Amount	Cumulative Amount to 1978
Rockwell International Corp.	Design, development, testing, and evaluation of the Space Shuttle Orbiter Vehicle, integration of all elements of the Space Shuttle System, and operational planning.	NAS9-14000	666	3,439
Rockwell International Corp. Martin Marietta Corp.	Design of main engine for the Space Shuttle.	NAS8-27980	188	728
	Design, development, testing, and evaluation of the Space Shuttle external tank.	NAS8-30300	78	273
Bendix Corp.	Maintenance and operation of the Space Flight Tracking and Data Network.	NAS5-22880	70	151
Thiokol Corp.	Design, development, testing, and evaluation of the Space Shuttle solid rocket motors.	NAS8-30490	56	168
Lockheed Electronics Co., Inc.	Engineering, scientific, and computing center support services at the Johnson Space Center.	NAS9-15200	55	103
McDonnell Douglas Corp.	Two-year launch capability for Delta Space Vehicles.	NAS5-24317	51	(new contract)
Boeing Services International, Inc.	Ground systems operations in support of launch operations at the Kennedy Space Center.	NAS10-9200	34	44
Hughes Aircraft Co.	Design, development, and testing of a thematic mapper instrument for Landsat-D.	NAS5-24200	27	32

Table 5-13. Twenty Largest Contracts During FY 1978 (Continued)
(in millions of dollars)

Contractor	Contract Description	Contract Number	FY 1978 Amount	Cumulative Amount to 1978
Ford Aerospace and Communications Corp.	Ground data hardware and software systems, engineering, implementation, maintenance, and operations for mission control center.	NAS9-15014	26	55
Planning Research Corp.	Systems engineering design and engineering support services for Space Shuttle program.	NAS10-8525	25	82
General Dynamics Corp.	Material and components for assembly of Atlas and Centaur vehicles.	NAS3-19150	24	43
Rockwell International Corp.	Shuttle orbiter site activation and orbiter/main engine (SSME) flight test operations at the Kennedy Space Center.	NAS10-9100	24	33
McDonnell Douglas Corp.	Procurement of Delta space vehicles and related equipment.	NAS5-24084	24	44
Int'l Business Machines Corp.	Space Shuttle Orbiter Vehicle avionics software development.	NAS9-14444	24	74
Air Products and Chemicals, Inc.	Liquid hydrogen.	NAS8-31034	23	36
Martin Marietta Corp.	Consolidated facilities contract in support of Space Shuttle external tank.	NAS8-30382	21	51
Computer Sciences Corp.	Communications and instrumentation support services at the Kennedy Space Center.	NAS10-9130	19	20
Int'l Business Machines Corp.	Software for the ground-based computing and data processing system.	NAS9-14350	19	49
RCA Corp.	Long lead items for TIROS-N/NOAA A-G follow-on spacecraft.	NAS5-22330	19	62

Source: NASA, *Annual Procurement Report* (Fiscal year 1977).

Table 5-14. Ranking of NASA's Top Ten Contractors

Contractor	FY 1969	FY 1970	FY 1971	FY 1972	FY 1973	FY 1974	FY 1975	FY 1976	FY 1977	FY 1978
North American Rockwell Corp. ^a	1	1	2	3	1	1	1	1	1	1
Grumman Aerospace Corp.	2	2	6	—	—	—	—	—	—	—
Boeing Co.	3	4	5	5	7	7	9	8	10	—
McDonnell Douglas Corp.	4	3	1	1	2	3	3	2	2	3
General Electric Co.	5	6	3	4	4	6	6	6	6	8
Bendix Corp.	6	7	4	6	6	4	5	5	4	4
Int'l. Business Machines Corp.	7	5	9	7	8	8	7	—	8	6
Aerojet—General Corp.	8	9	—	—	—	—	—	—	—	—
Martin Marietta Corp.	9	8	7	2	3	2	2	3	3	2
RCA Corp.	10	—	8	9	10	—	10	10	—	—
TRW, Inc.	—	10	10	—	—	—	—	—	—	—
General Dynamics Corp.	—	—	—	8	5	5	4	4	5	—
Fairchild Industries, Inc.	—	—	—	10	9	—	—	—	—	—
United Aircraft Corp.	—	—	—	—	—	9	—	—	—	—
Philco—Ford Corp.	—	—	—	—	—	10	—	—	—	—
Lockheed Electronics Co., Inc.	—	—	—	—	—	—	8	7	7	5
Hughes Aircraft Co.	—	—	—	—	—	—	—	9	—	7
Thiokol Corp.	—	—	—	—	—	—	—	—	9	9
Computer Sciences Corp.	—	—	—	—	—	—	—	—	—	10

^aBecame Rockwell International Corp. in 1973.

Source: Tables 5-22 through 5-31.

Table 5-15. Top One Hundred Contractors: FY 1969
(in thousands of dollars)

Contractor and Place of Contract Performance	Rank in FY 1968	Net Value of Awards		Contractor and Place of Contract Performance	Rank in FY 1968	Net Value of Awards	
		Amount	Percentage			Amount	Percentage
1. North American Rockwell Corp. * Downey, Calif.	1	680,862	22.53	14. Trans World Airlines, Inc. * Kennedy Space Center, Fla.	19	35,363	1.17
2. Grumman Aerospace Corp. * Bethpage, N.Y.	2	369,168	12.21	15. Sperry Rand Corp. * Huntsville, Ala.	17	34,057	1.13
3. Boeing Co. * Kennedy Space Center, Fla.	3	228,679	7.57	16. General Dynamics Corp. * San Diego, Calif.	11	34,003	1.13
4. McDonnell Douglas Corp. * Santa Monica, Calif.	4	207,496	6.87	17. General Motors Corp. * Milwaukee, Wisc.	13	30,856	1.02
5. General Electric Co. * King of Prussia, Pa.	5	150,049	4.97	18. Federal Electric Corp. * Kennedy Space Center, Fla.	20	27,014	0.89
6. Bendix Corp. * Owings Mills, Md.	7	127,635	4.22	19. United Aircraft Corp. * Windsor Locks, Conn.	22	26,214	0.87
7. Int'l. Business Machines Corp. * Huntsville, Ala.	6	112,526	3.72	20. Service Technology Corp. * Houston, Texas	—	26,180	0.87
8. Aerojet-General Corp. * Sacramento, Calif.	8	64,857	2.15	21. Philco-Ford Corp. * Houston, Texas	16	22,388	0.74
9. Martin Marietta Corp. * Denver, Colo.	18	56,037	1.85	22. Catalytic-Dow (JV) Kennedy Space Center, Fla.	21	19,428	0.64
10. RCA Corp. * Camden, N.J.	9	51,643	1.71	23. LTV Aerospace Corp. * Dallas, Texas	14	18,265	0.60
11. TRW, Inc. * Houston, Texas	12	49,974	1.65	24. Brown/Northrop (JV) Houston, Texas	28	12,679	0.42
12. Chrysler Corp. * New Orleans, La.	10	42,454	1.40	25. Northrop Corp. * Huntsville, Ala.	26	12,360	0.41
13. Lockheed Aircraft Corp. * Houston, Texas	15	39,763	1.32	26. ILC Industries, Inc. Dover, Del.	36	12,187	0.40

* Awards during year represent awards on several contracts which have different principal places of performance. The place shown is that which has the largest amount of the awards.

(S) = Indicates small business concerns.

(JV) = Joint venture.

* Data for individual companies include awards on research and development contracts of \$10,000 and over and on all other contracts of \$25,000 and over.

Table 5-15. Top One Hundred Contractors: FY 1969 (Continued)
(in thousands of dollars)

	Contractor and Place of Contract Performance	Rank in FY 1968	Net Value of Awards		Rank in FY 1968	Contractor and Place of Contract Performance	Net Value of Awards	
			Amount	Percentage			Amount	Percentage
27.	Brown Engineering Co., Inc. * Huntsville, Ala.	23	11,099	0.37	39	Fairchild Hiller Corp. * Germantown, Md.	6,861	0.23
28.	Bellcomm, Inc. Washington, D.C.	33	10,077	0.33	49	Computing and Software, Inc. * Greenbelt, Md.	6,023	0.20
29.	Singer-General Precision, Inc. * Houston, Texas	29	9,736	0.32	59	Scientific Data Systems * Huntsville, Ala.	4,968	0.16
30.	Union Carbide Corp. * Sacramento, Calif.	27	8,943	0.30	55	Bell Aerospace Corp. * Buffalo, N.Y.	4,673	0.15
31.	Garrett Corp. * Los Angeles, Calif.	32	8,881	0.29	50	Perkin-Elmer Corp. * Norwalk, Conn.	4,498	0.15
32.	Comm. Satellite Corp. Andover, Me.	35	8,680	0.29	30	Mason-Rust New Orleans, La.	4,376	0.14
33.	American Science and Engrg., Inc. Cambridge, Mass. (S)	40	8,395	0.28	44	Zia Co. Las Cruces, N.M.	4,327	0.14
34.	Computer Sciences Corp. * Huntsville, Ala.	31	8,264	0.27	47	Air Products and Chemicals, Inc. * Allentown, Pa.	4,269	0.14
35.	Honeywell, Inc. * St. Petersburg, Fla.	24	8,073	0.27	58	American Tel. and Tel. Co. * Greenbelt, Md.	4,176	0.14
36.	Ball Brothers Research Corp. * Boulder, Colo.	51	7,588	0.25	45	Avco Corp. * Lowell, Mass.	3,895	0.13
37.	Hughes Aircraft Co. * Culver City, Calif.	34	7,523	0.25	63	Computer Application, Inc. * Silver Spring, Md.	3,875	0.13
38.	Control Data Corp. * Minneapolis, Minn.	25	7,212	0.24	61	Aero Spacelines, Inc. Van Nuys, Calif. (S)	3,765	0.12
39.	Westinghouse Electric Corp. * Friendship Airport, Md.	38	6,900	0.23	69	Electronic Associates, Inc. * Mountain View, Calif.	3,708	0.12

(JV) = Joint venture.

Awards during year represent awards on several contracts which have different principal places of performance. The place shown is that which has the largest amount of the awards.

(S) = Indicates small business concerns.

Data for individual companies include awards on research and development contracts of \$10,000 and over and on all other contracts of \$25,000 and over.

Table 5-15. Top One Hundred Contractors: FY 1969 (Continued)
(in thousands of dollars)

Contractor and Place of Contract Performance	Rank in FY 1968	Net Value of Awards		Contractor and Place of Contract Performance	Rank in FY 1968	Net Value of Awards	
		Amount	Percentage			Amount	Percentage
53. Allis-Chalmers Mfg. Co. Milwaukee, Wisc.	—	3,500	0.12	66. Thiokol Chemical Corp. * Elkton, Md.	60	2,677	0.09
54. Pittsburgh-Des Moines Steel Co. * Cleveland, Ohio	—	3,323	0.11	67. 3M Co. * Hutchinson, Minn.	54	2,650	0.09
55. Vitro Corp. of America * Greenbelt, Md.	37	3,249	0.11	68. Memorex Corp. Santa Clara, Calif.	92	2,571	0.09
56. Technical Information Services Co. College Park, Md.	—	3,196	0.11	69. Hayes International Corp. * Birmingham, Ala.	56	2,426	0.08
57. Wolf Research and Develop. Corp. * Arlington, Va.	67	3,165	0.10	70. Lawrence, J.H., Co. Greenbelt, Md. (S)	71	2,266	0.07
58. Space, Inc. Huntsville, Ala. (S)	42	3,149	0.10	71. Virginia Electric Power Co. Hampton, Va.	78	2,233	0.07
59. ITT World Communications, Inc. New York, N.Y.	85	3,148	0.10	72. Eastman Kodak Co. * Rochester, N.Y.	—	2,198	0.07
60. Management Services, Inc. Huntsville, Ala.	46	2,966	0.10	73. Cleveland Elec. Illuminating Co. Cleveland, Ohio	76	2,188	0.07
61. Southern Bell Tel. Co. * Kennedy Space Center, Fla.	65	2,942	0.10	74. Ampex Corp. * Redwood City, Calif.	81	2,173	0.07
62. Chesapeake and Potomac Tel. Co. * Greenbelt, Md.	64	2,922	0.10	75. LTV Electro Systems Greenville, Texas	—	2,146	0.07
63. Dynallectron Corp. Houston, Texas	66	2,905	0.10	76. Sanders Associates, Inc. * Nashua, N.H.	48	2,092	0.07
64. Leasco Systems and Research Corp. * College Park, Md.	41	2,804	0.10	77. Beckman Instruments, Inc. * Fullerton, Calif.	86	2,033	0.07
65. Xerox Corp. * Pasadena, Calif.	97	2,685	0.09	78. Carl N. Swenson, Co. Mountain View, Calif.	—	2,008	0.07

(JV) = Joint venture.

Awards during year represent awards on several contracts which have different principal places of performance. The place shown is that which has the largest amount of the awards.

(S) = Indicates small business concerns.

*Data for individual companies include awards on research and development contracts of \$10,000 and over and on all other contracts of \$25,000 and over.

Table 5-15. Top One Hundred Contractors: FY 1969
(in thousands of dollars)

Contractor and Place of Contract Performance	Rank in FY 1968	Net Value of Awards		Contractor and Place of Contract Performance	Rank in FY 1968	Net Value of Awards	
		Amount	Percentage			Amount	Percentage
79. Int'l. Tel. and Tel. Corp. * Fort Wayne, Ind.	73	1,996	0.07	92. Marquardt Corp. Van Nuys, Calif.	—	1,337	0.04
80. Wackenhut Services, Inc. * Houston, Texas	57	1,923	0.06	93. Hewlett-Packard Co. * Palo Alto, Calif.	99	1,308	0.04
81. Radiation, Inc. * Melbourne, Fla.	43	1,910	0.06	94. GCA Corp. * Bedford, Mass.	—	1,275	0.04
82. Teledyne, Inc. * Northridge, Calif.	52	1,781	0.06	95. Southwestern Bell Tel. Co. Houston, Texas	98	1,272	0.04
83. Western Union Int'l., Inc. New York, N.Y.	88	1,717	0.06	96. Maurer, J.A., Inc. Long Island City, N.Y. (S)	—	1,266	0.04
84. Motorola, Inc. * Scottsdale, Ariz.	94	1,668	0.06	97. Potomac Electric Power Co. * Beltsville, Md.	82	1,233	0.04
85. Klate Holt Co. * Houston, Texas (S)	89	1,645	0.05	98. Collins Radio Co. * Richardson, Texas	79	1,227	0.04
86. Kollsman Instrument Corp. * Kennedy Space Center, Fla.	—	1,587	0.05	99. Isotopes, Inc. * Sandusky, Ohio	—	1,201	0.04
87. Western Electric Co., Inc. * Cape Kennedy, Fla.	84	1,564	0.05	100. A-V Corp. Houston, Texas (S)	100	1,184	0.04
88. Texas Instruments, Inc. * Dallas, Texas	68	1,542	0.05	Other		256,768	8.50
89. Weston Instruments, Inc. * College Park, Md.	53	1,476	0.05				
90. Wyle Laboratories * Hampton, Va.	93	1,460	0.05				
91. Goodyear Aerospace Corp. Akron, Ohio	90	1,411	0.05				
				TOTAL AWARDS TO BUSINESS FIRMS		3,022,333	100.00

Awards during year represent awards on several contracts which have different principal places of performance. The place shown is that which has the largest amount of the awards.

(S) = Indicates small business concerns.

(JV) = Joint venture.

*Data for individual companies include awards on research and development contracts of \$10,000 and over and on all other contracts of \$25,000 and over.

Source: NASA, *Annual Procurement Report* (Fiscal year 1969).

Table 5-16. Top One Hundred Contractors: FY 1970
(in thousands of dollars)

Contractor and Place of Contract Performance	Rank in FY 1969	Net Value of Awards		Contractor and Place of Contract Performance	Rank in FY 1969	Net Value of Awards	
		Amount	Percentage			Amount	Percentage
1. North American Rockwell Corp. * Downey, Calif.	1	531,536	19.26	14. General Dynamics Corp. * San Diego, Calif.	16	37,968	1.38
2. Grumman Aerospace Corp. * Bethpage, N.Y.	2	284,411	10.31	15. Trans World Airlines, Inc. * Kennedy Space Center, Fla.	14	35,988	1.30
3. McDonnell Douglas Corp. * Santa Monica, Calif.	4	236,294	8.56	16. Service Technology Corp. * Houston, Texas	20	27,485	1.00
4. Boeing Co. * Kennedy Space Center, Fla.	3	158,575	5.75	17. United Aircraft Corp. * Windsor Locks, Conn.	19	27,113	0.98
5. Int'l. Business Machines Corp. * Huntsville, Ala.	7	133,429	4.84	18. Federal Electric Corp. * Kennedy Space Center, Fla.	18	26,295	0.95
6. General Electric Co. * King of Prussia, Pa.	5	131,679	4.77	19. Philco-Ford Corp. * Houston, Texas	21	23,988	0.87
7. Bendix Corp. * Owings Mills, Md.	6	109,765	3.98	20. General Motors Corp. * Milwaukee, Wis.	17	20,434	0.74
8. Martin Marietta Corp. * Denver, Colo.	9	108,012	3.92	21. LTV Aerospace Corp. * Dallas, Texas	23	17,853	0.65
9. Aerojet-General Corp. * Sacramento, Calif.	8	71,598	2.60	22. Chrysler Corp. * New Orleans, La.	12	16,709	0.61
10. TRW, Inc. * Houston, Texas	11	58,264	2.11	23. Brown/Northrop (JV) Houston, Texas	24	16,635	0.60
11. RCA Corp. * Camden, N.J.	10	54,547	1.98	24. ILC Industries, Inc. Dover, Del.	26	13,016	0.47
12. Sperry Rand Corp. * Huntsville, Ala.	15	48,118	1.74	25. Singer-General Precision, Inc. * Houston, Texas	29	12,337	0.45
13. Lockheed Aircraft Corp. * Houston, Texas	13	41,040	1.49	26. Honeywell, Inc. * St. Petersburg, Fla.	35	11,494	0.42

* Awards during year represent awards on several contracts which have different principal places of performance. The place shown is that which has the largest amount of the awards.

(S) = Indicates small business concerns.

(JV) = Joint venture.

*Data for individual companies include awards on research and development contracts of \$10,000 and over and on all other contracts of \$25,000 and over.

Table 5-16. Top One Hundred Contractors:^a FY 1970 (Continued)
(in thousands of dollars)

Contractor and Place of Contract Performance	Rank in FY 1969	Net Value of Awards		Contractor and Place of Contract Performance	Rank in FY 1969	Net Value of Awards	
		Amount	Percentage			Amount	Percentage
27. Bellcomm, Inc. Washington, D.C.	28	10,990	0.40	40. Mason-Rust New Orleans, La.	45	5,962	0.22
28. Computer Sciences Corp. * Huntsville, Ala.	34	10,961	0.40	41. Union Carbide Corp. * Sacramento, Calif.	30	5,543	0.20
29. Brown Engineering Co., Inc. * Huntsville, Ala.	27	9,934	0.36	42. Comm. Satellite Corp. Andover, Me.	32	4,485	0.16
30. American Science and Engrg., Inc. Cambridge, Mass. (S)	33	9,810	0.36	43. Technical Information Services Co. College Park, Md.	56	4,329	0.16
31. Northrop Corp. * Huntsville, Ala.	25	9,426	0.34	44. Textron, Inc. Buffalo, N.Y.	—	4,194	0.15
32. Hughes Aircraft Co. * Culver City, Calif.	37	9,048	0.33	45. American Tel. and Tel. Co. * Greenbelt, Md.	48	4,157	0.15
33. Ball Brothers Research Corp. * Boulder, Colo.	36	8,679	0.31	46. Fairchild Camera and Instrument Corp. * Syosset, N.Y.	—	4,125	0.15
34. Garrett Corp. * Los Angeles, Calif.	31	7,767	0.28	47. Dynalectron Corp. Houston, Texas	63	4,039	0.15
35. Computing and Software, Inc. * Greenbelt, Md.	41	7,662	0.28	48. Computer Applications, Inc. * Silver Spring, Md.	50	4,034	0.15
36. Itek Corp. * Lexington, Mass.	—	7,511	0.27	49. Xerox Data Systems * El Segundo, Calif.	—	4,021	0.15
37. Westinghouse Electric Corp. * Friendship Airport, Md.	39	7,200	0.26	50. Perkin-Elmer Corp. * Norwalk, Conn.	44	3,788	0.14
38. Control Data Corp. * Minneapolis, Minn.	38	6,711	0.24	51. Ampex Corp. * Redwood City, Calif.	74	3,758	0.14
39. Catalytic-Dow (JV) Kennedy Space Center, Fla.	22	6,139	0.22	52. ITT World Communications, Inc. New York, N.Y.	59	3,718	0.13

^aAwards during year represent awards on several contracts which have different (JV) = Joint venture.

principal places of performance. The place shown is that which has the largest amount of the awards. ^bData for individual companies include awards on research and development contracts of \$10,000 and over and on all other contracts of \$25,000 and over.

(S) = Indicates small business concerns.

Table 5-16. Top One Hundred Contractors: FY 1970 (Continued)
(in thousands of dollars)

Contractor and Place of Contract Performance	Rank in FY 1969	Net Value of Awards		Contractor and Place of Contract Performance	Rank in FY 1969	Net Value of Awards	
		Amount	Percentage			Amount	Percentage
53. Santa Barbara Research Center Goleta, Calif.	—	3,718	0.13	66. Management Services, Inc. Huntsville, Ala.	60	2,529	0.09
54. Texas Instruments, Inc. * Dallas, Texas	88	3,425	0.12	67. Klate Holt Co. * Houston, Texas (S)	85	2,518	0.09
55. Teledyne, Inc. * Northridge, Calif.	82	3,390	0.12	68. Hayes International Corp. * Birmingham, Ala.	69	2,500	0.09
56. Air Products and Chemicals, Inc. * Allentown, Pa.	47	3,385	0.12	69. Aero Spacelines, Inc. Van Nuys, Calif. (S)	51	2,468	0.09
57. 3M Co. * Hutchinson, Minn.	67	3,383	0.12	70. Western Electric Co., Inc. * Cape Kennedy, Fla.	87	2,301	0.08
58. Chesapeake and Potomac Tel. Co. * Greenbelt, Md.	62	3,280	0.12	71. Virginia Electric Power Co. Hampton, Va.	71	2,296	0.08
59. Space, Inc. Huntsville, Ala. (S)	58	3,248	0.12	72. Wolf Research and Develop. Corp. * Arlington, Va.	57	2,235	0.08
60. Int'l. Tel. and Tel. Corp. * Fort Wayne, Ind.	79	3,124	0.11	73. Motorola, Inc. * Scottsdale, Ariz.	84	2,174	0.08
61. Raytheon Co. * Waltham, Mass.	—	3,117	0.11	74. Wackenhut Services, Inc. * Houston, Texas	80	2,109	0.08
62. Electronic Associates, Inc. * Mountain View, Calif.	52	3,058	0.11	75. Wyle Laboratories * Hampton, Va.	90	2,063	0.07
63. Xerox Corp. * Pasadena, Calif.	65	2,976	0.11	76. Sanders Associates, Inc. * Nashua, N.H.	76	2,039	0.07
64. Southern Bell Tel. Co. * Kennedy Space Center, Fla.	61	2,682	0.10	77. Thiokol Chemical Corp. * Elkton, Md.	66	1,973	0.07
65. Zia Co. Las Cruces, N.M.	46	2,637	0.10	78. Systems Engrg. Labs., Inc. * Ft. Lauderdale, Fla.	—	1,952	0.07

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principal places of performance. The place shown is that which has the largest amount of the awards.

(S) = Indicates small business concerns.

*Data for individual companies include awards on research and development contracts of \$10,000 and over and on all other contracts of \$25,000 and over.

Table 5-16. Top One Hundred Contractors:^a FY 1970 (Continued)
(in thousands of dollars)

Contractor and Place of Contract Performance	Rank in FY 1969	Net Value of Awards		Contractor and Place of Contract Performance	Rank in FY 1969	Net Value of Awards	
		Amount	Percentage			Amount	Percentage
79. Fairchild Hiller Corp. * Germantown, Md.	40	1,894	0.07	92. Goodyear Aerospace Corp. Akron, Ohio	91	1,378	0.05
80. Cleveland Elec. Illuminating Co. Cleveland, Ohio	73	1,788	0.06	93. Southwestern Bell Tel. Co. Houston, Texas	95	1,347	0.05
81. Ohio Title Corp. Sandusky, Ohio (S)	—	1,781	0.06	94. Avco Corp. * Lowell, Mass.	49	1,330	0.05
82. Litton Systems * Beverly Hills, Calif.	—	1,752	0.06	95. Potomac Electric Power Co. * Beltsville, Md.	97	1,280	0.05
83. Lawrence, J.H., Co. Greenbelt, Md. (S)	70	1,742	0.06	96. Pan American World Airways, Inc. Kennedy Space Center, Fla.	—	1,250	0.05
84. Kentron Hawaii, Ltd. Lihue, Hawaii	—	1,656	0.06	97. RF Communications, Inc. Rochester, N.Y.	—	1,211	0.04
85. Vitro Corp. of America * Greenbelt, Md.	55	1,632	0.06	98. Isotopes, Inc. * Sandusky, Ohio	99	1,164	0.04
86. Hycon Manufacturing Co. Monrovia, Calif.	—	1,591	0.06	99. Owens-Illinois, Inc. * Pittsburgh, Pa.	—	1,151	0.04
87. Lake Erie Mechanical, Inc. Cleveland, Ohio (S)	—	1,587	0.06	100. Allis-Chalmers Mfg. Co. Milwaukee, Wisc.	53	1,125	0.04
88. A-V Corp. Houston, Texas (S)	100	1,548	0.06	Other		233,617	8.47
89. Fansteel, Inc. Baltimore, Md.	—	1,443	0.05				
90. Weston Instruments, Inc. * College Park, Md.	89	1,412	0.05	TOTAL AWARDS TO BUSINESS FIRMS		2,759,215	100.00
91. Time-Zero Corp. Torrance, Calif. (S)	—	1,382	0.05				

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^bData for individual companies include awards on research and development contracts of \$10,000 and over and on all other contracts of \$25,000 and over.

Source: NASA, *Annual Procurement Report* (Fiscal year 1970).

Table S-17. Top One Hundred Contractors:^a FY 1971
(in thousands of dollars)

Contractor and Place of Contract Performance	Rank in		Net Value of Awards		Contractor and Place of Contract Performance	Rank in		Net Value of Awards	
	FY 1970	FY 1970	Amount	Percentage		FY 1970	FY 1970	Amount	Percentage
1. McDonnell Douglas Corp. * St. Louis, Mo.	3	302,873	13.29		14. United Aircraft Corp. * Windsor Locks, Conn.	17	28,426	1.25	
2. North American Rockwell Corp. * Downey, Calif.	1	172,463	7.57		15. Lockheed Electronics Co. * Houston, Texas	^b	26,546	1.16	
3. General Electric Co. * King of Prussia, Pa.	6	161,352	7.08		16. Lockheed Aircraft Corp. * Sunnyvale, Calif.	13	24,797	1.09	
4. Bendix Corp. * Columbia, Md.	7	121,383	5.33		17. Philco-Ford Corp. * Houston, Texas	19	23,054	1.01	
5. Boeing Co. * Kennedy Space Center, Fla.	4	114,407	5.02		18. Service Technology Corp. * Houston, Texas	16	22,396	0.98	
6. Grumman Aerospace Corp. * Bethpage, N.Y.	2	113,670	4.99		19. Trans World Airlines, Inc. Kennedy Space Center, Fla.	15	22,252	0.98	
7. Martin Marietta Corp. * Denver, Colo.	8	107,602	4.72		20. Federal Electric Corp. * Kennedy Space Center, Fla.	18	21,826	0.96	
8. RCA Corp. * Camden, N.J.	11	93,906	4.12		21. Hughes Aircraft Co. * El Segundo, Calif.	32	20,857	0.91	
9. Int'l. Business Machines Corp. * Huntsville, Ala.	5	72,360	3.17		22. General Motors Corp. * Milwaukee, Wisc.	20	19,573	0.86	
10. TRW, Inc. * Redondo Beach, Calif.	10	62,329	2.73		23. Computer Sciences Corp. * Silver Spring, Md.	28	17,449	0.76	
11. Aerojet-General Corp. * Sacramento, Calif.	9	54,647	2.40		24. Fairchild Industries, Inc. * Germantown, Md.	79 ^c	16,392	0.72	
12. General Dynamics Corp. * San Diego, Calif.	14	50,784	2.23		25. LTV Aerospace Corp. * Dallas, Texas	21	15,438	0.68	
13. Sperry Rand Corp. * Huntsville, Ala.	12	31,727	1.39		26. Chrysler Corp. * New Orleans, La.	22	15,304	0.67	

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^b Data for individual companies include awards on research and development contracts of \$10,000 and over and on all other contracts of \$25,000 and over.

^c Formerly a division of Lockheed Aircraft Corp.

^d Formerly Fairchild Hiller Corp.

^e Formerly Computer Applications, Inc.

^f Formerly a division of Honeywell, Inc.

^g Formerly Electro-Mechanical Division of Northrop.

Table 5-17. Top One Hundred Contractors:^a FY 1971 (Continued)
(in thousands of dollars)

Contractor and Place of Contract Performance	Rank in Net Value of Awards		Contractor and Place of Contract Performance	Rank in Net Value of Awards	
	FY 1970	Amount Percentage		FY 1970	Amount Percentage
27. Singer-General Precision, Inc. * Houston, Texas	25	13,883 0.61	40. Mason-Rust New Orleans, La.	40	6,032 0.26
28. Northrop Corp. * Huntsville, Ala.	31	12,326 0.54	41. ILC Industries, Inc. Dover, Del.	24	5,428 0.24
29. Honeywell, Inc. * St. Petersburg, Fla.	26	11,958 0.52	42. Comm. Satellite Corp. * Clarksburg, Md.	42	5,332 0.23
30. Radiation, Inc. * Palm Bay, Fla.	—	11,359 0.50	43. Pan American World Airways, Inc. Kennedy Space Center, Fla.	96	5,286 0.23
31. Computing and Software, Inc. * Greenbelt, Md.	35	11,306 0.49	44. Management Services, Inc. Huntsville, Ala.	66	5,229 0.23
32. Brown Engineering Co., Inc. * Huntsville, Ala.	29	11,291 0.49	45. Informatics Tisco, Inc. College Park, Md.	43	4,645 0.20
33. Bellicom, Inc. Washington, D.C.	27	10,369 0.45	46. Itek Corp. * Lexington, Mass.	36	4,596 0.20
34. Brown and Root/Northrop (JV) * Houston, Texas	23	10,285 0.45	47. Textron, Inc. * Los Angeles, Calif.	44	4,495 0.20
35. Garrett Corp. * Torrance, Calif.	34	9,559 0.42	48. Control Data Corp. * Minneapolis, Minn.	38	4,395 0.19
36. American Science and Engrg., Inc. Cambridge, Mass. (S)	30	7,691 0.34	49. Thiokol Chemical Corp. * Elkton, Md.	77	4,248 0.19
37. Westinghouse Electric Corp * Friendship Airport, Md.	37	7,005 0.31	50. ITT World Communications, Inc. New York, N.Y.	52	4,210 0.18
38. Ball Brothers Research Corp. * Boulder, Colo.	33	6,956 0.31	51. Fairchild Camera and Instrument Corp. * Syosset, N.Y.	46	3,940 0.17
39. Teledyne Industries, Inc. * Northridge, Calif.	—	6,693 0.29	52. Raytheon Co. * Waltham, Mass.	61	3,797 0.17

^aAwards during year represent awards on several contracts which have different principal places of performance. The place shown is that which has the largest amount of the awards.

(S) = Indicates small business concerns.

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^eFormerly a division of Honeywell, Inc.

^fFormerly Electro-Mechanical Division of Northrop.

Table 5-17. Top One Hundred Contractors:^a FY 1971 (Continued)
(in thousands of dollars)

Contractor and Place of Contract Performance	Rank in FY 1970	Net Value of Awards		Contractor and Place of Contract Performance	Rank in FY 1970	Net Value of Awards	
		Amount	Percentage			Amount	Percentage
53. Perkin-Elmer Corp. * Pomona, Calif.	50	3,773	0.17	66. Radiation Systems, Inc. McLean, Va. (S)	—	2,984	0.13
54. American Tel. and Tel. Co. * Greenbelt, Md.	45	3,715	0.16	67. 3M Co. * Freehold, N.J.	57	2,979	0.13
55. Spaco, Inc. Huntsville, Ala. (S)	59	3,688	0.16	68. Electronic Associates, Inc. * West Long Branch, N.J.	62	2,887	0.13
56. Chesapeake and Potomac Tel. Co. * Greenbelt, Md.	58	3,684	0.16	69. Aero Spacelines, Inc. * Los Angeles, Calif. (S)	69	2,568	0.11
57. Programming Methods, Inc. * New York, N.Y.	48 ^d	3,680	0.16	70. Air Products and Chemicals, Inc. * Allentown, Pa.	56	2,534	0.11
58. Xerox Data Systems, Inc. * Rockville, Md.	49	3,385	0.15	71. Xerox Corp. * Pasadena, Calif.	63	2,533	0.11
59. Barnes Engineering Co. Stamford, Conn. (S)	—	3,338	0.15	72. RF Communications, Inc. Rochester, N.Y.	97	2,503	0.11
60. Southern Bell Tel. Co. * Huntsville, Ala.	64	3,334	0.15	73. Systems Engr. Labs., Inc. * Ft. Lauderdale, Fla.	78	2,458	0.11
61. Dynallectron Corp. * Houston, Texas	47	3,292	0.14	74. Hayes International Corp. * Birmingham, Ala.	68	2,422	0.11
62. Maurer J.A., Inc. * Woodside, N.Y. (S)	—	3,230	0.14	75. Ampex Corp. * Redwood City, Calif.	51	2,328	0.10
63. Klate Holt Co. * Hampton, Va. (S)	67	3,187	0.14	76. Virginia Electric Power Co. * Hampton, Va.	71	2,305	0.10
64. Monitor Systems, Inc. * Ft. Washington, Pa.	—	3,100	0.14	77. Int'l. Tel. and Tel. Corp. * Fort Wayne, Ind.	60	2,274	0.10
65. Santa Barbara Research Center Goleta, Calif.	53	3,053	0.13	78. Wackenhut Services, Inc. * Houston, Texas	74	2,254	0.10

^aAwards during year represent awards on several contracts which have different principal places of performance. The place shown is that which has the largest amount of the awards.

(S) = Indicates small business concerns.

(JV) = Joint venture.

^dData for individual companies include awards on research and development contracts of \$10,000 and over and on all other contracts of \$25,000 and over.

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^cFormerly Fairchild Hiller Corp.

^eFormerly Computer Applications, Inc.

^fFormerly a division of Honeywell, Inc.

^gFormerly Electro-Mechanical Division of Northrop.

Table 5-17. Top One Hundred Contractors:^a FY 1971 (Continued)
(in thousands of dollars)

Contractor and Place of Contract Performance	Rank in FY 1970	Net Value of Awards		Contractor and Place of Contract Performance	Rank in FY 1970	Net Value of Awards	
		Amount	Percentage			Amount	Percentage
79. Cleveland Elec. Illuminating Co. Cleveland, Ohio	80	2,080	0.09	92. Technicolor, Inc. Houston, Texas	—	1,564	0.07
80. Honeywell Information Systems, Inc. * Kennedy Space Center, Fla.	—	2,049	0.09	93. Balboa Structural Industries, Inc. Fairbanks, Alaska	—	1,553	0.07
81. Stone Construction Co. Houston, Texas (S)	—	2,037	0.09	94. Western Electric Co., Inc. * Cape Kennedy, Fla.	70	1,542	0.07
82. Weston Instruments, Inc. * College Park, Md.	90	1,885	0.08	95. Northrop Services, Inc. * Mountain view, Calif.	—	1,533	0.07
83. Union Carbide Corp. * Sacramento, Calif.	41	1,854	0.08	96. PRC Data Services, Inc. Washington, D.C.	—	1,532	0.07
84. Whirlpool Corp. St. Joseph, Mich.	—	1,839	0.08	97. Potomac Electric Power Co. Greenbelt, Md.	95	1,513	0.07
85. Avco Corp. * Lowell, Mass.	94	1,808	0.08	98. Cutler-Hammer, Inc. * Melville, N.Y.	—	1,498	0.07
86. Motorola, Inc. * Scottsdale, Ariz.	73	1,748	0.08	99. Owens-Illinois, Inc. Pittsburgh, Pa.	99	1,482	0.07
87. Technology, Inc. * Houston, Texas	—	1,632	0.07	100. Zia Co. Las Cruces, N.M.	65	1,460	0.06
88. Time-Zero Corp. Torrance, Calif. (S)	91	1,624	0.07	Other		238,858	10.48
89. Wyle Laboratories * Hampton, Va.	75	1,620	0.07				
90. Wolf Research and Develop. Corp. * Riverdale, Md.	72	1,590	0.07	TOTAL AWARDS TO BUSINESS FIRMS		2,279,487	100.00
91. Graham Magnetics, Inc. Graham, Texas (S)	—	1,571	0.07				

^aAwards during year represent awards on several contracts which have different principal places of performance. The place shown is that which has the largest amount of the awards.

(S) = Indicates small business concerns.

(JV) = Joint venture.

^bData for individual companies include awards on research and development contracts of \$10,000 and over and on all other contracts of \$25,000 and over.

¹Formerly a division of Lockheed Aircraft Corp.

²Formerly Fairchild Hiller Corp.

³Formerly Computer Applications, Inc.

⁴Formerly a division of Honeywell, Inc.

⁵Formerly Electro-Mechanical Division of Northrop.

Source: NASA, *Annual Procurement Report* (Fiscal year 1971).

Table 5-18. Top One Hundred Contractors:^a FY 1972
(in thousands of dollars)

Contractor and Place of Contract Performance	Rank in FY 1971		Net Value of Awards		Contractor and Place of Contract Performance	Rank in FY 1971		Net Value of Awards	
	Contract Performance	Percentage	Amount	Percentage		Contract Performance	Percentage	Amount	Percentage
1. McDonnell Douglas Corp. * St. Louis, Mo.	1	343,131	16.01		14. Grumman Aerospace Corp. * Kennedy Space Center, Fla.	6	28,478	1.33	
2. Martin Marietta Corp. * Denver, Colo.	7	208,361	9.72		15. Aerojet-General Corp. * Sacramento, Calif.	11	25,718	1.20	
3. North American Rockwell Corp. * Downey, Calif.	2	175,146	8.17		16. Lockheed Electronics Co. * Houston, Texas	15	24,375	1.14	
4. General Electric Co. * King of Prussia, Pa.	3	114,944	5.36		17. Chrysler Corp. * New Orleans, La.	26	24,301	1.13	
5. Boeing Co. * Kennedy Space Center, Fla.	5	94,186	4.40		18. Federal Electric Corp. * Kennedy Space Center, Fla.	20	23,465	1.10	
6. Bendix Corp. * Columbia, Md.	4	87,956	4.10		19. Computer Sciences Corp. * Silver Spring, Md.	23	23,298	1.09	
7. Int'l. Business Machines Corp. * Huntsville, Ala.	9	72,019	3.36		20. Hughes Aircraft Co. * El Segundo, Calif.	21	22,029	1.03	
8. General Dynamics Corp. * San Diego, Calif.	12	66,627	3.11		21. LTV Aerospace Corp. * Dallas, Texas	25	21,925	1.02	
9. RCA Corp., Inc. * Camden, N.J.	8	47,210	2.67		22. Lockheed Missiles and Space Co., Inc. * Sunnyvale, Calif.	^b	16,399	0.77	
10. Fairchild Industries, Inc. * Germantown, Md.	24	42,025	1.96		23. Brown and Root/Northrop (JV) * Houston, Texas	34	16,295	0.76	
11. Philco-Ford Corp. * Houston, Texas	17	36,219	1.69		24. United Aircraft Corp. * Windsor Locks, Conn.	14	15,869	0.74	
12. Sperry Rand Corp. * Huntsville, Ala.	13	33,535	1.57		25. Service Technology Corp. * Houston, Texas	18	15,473	0.72	
13. TRW, Inc. * Redondo Beach, Calif.	10	33,299	1.55		26. Brown Engineering Co., Inc. * Huntsville, Ala.	32	11,808	0.55	

^aAwards during year represent awards on several contracts which have different principal places of performance. The place shown is that which has the largest amount of the awards.

(S) = Indicates small business concerns.
(JV) = Joint venture.

^bFormerly a division of Lockheed Aircraft Corp.

^cCombined awards to Xerox Corp. and Xerox Data Systems, Inc., formerly a subsidiary of Xerox Corp.

^dFormerly Monitor Systems, Inc.
^eData for individual companies include awards on research and development contracts of \$10,000 and over and on all other contracts of \$25,000 and over.

Table 5-18. Top One Hundred Contractors: FY 1972 (Continued)
(in thousands of dollars)

Contractor and Place of Contract Performance	Rank in FY 1971	Net Value of Awards		Contractor and Place of Contract Performance	Rank in FY 1971	Net Value of Awards	
		Amount	Percentage			Amount	Percentage
27. Honeywell, Inc. * St. Petersburg, Fla.	29	11,110	0.52	40. Mason-Rust New Orleans, La.	40	6,295	0.29
28. Computing and Software, Inc. * Greenbelt, Md.	31	10,488	0.49	41. Teledyne Industries, Inc. * Northridge, Calif.	39	6,041	0.28
29. Singer Co. * Houston, Texas	27	10,200	0.48	42. Litton Systems, Inc. * Los Angeles, Calif.	—	6,031	0.28
30. ILC Industries, Inc. Dover, Del.	41	8,998	0.42	43. Lockheed Aircraft Corp. * Marietta, Ga.	16	5,826	0.27
31. Control Data Corp. * Minneapolis, Minn.	48	8,756	0.41	44. Hayes International Corp. * Huntsville, Ala.	74	5,679	0.26
32. Global Associates Bay St. Louis, Miss.	—	7,800	0.36	45. Textron, Inc. * Buffalo, N. Y.	47	5,409	0.25
33. Westinghouse Electric Corp. * Friendship Airport, Md.	37	7,791	0.36	46. Northrop Services, Inc. * Huntsville, Ala.	95	4,871	0.23
34. Xerox Corp. * Greenbelt, Md.	41 ^c	6,866	0.32	47. Santa Barbara Research Center Goleta, Calif.	65	4,485	0.21
35. American Science and Engrg., Inc. Cambridge, Mass. (S)	36	6,841	0.32	48. Informatics Tisco, Inc. College Park, Md.	45	4,184	0.20
36. Garrett Corp. * Torrance, Calif.	35	6,750	0.31	49. Itek Corp. * Lexington, Mass.	46	4,029	0.19
37. Dynallectron Corp. * Houston, Texas	61	6,735	0.31	50. Carney Gen. Contractors, Inc./Met. Const. Co. of Mo. (JV) (S)	—	3,968	0.19
38. Radiation, Inc. * Palm Bay, Fla.	30	6,708	0.31	51. Ball Brothers Research Corp. Boulder, Colo.	38	3,782	0.18
39. General Motors Corp. * Milwaukee, Wisc.	22	6,701	0.31	52. Chesapeake and Potomac Tel. Co. * Greenbelt, Md.	56	3,600	0.17

^aAwards during year represent awards on several contracts which have different principal places of performance. The place shown is that which has the largest amount of the awards.

(S) = Indicates small business concerns.

(JV) = Joint venture.

^cData for individual companies include awards on research and development contracts of \$10,000 and over and on all other contracts of \$25,000 and over.

^bFormerly a division of Lockheed Aircraft Corp.

^dCombined awards to Xerox Corp. and Xerox Data Systems, Inc., formerly a subsidiary of Xerox Corp..

^eFormerly Monitor Systems, Inc.

Table 5-18. Top One Hundred Contractors:^a FY 1972 (Continued)
(in thousands of dollars)

Contractor and Place of Contract Performance		Rank in FY 1971	Net Value of Awards		Contractor and Place of Contract Performance		Rank in FY 1971	Net Value of Awards	
			Amount	Percentage				Amount	Percentage
53.	Bellcomm, Inc. Washington, D.C.	33	3,380	0.16	66.	Technicolor, Inc. Houston, Texas	92	2,430	0.11
54.	Air Products and Chemicals, Inc. * Long Beach, Calif.	70	3,312	0.15	67.	Owens-Illinois, Inc. * Pittsburgh, Pa.	99	2,362	0.11
55.	ITT World Communications, Inc. New York, N.Y.	50	3,226	0.15	68.	Virginia Electric Power Co. * Hampton, Va.	76	2,333	0.11
56.	American Tel. and Tel. Co. * Greenbelt, Md.	54	3,124	0.15	69.	3M Co. * Freehold, N.J.	67	2,325	0.11
57.	Thiokol Chemical Corp. * Huntsville, Ala.	49	3,011	0.14	70.	Electronic Associates, Inc. * West Long Branch, N.J.	68	2,287	0.11
58.	Wyle Laboratories * Hampton, Va.	89	2,934	0.14	71.	Cleveland Elec. Illuminating Co. Cleveland, Ohio	79	2,277	0.11
59.	Klate Holt Co. * Hampton, Va. (S)	63	2,883	0.13	72.	Int'l. Tel. and Tel. Corp. * Fort Wayne, Ind.	77	2,219	0.10
60.	Southern Bell Tel. Co. * Kennedy Space Center, Fla.	60	2,832	0.13	73.	Digital Equipment Corp. * Maynard, Mass.	—	2,193	0.10
61.	Management Services, Inc. Huntsville, Ala.	44	2,815	0.13	74.	McGregor and Werner, Inc. Kennedy Space Center, Fla. (S)	—	2,131	0.10
62.	Wackenhut Services, Inc. * Houston, Texas	78	2,679	0.12	75.	Programming Methods, Inc. * Silver Spring, Md.	57	2,069	0.10
63.	Cutler-Hammer, Inc. * Melville, N.Y.	98	2,594	0.12	76.	Holmes and Narver, Inc. Los Angeles, Calif.	—	2,041	0.10
64.	Weston Instruments, Inc. * Sarasota, Fla.	82	2,563	0.12	77.	Barnes Engineering Co. Stamford, Conn. (S)	59	1,964	0.09
65.	Perkin-Elmer Corp. * Norwalk, Conn.	53	2,497	0.12	78.	Northrop Corp. * Rolling Hills Estates, Calif.	28	1,837	0.09

^aAwards during year represent awards on several contracts which have different principal places of performance. The place shown is that which has the largest amount of the awards.

(S) = Indicates small business concerns.

(JV) = Joint venture.

^bData for individual companies include awards on research and development contracts of \$10,000 and over and on all other contracts of \$25,000 and over.

^cFormerly a division of Lockheed Aircraft Corp.

^dCombined awards to Xerox Corp. and Xerox Data Systems, Inc., formerly a subsidiary of Xerox Corp..

^eFormerly Monitor Systems, Inc.

Table 5-18. Top One Hundred Contractors:^a FY 1972 (Continued)
(in thousands of dollars)

Contractor and Place of Contract Performance	Rank in FY 1971	Net Value of Awards Amount	Percentage	Contractor and Place of Contract Performance	Rank in FY 1971	Net Value of Awards Amount	Percentage
79. Pan American World Airways, Inc. Kennedy Space Center, Fla.	43	1,785	0.08	92. Serv-Air, Inc. Edwards, Calif.	—	1,332	0.06
80. Raytheon Co. * Waltham, Mass.	52	1,724	0.08	93. RF Communications, Inc. Rochester, N.Y.	72	1,321	0.06
81. Planning Research Corp. * Huntsville, Ala.	—	1,693	0.08	94. Teledyne Isotopes * Sandusky, Ohio	—	1,313	0.06
82. Lawrence, J.H., Co. Greenbelt, Md. (S)	—	1,691	0.08	95. Teledyne, Inc. * El Segundo, Calif.	—	1,307	0.06
83. Wolf Research and Development Corp. * Riverdale, Md.	90	1,680	0.08	96. Western Electric Co., Inc. * New York, N.Y.	94	1,297	0.06
84. ARO, Inc. Mountain View, Calif.	—	1,623	0.08	97. Aydin Corp. * Fort Washington, Pa.	64 ^d	1,286	0.06
85. Honeywell Information Systems, Inc. * Kennedy Space Center, Fla.	80	1,578	0.07	98. KMS Industries, Inc. Greenbelt, Md.	—	1,255	0.06
86. Avco Corp. * Lowell, Mass.	85	1,551	0.07	99. Informatics, Inc. * Palo Alto, Calif.	—	1,202	0.06
87. Potomac Electric Power Co. Greenbelt, Md.	97	1,545	0.07	100. Southwestern Bell Telephone Co. Houston, Texas	—	1,200	0.06
88. Rosendin Electric, Inc. Mountain View, Calif.	—	1,474	0.07	Other	—	240,933	11.24
89. Ampex Corp. * Redwood City, Calif.	75	1,467	0.07				
90. Riggins Co., Inc. Hampton, Va. (S)	—	1,363	0.06	TOTAL AWARDS TO BUSINESS FIRMS	—	2,143,315	100.00
91. Eastman Kodak Co. * Rochester, N.Y.	—	1,342	0.06				

^aAwards during year represent awards on several contracts which have different principal places of performance. The place shown is that which has the largest amount of the awards.

(S) = Indicates small business concerns.

(JV) = Joint venture.

^dData for individual companies include awards on research and development contracts of \$10,000 and over and on all other contracts of \$25,000 and over.

^bFormerly a division of Lockheed Aircraft Corp.

^cCombined awards to Xerox Corp. and Xerox Data Systems, Inc., formerly a subsidiary of Xerox Corp.

^eFormerly Monitor Systems, Inc.

Source: NASA. Annual Procurement Report (Fiscal year 1972).

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Table 5-19. Top One Hundred Contractors:^a FY 1973
(in thousands of dollars)

Contractor and Place of Contract Performance		Rank in FY 1972	Net Value of Awards		Contractor and Place of Contract Performance		Rank in FY 1972	Net Value of Awards	
			Amount	Percentage				Amount	Percentage
1. Rockwell International Corp. * Downey, Calif.		3	317,756	15.40	14. Chrysler Corp. * New Orleans, La.		17	27,693	1.34
2. McDonnell Douglas Corp. * St. Louis, Mo.		1	272,364	13.20	15. Sperry Rand Corp. * Huntsville, Ala.		12	26,558	1.29
3. Martin Marietta Corp. * Denver, Colo.		2	191,987	9.30	16. Computer Sciences Corp. * Silver Spring, Md.		19	25,103	1.22
4. General Electric Co. * King of Prussia, Pa.		4	86,856	4.21	17. United Aircraft Corp. * East Hartford, Conn.		24	24,986	1.21
5. General Dynamics Corp. * San Diego, Calif.		8	80,422	3.90	18. Federal Electric Corp. * Kennedy Space Center, Fla.		18	24,833	1.20
6. Bendix Corp. * Columbia, Md.		6	79,054	3.83	19. Hughes Aircraft Co. * El Segundo, Calif.		20	20,941	1.01
7. Boeing Co. * Kennedy Space Center, Fla.		5	75,535	3.66	20. LTV Aerospace Corp. * Dallas, Texas		21	19,878	0.96
8. Int'l. Business Machines Corp. * Huntsville, Ala.		7	61,307	2.97	21. Northrop Services, Inc. * Houston, Texas		46	16,522	0.80
9. Fairchild Industries, Inc. * Germantown, Md.		10	43,724	2.12	22. Lockheed Missiles and Space Co., Inc. * Sunnyvale, Calif.		22	14,717	0.71
10. RCA Corp. * Princeton, N.J.		9	38,227	1.85	23. Kentron Hawaii, Ltd. * Houston, Texas		—	12,956	0.63
11. Philco--Ford Corp. * Houston, Texas		11	37,521	1.82	24. Honeywell, Inc. * St. Petersburg, Fla.		27	12,419	0.60
12. Lockheed Electronics Co. * Houston, Texas		16	29,339	1.42	25. Grumman Aerospace Corp. Bethpage, N. Y.		14	11,998	0.58
13. TRW, Inc. * Redondo Beach, Calif.		13	28,223	1.37	26. Litton Systems, Inc. * Los Angeles, Calif.		42	11,235	0.54

^a = Awards during year represent awards on several contracts which have different principal places of performance. The place shown is that which has the largest amount of the awards.

(S) = Indicates small business concerns.

(JV) = Joint venture.

^bData for individual companies include awards on research and development contracts of \$10,000 and over and on all other contracts of \$25,000 and over.

^cFormerly a division of Raytheon Co.

Table 5-19. Top One Hundred Contractors:^a FY 1973 (Continued)
(in thousands of dollars)

Contractor and Place of Contract Performance	Rank in FY 1972	Net Value of Awards Amount	Percentage	Contractor and Place of Contract Performance	Rank in FY 1972	Net Value of Awards Amount	Percentage
27. Computing and Software, Inc. * Greenbelt, Md.	28	9,815	0.48	40. Dynallectron Corp. * Houston, Texas	37	5,418	0.26
28. Teledyne Industries, Inc. * Northridge, Calif.	41	9,759	0.47	41. Mason--Rust New Orleans, La.	40	5,301	0.26
29. American Science and Engrg., Inc. Cambridge, Mass. (S)	35	8,877	0.43	42. Morrison--Knudsen Co. Kennedy Space Center, Fla.	—	4,780	0.23
30. Brown Engineering Co., Inc. * Huntsville, Ala.	26	8,617	0.42	43. Pan American World Airways, Inc. * Kennedy Space Center, Fla.	79	4,628	0.22
31. General Motors Corp. * Goleta, Calif.	39	8,124	0.39	44. Control Data Corp. * Minneapolis, Minn.	31	4,594	0.22
32. Hayes International Corp. * Huntsville, Ala.	44	7,848	0.38	45. Chesapeake and Potomac Tel. Co. * Greenbelt, Md.	52	4,442	0.22
33. Westinghouse Electric Corp. * Friendship Airport, Md.	33	7,450	0.36	46. Thiokol Chemical Corp. * Huntsville, Ala.	57	4,187	0.20
34. Singer Co. * Houston, Texas	29	7,277	0.35	47. Management Services, Inc. Huntsville, Ala.	61	4,160	0.20
35. Garrett Corp. * Torrance, Calif.	36	6,900	0.33	48. American Tel. and Tel. Co. * Greenbelt, Md.	56	4,067	0.20
36. Lockheed Aircraft Corp. * Marietta, Ga.	43	6,752	0.33	49. Aerojet--General Corp. * El Monte, Calif.	15	3,910	0.19
37. Global Associates Bay St. Louis, Miss.	32	6,472	0.31	50. ILC Industries, Inc. Dover, Del.	30	3,902	0.19
38. Raytheon Service Co. * Halethorpe, Md.	^b	5,896	0.29	51. Informatics Tisco, Inc. College Park, Md.	48	3,844	0.19
39. Xerox Corp. * El Segundo, Calif.	34	5,655	0.27	52. ITT World Communications, Inc. * New York, N.Y.	55	3,743	0.18

^a = Awards during year represent awards on several contracts which have different principal places of performance. The place shown is that which has the largest amount of the awards.

(S) = Indicates small business concerns.

(JV) = Joint venture.

^bData for individual companies include awards on research and development contracts of \$10,000 and over and on all other contracts of \$25,000 and over.
^cFormerly a division of Raytheon Co.

Table 5-19. Top One Hundred Contractors:^a FY 1973 (Continued)
(in thousands of dollars)

Contractor and Place of Contract Performance	Rank in FY 1972	Net Value of Awards Amount	Percentage	Contractor and Place of Contract Performance	Rank in FY 1972	Net Value of Awards Amount	Percentage
53. Alpha Building Corp. Houston, Texas (S)	—	3,623	0.18	66. Collins Radio Co. * Addison, Texas	—	2,244	0.11
54. Santa Barbara Research Center Goleta, Calif.	47	3,308	0.16	67. Technicolor Graphic Service, Inc. Houston, Texas	66	2,156	0.10
55. Textron, Inc. * Fort Worth, Texas	45	3,185	0.15	68. Woerfel Corp. and Towne Realty Co. (JV) Cape Kennedy, Fla.	—	2,124	0.10
56. Int'l. Tel. and Tel. Corp. * Fort Wayne, Ind.	72	3,017	0.15	69. McGregor and Werner, Inc. Kennedy Space Center, Fla. (S)	74	2,086	0.10
57. Ampex Corp. * Redwood City, Calif.	89	2,988	0.15	70. Ball Brothers Research Corp. Boulder, Colo.	51	2,063	0.10
58. Aydin Corp. * Fort Washington, Pa.	97	2,898	0.14	71. Lathrop FP Construction Co. Mountain View, Calif.	—	2,030	0.10
59. Southern Bell Tel. Co. * Kennedy Space Center, Fla.	60	2,825	0.14	72. Planning Research Corp. * Huntsville, Ala.	81	2,027	0.10
60. Serv-Air, Inc. * Edwards, Calif.	92	2,489	0.12	73. Eastman Kodak Co. * Rochester, N.Y.	91	1,995	0.10
61. Virginia Electric Power Co. * Hampton, Va.	68	2,456	0.12	74. Wackenhut Services, Inc. * Houston, Texas	62	1,917	0.09
62. Cleveland Elec. Illuminating Co. * Cleveland, Ohio	71	2,451	0.12	75. United Air Lines, Inc. San Francisco, Calif.	—	1,913	0.09
63. Wyle Laboratories Hampton, Virginia	58	2,385	0.12	76. Aero Spacelines, Inc. * Los Angeles, Calif. (S)	—	1,891	0.09
64. Klate Holt Co. * Hampton, Va. (S)	59	2,373	0.11	77. Wolf Research and Develop. Corp. * Riverdale, Md.	83	1,865	0.09
65. Computer Sciences Corp./ Technicolor Graphics DP Assoc. (JV) Greenbelt, Md.	—	2,347	0.11	78. Air Products and Chemicals, Inc. * Long Beach, Calif.	54	1,850	0.09

^a = Awards during year represent awards on several contracts which have different principal places of performance. The place shown is that which has the largest amount of the awards.

(S) = Indicates small business concerns.

(JV) = Joint venture.

^bData for individual companies include awards on research and development contracts of \$10,000 and over and on all other contracts of \$25,000 and over.
^cFormerly a division of Raytheon Co.

Table 5-19. Top One Hundred Contractors:^a FY 1973 (Continued)
(in thousands of dollars)

Contractor and Place of Contract Performance	Rank in FY 1972	Net Value of Awards Amount	Percentage	Contractor and Place of Contract Performance	Rank in FY 1972	Net Value of Awards Amount	Percentage
79. Lawrence, J.H., Co. Greenbelt, Md. (S)	82	1,831	0.09	92. Pacific Gas and Electric Co. * Mountain View, Calif.	—	1,348	0.07
80. S & Q Construction Co. * Mountain View, Calif. (S)	—	1,819	0.09	93. Hewlett-Packard Co. * Palo Alto, Calif.	—	1,340	0.06
81. Texas Instruments, Inc. * Dallas, Texas	—	1,785	0.09	94. Weston Instruments, Inc. * College Park, Md.	64	1,292	0.06
82. Mechanical Projects, Inc. Hampton, Va. (S)	—	1,782	0.09	95. Western Union International, Inc. New York, N.Y.	—	1,288	0.06
83. Programming Methods, Inc. * Mountain View, Calif.	75	1,756	0.09	96. Systems Engineering Labs, Inc. * Houston, Texas	—	1,265	0.06
84. Electronic Associates, Inc. * Hampton, Va.	70	1,744	0.08	97. Southwestern Bell Telephone Co. Houston, Texas	100	1,257	0.06
85. Perkin-Elmer Corp. * Norwalk, Conn.	65	1,717	0.08	98. Raytheon Co. * Sudbury, Mass.	80	1,234	0.06
86. Taft Broadcasting Co. Houston, Texas (S)	—	1,712	0.08	99. Peoples Construction Co. Mountain View, Calif. (S)	—	1,167	0.06
87. Systems Technology Associates, Inc. Falls Church, Va. (S)	—	1,628	0.08	100. Owens-Illinois, Inc. * Pittsburgh, Pa.	67	1,160	0.06
88. Potomac Electric Power Co. Greenbelt, Md.	87	1,574	0.08	Other		219,819	10.65
89. R&W Machine Co. Hampton, Va. (S)	—	1,465	0.07				
90. Honeywell Information Systems, Inc. * Kennedy Space Center, Fla.	85	1,381	0.07	TOTAL AWARDS TO BUSINESS FIRMS		2,063,797	100.00
91. Jacob Transfer, Inc. Greenbelt, Md.	—	1,355	0.07				

^a - Awards during year represent awards on several contracts which have different principal places of performance. The place shown is that which has the largest amount of the awards.

(S) - Indicates small business concerns.
(JV) - Joint venture.

^bData for individual companies include awards on research and development contracts of \$10,000 and over and on all other contracts of \$25,000 and over.
^cFormerly a division of Raytheon Co.

Source: NASA, *Annual Procurement Report* (Fiscal year 1973).

Table 5-20. Top One Hundred Contractors:^a FY 1974
(in thousands of dollars)

Contractor and Place of Contract Performance	Net Value of Awards		Rank in FY 1971	Contractor and Place of Contract Performance	Net Value of Awards		
	Amount	Percentage			Amount	Percentage	
1. Rockwell International Corp. * Downey, Calif.	1 ^b	486,478	22.96	14. Sperry Rand Corp. * Huntsville, Ala.	15	21,667	1.02
2. Martin Marietta Corp. * Denver, Colo.	3	201,800	9.53	15. Federal Electric Corp. * Kennedy Space Center, Fla.	18	20,932	0.99
3. McDonnell Douglas Corp. * Huntington Beach, Calif.	2	155,955	7.36	16. TRW, Inc. * Redondo Beach, Calif.	13	20,750	0.98
4. Bendix Corp. * Columbia, Md.	6	79,801	3.77	17. Hughes Aircraft Co. * El Segundo, Calif.	19	17,996	0.85
5. General Dynamics Corp. * San Diego, Calif.	5	79,539	3.75	18. LTV Aerospace Corp. * Dallas, Texas	20	17,229	0.81
6. General Electric Co. * King of Prussia, Pa.	4	64,996	3.07	19. Thiokol Corp. * Huntsville, Ala.	46	17,012	0.80
7. Boeing Co. * Kennedy Space Center, Fla.	7	60,047	2.83	20. American Airlines, Inc. * New York, N.Y.	—	16,850	0.80
8. Int'l. Business Machines Corp. * Houston, Texas	8	47,491	2.24	21. Northrop Services, Inc. * Houston, Texas	21	16,271	0.77
9. United Aircraft Corp. * East Hartford, Conn.	17	39,671	1.87	22. Chrysler Corp. * New Orleans, La.	14	16,053	0.76
10. Philco-Ford Corp. * Houston, Texas	11	36,010	1.70	23. Morrison-Knudsen Co., Inc. Kennedy Space Center, Fla.	42	15,551	0.73
11. Lockheed Electronics Co., Inc. * Houston, Texas	12	35,377	1.67	24. Fairchild Industries, Inc. * Germantown, Md.	9	12,976	0.61
12. RCA Corp. * Princeton, N.J.	10	34,736	1.64	25. Honeywell, Inc. * St. Petersburg, Fla.	24	12,644	0.60
13. Computer Sciences Corp. * Silver Spring, Md.	16	27,395	1.29	26. Teledyne Industries, Inc. * Los Angeles, Calif.	28	12,341	0.58

* = Awards during year represent awards on several contracts which have different principal places of performance. The place shown is that which has the largest amount of the awards.

(S) = Indicates small business concerns.

(JV) = Joint venture.

^aData for individual companies include awards on research and development contracts of \$10,000 and over and on all other contracts of \$25,000 and over.

^bIncludes awards to Collins Radio Co., now a division of Rockwell International Corp.

^cFormerly Computing and Software, Inc.

^dFormerly Serv-Air, Inc.

^eFormerly Informatics Tisco, Inc.

Table 5-20. Top One Hundred Contractors:^a FY 1974 (Continued)
(in thousands of dollars)

Contractor and Place of Contract Performance	Rank in FY 1973		Net Value of Awards		Contractor and Place of Contract Performance	Rank in FY 1973		Net Value of Awards	
	Amount	Percentage	Amount	Percentage		Amount	Percentage	Amount	Percentage
27. Litton Systems, Inc. * Los Angeles, Calif.	26	11,253	0.53		40. Lockheed Aircraft Corp. * Marietta, Ga.	36	7,701	0.36	
28. Grumman Aerospace Corp. * Bethpage, N.Y.	25	11,133	0.53		41. Hayes International Corp. * Huntsville, Ala.	32	7,352	0.35	
29. Harris Corp. * Rochester, N.Y.	—	10,581	0.50		42. Xerox Corp. * El Segundo, Calif.	39	7,088	0.33	
30. Textron, Inc. * Fort Worth, Texas	55	10,104	0.48		43. American Science and Engrg., Inc. Cambridge, Mass. (S)	29	6,896	0.33	
31. Pan American World Airways, Inc. * Houston, Texas	43	9,835	0.46		44. Cordura Corp. * Slidell, La.	27 ^c	6,033	0.28	
32. Computer Sciences Corp./Technicolor Graphics DP Assoc. (JV) * Greenbelt, Md.	65	9,158	0.43		45. Kentron Hawaii, Ltd. * Houston, Texas	23	5,832	0.28	
33. Westinghouse Electric Corp. * Friendship Airport, Md.	33	8,849	0.42		46. Mason-Rust (JV) * New Orleans, La.	41	5,800	0.27	
34. General Motors Corp. * Goleta, Calif.	31	8,341	0.39		47. Management Services, Inc. Huntsville, Ala. (S)	47	5,077	0.24	
35. Raytheon Service Co. * Halethorpe, Md.	38	8,294	0.39		48. E-Systems, Inc. * Houston, Texas	60 ^d	4,971	0.23	
36. Lockheed Missiles and Space Co., Inc. * Sunnyvale, Calif.	33	8,120	0.38		49. Chesapeake and Potomac Tel. Co. * Greenbelt, Md.	45	4,766	0.22	
37. Brown Engineering Co., Inc. Huntsville, Ala.	30	8,090	0.38		50. Aerojet-General Corp. * Sacramento, Calif.	49	4,466	0.21	
38. Global Associates Bay St. Louis, Miss.	37	8,064	0.38		51. Singer Co. * Houston, Texas	34	4,447	0.21	
39. Control Data Corp. * Minneapolis, Minn.	44	7,900	0.37		52. Avco Corp. * Huntsville, Ala.	—	4,214	0.20	

^a—Awards during year represent awards on several contracts which have different principal places of performance. The place shown is that which has the largest amount of the awards.

(S) = Indicates small business concerns.

(JV) = Joint venture.

^bData for individual companies include awards on research and development contracts of \$10,000 and over and on all other contracts of \$25,000 and over.

^cIncludes awards to Collins Radio Co., now a division of Rockwell International Corp.

^dFormerly Computing and Software, Inc.

^eFormerly Serv-Air, Inc.

^fFormerly Informatics Tisco, Inc.

Table 5-20. Top One Hundred Contractors:^a FY 1974
(in thousands of dollars)

Contractor and Place of Contract Performance	Rank in FY 1973	Net Value of Awards Amount	Percentage	Contractor and Place of Contract Performance	Rank in FY 1973	Net Value of Awards Amount	Percentage
53. Informatics Information Systems Co. College Park, Md.	51 ^c	4,186	0.20	66. Santa Barbara Research Center Goleta, Calif.	54	2,544	0.12
54. Dynallectron Corp. * Las Cruces, N.M.	40	3,810	0.18	67. McGregor and Werner, Inc. * Kennedy Space Center, Fla. (S)	69	2,508	0.12
55. ITT World Communications, Inc. New York, N.Y.	52	3,515	0.17	68. Technicolor Graphic Services, Inc. Houston, Texas	67	2,427	0.11
56. Planning Research Corp. * Kennedy Space Center, Fla.	72	3,503	0.17	69. Hewlett-Packard Co. * Palo Alto, Calif.	93	2,312	0.11
57. Int'l. Tel. and Tel. Corp. * Fort Wayne, Ind.	56	3,052	0.14	70. Eastman Kodak Co. * Rochester, N.Y.	73	2,304	0.11
58. United Airlines, Inc. San Francisco, Calif.	75	2,945	0.14	71. Ball Brothers Research Corp. * Boulder, Colo.	70	2,152	0.10
59. Wyle Laboratories * Hampton, Va.	63	2,904	0.14	72. Potomac Electric Power Co. Greenbelt, Md.	88	2,051	0.10
60. Cleveland Elec. Illuminating Co. Cleveland, Ohio	62	2,814	0.13	73. Perkin-Elmer Corp. * Norwalk, Conn.	85	2,034	0.10
61. Alpha Building Corp. Houston, Texas (S)	53	2,729	0.13	74. Texas Instruments, Inc. * Dallas, Texas	81	2,019	0.10
62. American Tel. and Tel. Co. * Greenbelt, Md.	48	2,689	0.13	75. R & W Machine Co. Hampton, Va. (S)	89	1,946	0.09
63. Expedient Services, Inc. Kennedy Space Center, Fla. (S)	--	2,666	0.13	76. Klate Holt Co. * Hampton, Va. (S)	64	1,944	0.09
64. ILC Industries, Inc. * Dover, Del.	50	2,617	0.12	77. Aydin Corp. * Fort Washington, Pa.	58	1,848	0.09
65. Amex Corp. * Redwood City, Calif.	57	2,607	0.12	78. Wackenhut Services, Inc. * Houston, Texas	74	1,822	0.09

* = Awards during year represent awards on several contracts which have different principal places of performance. The place shown is that which has the largest amount of the awards.

(S) = Indicates small business concerns.

(JV) = Joint venture.

^aData for individual companies include awards on research and development contracts of \$10,000 and over and on all other contracts of \$25,000 and over.

^bIncludes awards to Collins Radio Co., now a division of Rockwell International Corp.

^cFormerly Computing and Software, Inc.

^dFormerly Serv-Air, Inc.

^eFormerly Informatics Tisco, Inc.

Table 5-20. Top One Hundred Contractors:^a FY 1974 (Continued)
(in thousands of dollars)

Contractor and Place of Contract Performance	Rank in FY 1973		Net Value of Awards		Contractor and Place of Contract Performance	Rank in FY 1973		Net Value of Awards	
	Amount	Percentage	Amount	Percentage		Amount	Percentage	Amount	Percentage
79. Garrett Corp. * Phoenix, Ariz.	35	1.822	0.09		92. Southern Bell Telephone Co. * Kennedy Space Center, Fla.	59	1.376	0.06	
80. Air Products and Chemicals, Inc. * Long Beach, Calif.	78	1.814	0.09		93. Electronic Associates, Inc. * Hampton, Va.	84	1.365	0.06	
81. PRC Data Services, Inc. * Washington, D.C.	—	1.747	0.08		94. Southwestern Bell Telephone Co. Houston, Texas	97	1.311	0.06	
82. Western Union International, Inc. New York, N.Y.	95	1.739	0.08		95. Aro, Inc. Mountain View, Calif.	—	1.300	0.06	
83. Peoples Construction Co. Mountain View, Calif. (S)	99	1.677	0.08		96. Bell and Howell Co. * Pasadena, Calif.	—	1.295	0.06	
84. Honeywell Information Systems, Inc. * Atlanta, Ga.	90	1.628	0.08		97. Weston Instruments, Inc. * Sarasota, Fla.	94	1.273	0.06	
85. Reynolds Smith and Hills, Inc. * Jacksonville, Fla.	—	1.621	0.08		98. B.D. Ashe Hampton, Va. (S)	—	1.241	0.06	
86. Wolf Research and Develop. Corp. * Riverdale, Md.	77	1.559	0.07		99. Seelye Stevenson Value Knecht, Inc. New York, N.Y.	—	1.228	0.06	
87. Evans and Sutherland Computer Corp. * Salt Lake City, Utah (S)	—	1.471	0.07		100. Johnson Service Co. * Kennedy Space Center, Fla.	—	1.215	0.06	
88. J.H. Lawrence Co. Greenbelt, Md. (S)	79	1.463	0.07		Other		256,390	12.10	
89. Greiner Engineering Sciences, Inc. Tampa, Fla.	—	1.431	0.07						
90. Kelsey-Seybold Clinic * Houston, Texas	—	1.394	0.07						
91. Jacob Transfer, Inc. Greenbelt, Md.	91	1.386	0.07						
					TOTAL AWARDS TO BUSINESS FIRMS		2,118,627	100.0	

^a = Awards during year represent awards on several contracts which have different principal places of performance. The place shown is that which has the largest amount of the awards.

(S) = Indicates small business concerns.

(JV) = Joint venture.

^bData for individual companies include awards on research and development contracts of \$10,000 and over and on all other contracts of \$25,000 and over.

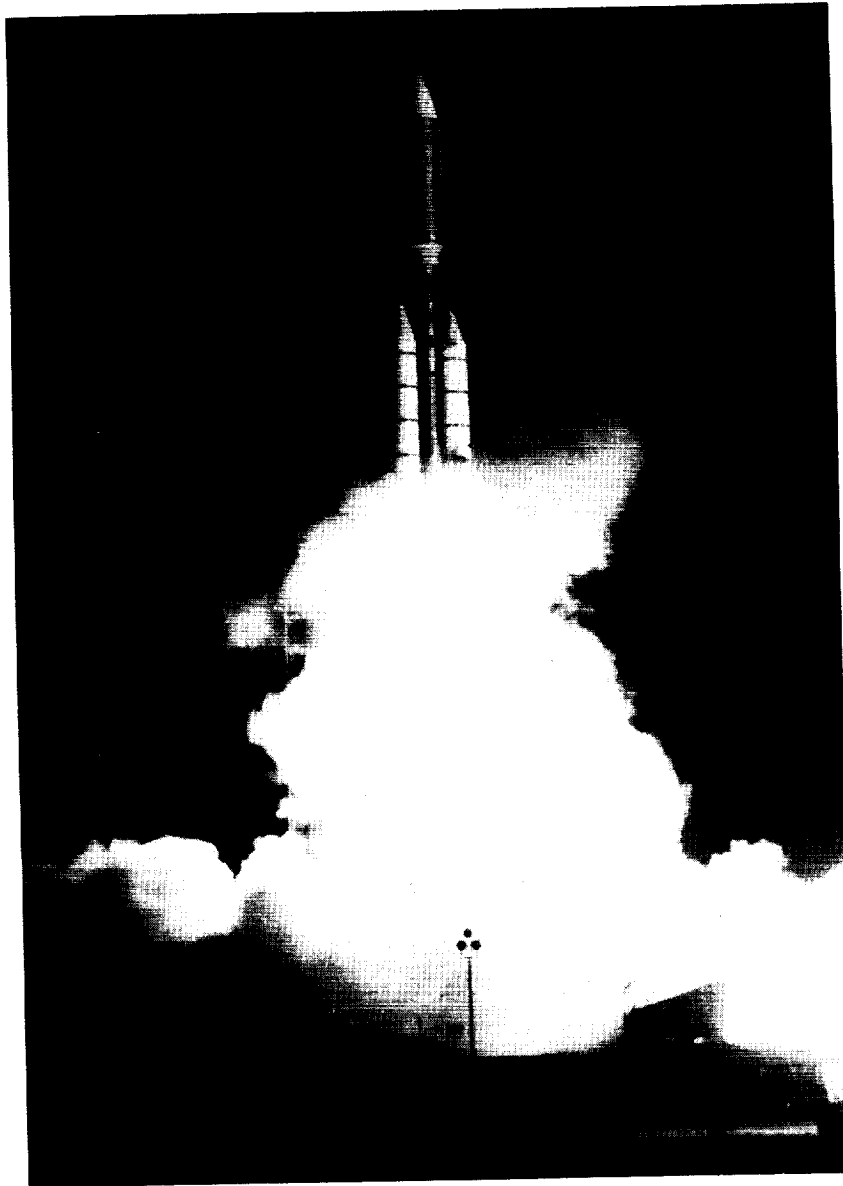
^cIncludes awards to Collins Radio Co., now a division of Rockwell International Corp.

^dFormerly Computing and Software, Inc.

^eFormerly Serv-Air, Inc.

^fFormerly Informatics Tisco, Inc.

Source: NASA, *Annual Procurement Report* (Fiscal year 1974).



Voyager 1 spacecraft lifts off atop a Titan-Centaur rocket on September 5, 1977 to join its sister spacecraft Voyager II on a mission to the outer planets.

**ORIGINAL PAGE
BLACK AND WHITE PHOTOGRAPH**

Table 5-21. Top One Hundred Contractors:^a FY 1975
(in thousands of dollars)

Contractor and Place of Contract Performance	Rank in FY 1974	Net Value of Awards Amount	Percentage	Contractor and Place of Contract Performance	Rank in FY 1974	Net Value of Awards Amount	Percentage
1. Rockwell International Corp. * Downey, Calif.	1	681,619	30.23	14. Thiokol Corp. * Brigham City, Utah	19	28,958	1.28
2. Martin Marietta Corp. * Denver, Colo.	2	130,255	5.78	15. Computer Sciences Corp. * Silver Spring, Md.	13	27,142	1.20
3. McDonnell Douglas Corp. * Huntington Beach, Calif.	3	125,450	5.56	16. Hughes Aircraft Co. * El Segundo, Calif.	17	26,263	1.16
4. General Dynamics Corp. * San Diego, Calif.	5	85,281	3.78	17. Sperry Rand Corp. * Huntsville, Ala.	14	22,333	0.99
5. Bendix Corp. * Columbia, Md.	4	75,702	3.36	18. LTV Aerospace Corp. * Dallas, Texas	18	18,451	0.82
6. General Electric Co. * King of Prussia, Pa.	6	69,738	3.09	19. Northrop Services, Inc. * Houston, Texas	21	16,961	0.75
7. Int'l Business Machines Corp. * Houston, Texas	8	54,246	2.41	20. Textron, Inc. * Fort Worth, Texas	30	15,231	0.68
8. Lockheed Electronics Co., Inc. * Houston, Texas	11	46,219	2.05	21. Grumman Aerospace Corp. * Bethpage, N.Y.	28	14,136	0.63
9. Boeing Co. * Kennedy Space Center, Fla.	7	43,686	1.94	22. Planning Research Corp. * Kennedy Space Center, Fla.	56	13,792	0.61
10. RCA Corp. * Princeton, N.J.	12	39,683	1.76	23. Control Data Corp. * Minneapolis, Minn.	39	12,525	0.56
11. United Technologies Corp. * Stratford, Conn.	9 ^b	36,230	1.61	24. Teledyne Industries, Inc. * Los Angeles, Calif.	26	11,864	0.53
12. TRW, Inc. * Redondo Beach, Calif.	16	34,425	1.53	25. Chrysler Corp. * New Orleans, La.	22	11,393	0.51
13. Aeronutronics Ford Corp. * Houston, Texas	10 ^c	28,965	1.28	26. American Sciences and Engrg., Inc. Cambridge, Mass. (S)	43	10,929	0.48

^a = Awards during year represent awards on several contracts which have different principal places of performance. The place shown is that which has the largest amount of the awards.

(S) = Indicates small business concerns.

(JV) = Joint venture.

^cExcludes smaller procurements, generally those of less than \$10,000.

^bFormerly United Aircraft Corp.

^dFormerly Philco-Ford Corp.

^eIncludes awards to Cordura Corp., now a division of Integrated Systems Support, Inc.

^fFormerly a division of E-Systems, Inc.

^gIncludes awards to Wolf Research and Development Corp., now a division of EG&G, Inc.

Table 5-21. Top One Hundred Contractors:^a FY 1975 (Continued)
(in thousands of dollars)

Contractor and Place of Contract Performance	Net Value of Awards		Contractor and Place of Contract Performance	Net Value of Awards	
	Rank in FY 1974	Amount		Rank in FY 1974	Amount
27. Computer Sciences—Technicolor Assocs. (JV) Greenbelt, Md.	32	10,410	40. Santa Barbara Research Center Goleta, California	66	6,249
28. Federal Electric Corp. * Kennedy Space Center, Fla.	15	10,185	41. Integrated Systems Support, Inc. * Slidell, La.	^d	6,086
29. Singer Co. * Houston, Texas	51	9,124	42. Ball Brothers Research Corp. * Boulder, Colo.	71	5,971
30. Frank Briscoe Co., Inc. Kennedy Space Center, Fla.	—	8,733	43. Xerox Corp. * Greenbelt, Md.	42	5,963
31. Global Associates Bay St. Louis, Miss.	38	8,638	44. Hayes International Corp. * Huntsville, Ala.	41	5,799
32. Pan American World Airways, Inc. * Houston, Texas	31	8,144	45. Serv-Air, Inc. * Houston, Texas	^e	5,509
33. Honeywell, Inc. * St. Petersburg, Fla.	25	8,116	46. Fairchild Industries, Inc. * Germantown, Md.	24	4,581
34. Brown Engineering Co., Inc. Huntsville, Ala.	37	7,381	47. Harris Corp. * Palm Bay, Fla.	29	4,347
35. Lockheed Aircraft Corp. * Mountain View, Calif.	40	7,030	48. DBA Systems, Inc. * Melbourne, Fla. (S)	—	4,305
36. Lockheed Missiles and Space Co., Inc. * Sunnyvale, Calif.	36	6,971	49. Odettes, Inc. Anaheim, Calif. (S)	—	4,275
37. Westinghouse Electric Corp. * Friendship Airport, Md.	33	6,845	50. Litton Systems, Inc. * Los Angeles, Calif.	27	4,208
38. Morrison-Knudsen Co., Inc. Kennedy Space Center, Fla.	23	6,809	51. Keniron Hawaii, Ltd. * Houston, Texas	45	4,168
39. Raytheon Service Co. * Halethorpe, Md.	35	6,780	52. Cutler Hammer, Inc. * Deer Park, N. Y.	—	4,042

^a = Awards during year represent awards on several contracts which have different principal places of performance. The place shown is that which has the largest amount of the awards.

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^fFormerly a division of E-Systems, Inc.

^gIncludes awards to Wolf Research and Development Corp., now a division of EG&G, Inc.

Table 5-21. Top One Hundred Contractors:^a FY 1975 (Continued)
(in thousands of dollars)

Contractor and Place of Contract Performance	Rank in FY 1974	Net Value of Awards Amount	Percentage	Contractor and Place of Contract Performance	Rank in FY 1974	Net Value of Awards Amount	Percentage
53. Chesapeake and Potomac Tel. Co. * Greenbelt, Md.	49	3,900	0.17	66. Hewlett-Packard Co. * Mountain View, Calif.	69	2,925	0.13
54. Cleveland Elec. Illuminating Co. Cleveland, Ohio	60	3,840	0.17	67. Amplex Corp. * Bethesda, Md.	65	2,706	0.12
55. Santa Fe Engineers, Inc. Edwards, Calif.	—	3,568	0.16	68. Beckman Instruments, Inc. * Anaheim, Calif.	—	2,615	0.12
56. Management Services, Inc. Huntsville, Ala. (S)	47	3,509	0.16	69. Technology Development Corp. * Mountain View, Calif. (S)	—	2,604	0.12
57. Informatics Information Systems Co. College Park, Md.	53	3,452	0.15	70. Potomac Electric Power Co. Greenbelt, Md.	72	2,519	0.11
58. Texas Instruments, Inc. * Dallas, Texas	74	3,367	0.15	71. ITT World Communications, Inc. New York, N.Y.	55	2,514	0.11
59. J.H. Lawrence Co. Greenbelt, Md. (S)	88	3,321	0.15	72. Boeing Services International, Inc. New Orleans, La.	—	2,483	0.11
60. Air Products and Chemicals, Inc. * Cape Canaveral, Fla.	80	3,264	0.14	73. Modular Computer Systems, Inc. Ft. Lauderdale, Fla. (S)	—	2,453	0.11
61. Mason-Rust (JV) New Orleans, La.	46	3,232	0.14	74. Klate Holt Co. * Houston, Texas (S)	76	2,429	0.11
62. Wyle Laboratories * Hampton, Va.	59	3,213	0.14	75. Reinhold Construction, Inc. Kennedy Space Center, Fla. (S)	—	2,376	0.11
63. Dynallectron Corp. * Las Cruces, N.M.	54	3,112	0.14	76. Inschos Mechanical Contractors, Inc. Huntsville, Ala. (S)	—	2,292	0.10
64. PMI Facilities Management Corp. * New York, N.Y.	—	2,965	0.13	77. Technicolor Graphic Services, Inc. Houston, Texas	68	2,267	0.10
65. Garrett Corp. * Phoenix, Ariz.	79	2,952	0.13	78. American Tel. and Tel. Co. * Greenbelt, Md.	62	2,248	0.10

*— Awards during year represent awards on several contracts which have different principal places of performance. The place shown is that which has the largest amount of the awards.

(S) = Indicates small business concerns.

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^aExcludes smaller procurements, generally those of less than \$10,000.

^bFormerly United Aircraft Corp.

^cFormerly Philco-Ford Corp.

^dIncludes awards to Cordura Corp., now a division of Integrated Systems Support, Inc.

^eFormerly a division of E-Systems, Inc.

^fIncludes awards to Wolf Research and Development Corp., now a division of EG&G, Inc.

Table 5-21. Top One Hundred Contractors:^a FY 1975 (Continued)
(in thousands of dollars)

Contractor and Place of Contract Performance	Rank in FY 1974	Net Value of Awards Amount	Percentage	Contractor and Place of Contract Performance	Rank in FY 1974	Net Value of Awards Amount	Percentage
79. Varian Associates * Palo Alto, Calif.	—	2,162	0.10	92. Wackenhut Services, Inc. Houston, Texas	78	1,549	0.07
80. Perkin-Elmer Corp. * Norwalk, Conn.	73	2,055	0.09	93. Programming Methods, Inc. * Palo Alto, Calif.	—	1,544	0.07
81. EG and G, Inc. * Riverdale, Md.	71	1,954	0.09	94. Motorola, Inc. * Scottsdale, Ariz.	—	1,529	0.07
82. Digital Equipment Corp. * Maynard, Mass.	—	1,938	0.09	95. Bell and Howell Co. * Pasadena, Calif.	96	1,518	0.07
83. Avco Corp. * Huntsville, Ala.	52	1,858	0.08	96. Operations Research, Inc. of Md. Silver Spring, Md.	—	1,512	0.07
84. R & W Machine Co. Hampton, Va. (S)	75	1,835	0.08	97. Micro Craft, Inc. Tulahoma, Tenn. (S)	—	1,509	0.07
85. Int'l Tel. and Tel. Corp. * Fort Wayne, Ind.	57	1,795	0.08	98. Ralph M. Parsons Co. * Pasadena, Calif.	—	1,490	0.07
86. B.D. Ashe Hampton, Va. (S)	98	1,782	0.08	99. Econ, Inc. * Princeton, N.J. (S)	—	1,446	0.06
87. PRC Data Services, Inc. McLean, Va.	81	1,766	0.08	100. Metro Contract Services * Houston, Texas (S)	—	1,442	0.06
88. Alpha Building Corp. Houston, Texas (S)	61	1,730	0.08	Other		289,426	12.83
89. Electronic Associates, Inc. * Hampton, Va.	93	1,653	0.07				
90. Aro, Inc. Mountain View, Calif.	95	1,619	0.07	TOTAL AWARDS TO BUSINESS FIRMS		2,254,993	100.00
91. Jacob Transfer, Inc. Greenbelt, Md.	91	1,609	0.07				

^a = Awards during year represent awards on several contracts which have different principal places of performance. The place shown is that which has the largest amount of the awards.

(S) = Indicates small business concerns.

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^bExcludes smaller procurements, generally those of less than \$10,000.

^cFormerly United Aircraft Corp.

^dFormerly Philco-Ford Corp.

^eIncludes awards to Cordura Corp., now a division of Integrated Systems Support, Inc.

^fFormerly a division of E-Systems, Inc.

^gIncludes awards to Wolf Research and Development Corp., now a division of EG&G, Inc.

Source: NASA, *Annual Procurement Report* (Fiscal year 1975).

**Table 5-22. Top One Hundred Contractors:^a FY 1976
(in thousands of dollars)**

Contractor and Place of Contract Performance	Rank in FY 1975	Net Value of Awards Amount	Percentage	Contractor and Place of Contract Performance	Rank in FY 1975	Net Value of Awards Amount	Percentage
1. Rockwell International Corp. * Downey, Calif.	1	906,270	35.73	14. Sperry Rand Corp. * Huntsville, Ala.	17	31,482	1.24
2. McDonnell Douglas Corp. * Huntington Beach, Calif.	3	124,766	4.92	15. Computer Sciences Corp. * Silver Spring, Md.	15	29,081	1.15
3. Martin Marietta Corp. * New Orleans, La.	2	109,616	4.32	16. Planning Research Corp. * Kennedy Space Center, Fla.	22	22,267	0.88
4. General Dynamics Corp. * San Diego, Calif.	4	76,268	3.01	17. Aeronutronics Ford Corp. * Houston, Texas	13	20,415	0.81
5. Bendix Corp. * Columbia, Md.	5	75,125	2.96	18. Blount Brothers Corp. * Kennedy Space Center, Fla.	—	19,674	0.78
6. General Electric Co. * Cincinnati, Ohio	6	60,576	2.39	19. United Technologies Corp. * West Palm Beach, Fla.	11	17,488	0.69
7. Lockheed Electronics Co., Inc. * Houston, Texas	8	55,691	2.20	20. Northrop Services, Inc. * Houston, Texas	19	16,492	0.65
8. Boeing Co. * Kennedy Space Center, Fla.	9	55,104	2.17	21. Vought Corp. * Dallas, Texas	18 ^b	15,638	0.62
9. Hughes Aircraft Co. * El Segundo, Calif.	16	47,461	1.87	22. American Sciences and Engrg., Inc. Cambridge, Mass. (S)	26	15,079	0.60
10. RCA Corp. * Princeton, N.J.	10	46,984	1.85	23. Singer Co. * Binghamton, N.Y.	29	14,663	0.58
11. Thiokol Corp. * Brigham City, Utah	14	46,974	1.85	24. Federal Electric Corp. Kennedy Space Center, Fla.	28	14,051	0.55
12. TRW, Inc. * Redondo Beach, Calif.	12	45,201	1.78	25. Grumman Aerospace Corp. * Bethpage, N.Y.	21	13,370	0.53
13. Int'l Business Machines Corp. * Houston, Texas	7	42,532	1.68	26. Global Associates Bay St. Louis, Miss.	31	11,995	0.47

^aExcludes smaller procurements, generally those of less than \$10,000.

^bFormerly LTV Aerospace Corp.

^cFormerly Integrated Systems Support, Inc.

^dFormerly a nonprofit organization.

^{*} - Awards during year represent awards on several contracts which have different principal places of performance. The place shown is that which has the largest amount of the awards.

(S) = Indicates small business concerns.

(JV) = Joint venture.

Table 5-22. Top One Hundred Contractors:^a FY 1976 (Continued)
(in thousands of dollars)

Contractor and Place of Contract Performance	Rank in FY 1975	Net Value of Awards Amount	Percentage	Contractor and Place of Contract Performance	Rank in FY 1975	Net Value of Awards Amount	Percentage
27. Lockheed Aircraft Corp. * Burbank, Calif.	35	11,007	0.43	40. SDC Integrated Services, Inc. * Slidell, La.	41 ^c	6,505	0.26
28. Raytheon Service Co. * Halthorpe, Md.	39	10,973	0.43	41. Air Products and Chemicals, Inc. * Allentown, Penn.	60	6,101	0.24
29. Computer Sciences - Technicolor Assocs. (JV) Greenbelt, Md.	27	10,812	0.43	42. Virginia Electric and Power Co. Hampton, Va.	—	5,692	0.22
30. Teledyne Industries, Inc. * Los Angeles, Calif.	24	10,492	0.41	43. Control Data Corp. * Minneapolis, Minn.	23	5,681	0.22
31. Honeywell Information Systems * McLean, Va.	—	10,429	0.41	44. Mayfair Construction Co. Kennedy Space Center, Fla.	—	5,288	0.21
32. Ball Brothers Research Corp. * Boulder, Colo.	42	10,303	0.41	45. Metro Contract Services * Hampton, Va. (S)	100	5,194	0.20
33. Honeywell, Inc. * Lexington, Mass.	33	9,601	0.38	46. Boeing Services International, Inc. New Orleans, La.	72	5,183	0.20
34. Lockheed Missiles and Space Co., Inc. * Sunnyvale, Calif.	36	8,693	0.34	47. Xerox Corp. * El Segundo, Calif.	43	4,858	0.19
35. Textron, Inc. * Fort Worth, Texas	20	7,723	0.30	48. Serv-Air, Inc. * Houston, Texas	45	4,613	0.18
36. Brown Engineering Co., Inc. Huntsville, Ala.	34	7,571	0.30	49. Texas Instruments, Inc. * Dallas, Texas	58	4,587	0.18
37. Pan American World Airways, Inc. * Houston, Texas	32	7,123	0.28	50. Int'l Tel. and Tel. Corp. * Fort Wayne, Ind.	85	4,442	0.18
38. Santa Barbara Research Center Goleta, Calif.	40	6,579	0.26	51. Westinghouse Electric Corp. * Friendship Airport, Md.	37	4,350	0.17
39. Cutler Hammer, Inc. * Deer Park, N.Y.	52	6,578	0.26	52. Frank Briscoe Co., Inc. Kennedy Space Center, Fla.	30	4,218	0.17

^a = Awards during year represent awards on several contracts which have different principal places of performance. The place shown is that which has the largest amount of the awards.

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^bExcludes smaller procurements, generally those of less than \$10,000.

^cFormerly LTV Aerospace Corp.

^dFormerly Integrated Systems Support, Inc.

^eFormerly a nonprofit organization.

Table 5-22. Top One Hundred Contractors:^a FY 1976 (Continued)
(in thousands of dollars)

Contractor and Place of Contract Performance	Rank in FY 1975	Net Value of Awards Amount	Percentage	Contractor and Place of Contract Performance	Rank in FY 1975	Net Value of Awards Amount	Percentage
53. Informatics Information Systems Co. * Friendship Airport, Md.	57	4,117	0.16	66. Union Carbide Corp. * Fontana, Calif.	—	3,074	0.12
54. Beckman Instruments, Inc. * Anaheim, Calif.	68	4,002	0.16	67. Digital Equipment Corp. * Lanham, Md.	82	2,995	0.12
55. Management Services, Inc. * Huntsville, Ala. (S)	56	3,655	0.14	68. Garrett Corp. * Phoenix, Ariz.	65	2,924	0.12
56. Kentron Hawaii, Ltd. * Houston, Texas	51	3,651	0.14	69. Ralph M. Parsons Co. * Pasadena, Calif.	98	2,903	0.11
57. Wyle Laboratories * Hampton, Va.	62	3,580	0.14	70. Potomac Electric Power Co. Greenbelt, Md.	70	2,801	0.11
58. Fairchild Industries, Inc. * Germantown, Md.	46	3,536	0.14	71. Klate Holt Co. * Houston, Texas (S)	74	2,758	0.11
59. Aydin Corp. * Fort Washington, Pa.	—	3,453	0.14	72. Motorola, Inc. * Scottsdale, Ariz.	94	2,648	0.10
60. Hewlett-Packard Co. * Santa Clara, Calif.	66	3,411	0.13	73. Chrysler Corp. * New Orleans, La.	25	2,505	0.10
61. Technology Development Corp. * Mountain View, Calif. (S)	69	3,374	0.13	74. Science Applications, Inc. * Huntsville, Ala.	—	2,454	0.10
62. Cleveland Elec. Illuminating Co. Cleveland, Ohio	54	3,329	0.13	75. Technicolor Graphic Services, Inc. Houston, Texas	77	2,399	0.09
63. PMI Facilities Management Corp. * New York, N.Y.	63	3,293	0.13	76. Avco Corp. * Huntsville, Ala.	83	2,360	0.09
64. Hayes International Corp. * Huntsville, Ala.	44	3,204	0.13	77. Battelle Memorial Institute * Columbus, Ohio	^d	2,354	0.09
65. Modular Computer Systems, Inc. * Ft. Lauderdale, Fla. (S)	73	3,181	0.13	78. Beech Aircraft Corp. * Boulder, Colo.	—	2,310	0.09

^a = Awards during year represent awards on several contracts which have different principal places of performance. The place shown is that which has the largest amount of the awards.

(S) - Indicates small business concerns.

(JV) - Joint venture.

^b Excludes smaller procurements, generally those of less than \$10,000.

^c Formerly LTV Aerospace Corp.

^d Formerly Integrated Systems Support, Inc.

^e Formerly a nonprofit organization.

Table 5-22. Top One Hundred Contractors:^a FY 1976 (Continued)
(in thousands of dollars)

Contractor and Place of Contract Performance	Rank in FY 1975	Net Value of Awards Amount	Percentage	Contractor and Place of Contract Performance	Rank in FY 1975	Net Value of Awards Amount	Percentage
79. Ampex Corp. * Bethesda, Md.	67	2,215	0.09	92. Wackenhut Services, Inc. Houston, Texas	92	1,688	0.07
80. TWA Services, Inc. Kennedy Space Center, Fla.	—	2,075	0.08	93. Tektronix, Inc. Beaverton, Ore.	—	1,677	0.07
81. Aro, Inc. Mountain View, Calif.	90	2,011	0.08	94. J.H. Lawrence Co. Greenbelt, Md. (S)	59	1,651	0.07
82. Western Union Telegraph Co. * Upper Saddle River, N.J.	—	1,982	0.08	95. Houston Lighting and Power Co. Houston, Texas	—	1,573	0.06
83. Sundstrand Corp. Rockford, Ill.	—	1,950	0.08	96. Informatics, Inc. * Palo Alto, Calif.	—	1,570	0.06
84. Entex Corp. Houston, Texas	—	1,908	0.08	97. Northrop Corp. * Edwards, Calif.	—	1,542	0.06
85. Harris Corp. * Rochester, N.Y.	47	1,908	0.08	98. Pacific Gas and Electric Co. * Mountain View, Calif.	—	1,518	0.06
86. Expedient Services, Inc. Kennedy Space Center, Fla. (S)	—	1,875	0.07	99. Operations Research, Inc. of Md. Silver Spring, Md.	96	1,511	0.06
87. Acts Computing Corp. Southfield, Mich. (S)	—	1,837	0.07	100. Alpha Building Corp. Houston, Texas (S)	88	1,482	0.06
88. McGregor and Werner, Inc. Kennedy Space Center, Fla. (S)	—	1,817	0.07	Other		297,952	11.75
89. Perkin-Elmer Corp. * Pomona, Calif.	80	1,777	0.07				
90. Amdahl Corp. New York, N.Y. (S)	—	1,731	0.07				
91. Southern Bell Telephone Co. * Kennedy Space Center, Fla.	—	1,721	0.07				
				TOTAL AWARDS TO BUSINESS FIRMS		2,536,101	100.0

* = Awards during year represent awards on several contracts which have different principal places of performance. The place shown is that which has the largest amount of the awards.
(S) = Indicates small business concerns.
(JV) = Joint venture.

^aExcludes smaller procurements, generally those of less than \$10,000.

^bFormerly LTV Aerospace Corp.

^cFormerly Integrated Systems Support, Inc.

^dFormerly a nonprofit organization.

Source: NASA, *Annual Procurement Report* (Fiscal year 1976).

Table 5-23. Top One Hundred Contractors:^a FY 1977
(in thousands of dollars)

Contractor and Place of Contract Performance	Rank in FY 1976		Net Value of Awards		Contractor and Place of Contract Performance	Rank in FY 1976		Net Value of Awards	
	1	2	Amount	Percentage		1	2	Amount	Percentage
1. Rockwell International Corp. * Downey, Calif.	1	2	1,011,448	35.64	14. United Technologies Corp. * East Hartford, Conn.	19	33,866	1.19	
2. McDonnell Douglas Corp. * Huntington Beach, Calif.	2	3	138,480	4.88	15. TRW, Inc. * Redondo Beach, Calif.	12	28,891	1.02	
3. Martin Marietta Corp. * New Orleans, La.	3	4	119,437	4.21	16. Ford Aerospace and Communications Corp. * Houston, Tex.	17 ^b	27,694	0.98	
4. Bendix Corp. * Columbia, Md.	5	5	90,642	3.19	17. Planning Research Corp. * Kennedy Space Center, Fla.	16	26,120	0.92	
5. General Dynamics Corp. * San Diego, Calif.	4	6	78,708	2.77	18. Vought Corp. * Dallas, Tex.	21	22,005	0.78	
6. General Electric Co. * King of Prussia, Pa.	6	7	68,613	2.42	19. Singer Co. * Binghamton, NY.	23	20,559	0.72	
7. Lockheed Electronics Co., Inc. * Houston, Tex.	7	8	67,986	2.40	20. Sperry Rand Corp. * Houston, Tex.	14	19,491	0.69	
8. Int'l Business Machines Corp. * Houston, Tex.	13	9	66,116	2.33	21. Global Associates Bay St. Louis, Miss.	26	19,069	0.67	
9. Thiokol Corp. * Brigham City, Utah	11	10	62,440	2.20	22. Northrop Services, Inc. * Houston, Tex.	20	18,749	0.66	
10. Boeing Co. * Seattle, Wash.	8	11	53,020	1.87	23. Lockheed Aircraft Corp. * Burbank, Calif.	27	18,474	0.65	
11. RCA Corp. * Princeton, NJ	10	12	42,383	1.49	24. Boeing Services International, Inc. * Kennedy Space Center, Fla.	46	16,053	0.57	
12. Computer Sciences Corp. * Greenbelt, Md.	15	13	40,494	1.43	25. Teledyne Industries, Inc. * Los Angeles, Calif.	30	14,449	0.51	
13. Hughes Aircraft Co. * El Segundo, Calif.	9	14	38,658	1.36	26. Federal Electric Corp. Kennedy Space Center, Fla.	24	13,978	0.49	

* = Awards during year represent awards on several contracts which have different principal places of performance. The place shown is that which has the largest amount of the awards.

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(JV) = Joint venture.

^a = Excludes smaller procurements, generally those of less than \$10,000.

^b Formerly Aeronautics Ford Corp.

Table 5-23. Top One Hundred Contractors:^a FY 1977 (Continued)
(in thousands of dollars)

	Contractor and Place of Contract Performance	Rank in FY 1976		Net Value of Awards		Contractor and Place of Contract Performance	Rank in FY 1976		Net Value of Awards	
		Amount	Percentage	Amount	Percentage		Amount	Percentage	Amount	Percentage
27.	Algernon Blair, Inc. Kennedy Space Center, Fla.	—	0.46	13,108	0.46	40.	Westinghouse Electric Corp. * Friendship Airport, Md.	51	6,755	0.24
28.	Chicago Bridge and Iron Co. Hampton, Va.	—	0.46	13,000	0.46	41.	Virginia Electric and Power Co. Hampton, Va.	42	6,562	0.23
29.	Pan American World Airways, Inc. * Houston, Tex.	37	0.42	11,829	0.42	42.	Control Data Corp. * Minneapolis, Minn.	43	6,393	0.23
30.	Blount Brothers Corp. Kennedy Space Center, Fla.	18	0.42	11,787	0.42	43.	Chrysler Corp. * New Orleans, La.	73	6,340	0.22
31.	Computer Sciences - Technicolor Assocs. (JV) Greenbelt, Md.	29	0.39	11,047	0.39	44.	Garrett Corp. * Phoenix, Ariz.	68	6,175	0.22
32.	Honeywell, Inc. * St. Petersburg, Fla.	33	0.35	10,047	0.35	45.	Mayfair Construction Co. Kennedy Space Center, Fla.	44	5,749	0.20
33.	Lockheed Missiles and Space Co., Inc. * Sunnyvale, Calif.	34	0.34	9,736	0.34	46.	Int'l Tel. and Tel. Corp. * Fort Wayne, Ind.	50	5,588	0.20
34.	Raytheon Service Co. * Halethorpe, Md.	28	0.34	9,654	0.34	47.	Fairchild Industries, Inc. * Germantown, Md.	58	5,372	0.19
35.	Metro Contract Services, Inc. (S) * Huntsville, Ala.	45	0.33	9,267	0.33	48.	Informatics Information Systems Co. * Friendship Airport, Md.	53	5,133	0.18
36.	Ball Brothers Research Corp. * Boulder, Colo.	32	0.29	8,183	0.29	49.	Beckman Construction Co. Kennedy Space Center, Fla. (S)	—	5,027	0.18
37.	American Sciences and Engrg., Inc. Cambridge, Mass. (S)	22	0.26	7,487	0.26	50.	Santa Barbara Research Center Goleta, Calif.	38	4,967	0.18
38.	Air Products and Chemicals, Inc. * Allentown, Penn.	41	0.25	7,179	0.25	51.	Serv-Air, Inc. * Houston, Texas	48	4,938	0.17
39.	SDC Integrated Services, Inc. * Slidell, La.	40	0.25	6,981	0.25	52.	Grumman Aerospace Corp. * Bethpage, NY	25	4,798	0.17

^a = Awards during year represent awards on several contracts which have different principal places of performance. The place shown is that which has the largest amount of the awards.

(S) = Indicates small business concerns.

(JV) = Joint venture.

^b = Excludes smaller procurements, generally those of less than \$10,000.

^c = Formerly Aeronautics Ford Corp.

Table 5-23. Top One Hundred Contractors:^a FY 1977 (Continued)
(in thousands of dollars)

Contractor and Place of Contract Performance	Rank in FY 1976	Net Value of Awards		Contractor and Place of Contract Performance	Rank in FY 1976	Net Value of Awards	
		Amount	Percentage			Amount	Percentage
53. Conraves Goerz Corp. Pittsburgh, Pa.	—	4,655	0.16	66. Ralph M. Parsons Co. * Pasadena, Calif.	69	3,181	0.11
54. Modular Computer Systems, Inc. * Ft. Lauderdale, Fla. (S)	65	4,540	0.16	67. Texas Instruments, Inc. * Dallas, Texas	49	3,175	0.11
55. Sundstrand Corp. Rockford, Ill.	83	4,516	0.16	68. Avco Corp. * Huntsville, Ala.	76	3,144	0.11
56. Union Carbide Corp. * Fontana, Calif.	66	4,395	0.15	69. Aerojet General Corp. * Sacramento, Calif.	—	3,113	0.11
57. United Space Boosters, Inc. Kennedy Space Center, Fla.	—	4,389	0.15	70. Digital Equipment Corp. * Lanham, Md.	67	3,104	0.11
58. Wyle Laboratories * Hampton, Va.	57	4,373	0.15	71. Klate Holt Co. * Houston, Texas (S)	71	3,094	0.11
59. Kentron Hawaii, Ltd. * Houston, Texas	56	3,684	0.13	72. Informatics, Inc. * Palo Alto, Calif.	96	3,055	0.11
60. Cleveland Elec. Illuminating Co. Cleveland, Ohio	62	3,672	0.13	73. Xerox Corp. * El Segundo, Calif.	47	2,966	0.10
61. Cutler Hammer, Inc. * Deer Park, NY	39	3,572	0.13	74. W & J Construction Corp. Kennedy Space Center, Fla. (S)	—	2,965	0.10
62. PMI Facilities Management Corp. * New York, NY	63	3,407	0.12	75. Science Applications, Inc. * Huntsville, Ala.	74	2,852	0.10
63. General Motors Corp. Indianapolis, Ind.	—	3,337	0.12	76. Hayes International Corp. * Huntsville, Ala.	64	2,822	0.10
64. Potomac Electric Power Co. Greenbelt, Md.	70	3,201	0.11	77. Hewlett-Packard Co. * Santa Clara, Calif.	60	2,809	0.10
65. Battelle Memorial Institute * Columbus, Ohio	77	3,186	0.11	78. OAO Corp. * Beltsville, Md. (S)	—	2,704	0.10

* = Awards during year represent awards on several contracts which have different principal places of performance. The place shown is that which has the largest amount of the awards.

(S) = Indicates small business concerns.

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^b Formerly Aeronautics Ford Corp.

Table 5-23. Top One Hundred Contractors:^a FY 1977
(in thousands of dollars)

Contractor and Place of Contract Performance	Rank in FY 1976	Net Value of Awards Amount	Percentage	Contractor and Place of Contract Performance	Rank in FY 1976	Net Value of Awards Amount	Percentage
79. Beckman Instruments, Inc. * Anaheim, Calif.	54	2,639	0.09	92. Technicolor Graphic Services, Inc. Houston, Texas	75	2,068	0.07
80. Textron, Inc. * Fort Worth, Texas	35	2,560	0.09	93. Aydin Corp. * Fort Washington, Pa.	59	2,029	0.07
81. Northrop Corp. * Edwards, Calif.	97	2,498	0.09	94. Holloway Corp. Kennedy Space Center, Fla. (S)	—	1,920	0.07
82. Bell and Howell Co. * Pasadena, Calif.	—	2,474	0.09	95. Tektronix, Inc. Beaverton, Oreg.	93	1,913	0.07
83. Expedient Services, Inc. Kennedy Space Center, Fla. (S)	86	2,458	0.09	96. Odetics, Inc. Anaheim, Calif. (S)	—	1,876	0.07
84. Technology Development Corp. * Mountain View, Calif. (S)	61	2,406	0.08	97. Management and Technical Services Co. * Greenbelt, Md.	—	1,863	0.07
85. Sangamo Weston, Inc. * Sarasota, Fla.	—	2,371	0.08	98. Alpha Building Corp. Houston, Texas (S)	100	1,838	0.06
86. Operations Research, Inc. of Md. Silver Spring, Md.	00	2,321	0.08	99. Spaw Glass, Inc. Houston, Tex.	—	1,838	0.06
87. Aro, Inc. Mountain View, Calif.	91	2,300	0.08	100. Reynolds Smith and Hills, Inc. Jacksonville, Fla.	—	1,828	0.06
88. Ampex Corp. * Bethesda, Md.	79	2,294	0.08	Other	339,318	11.96	
89. M & S Computing, Inc. * Huntsville, Ala. (S)	—	2,218	0.08				
90. Systems and Applied Sciences Corp. * Riverdale, Md. (S)	—	2,163	0.08				
91. Management Services, Inc. * Huntsville, Ala. (S)	55	2,088	0.07				
				TOTAL AWARDS TO BUSINESS FIRMS		2,838,117	100.00

* = Awards during year represent awards on several contracts which have different principal places of performance. The place shown is that which has the largest amount of the awards.

(S) = Indicates small business concerns.

(JV) = Joint venture.

^a = Excludes smaller procurements, generally those of less than \$10,000.

^b Formerly Aeronautics Ford Corp.

Source: NASA, *Annual Procurement Report* (Fiscal year 1977).

Table 5-24. Top One Hundred Contractors:^a FY 1978
(in thousands of dollars)

Contractor and Place of Contract Performance	Rank in FY 1977		Net Value of Awards		Contractor and Place of Contract Performance	Rank in FY 1977		Net Value of Awards	
	Amount	Percentage	Amount	Percentage		Amount	Percentage		
1. Rockwell International Corp. * Downey, Calif.	1	890,257	30.14		14. Boeing Services International, Inc. * Kennedy Space Center, Fla.	24	42,990	1.45	
2. Martin Marietta Corp. * New Orleans, La.	3	144,651	4.90		15. Boeing Co. * Seattle, Wash.	10	42,728	1.45	
3. McDonnell Douglas Corp. * Huntington Beach, Calif.	2	139,682	4.73		16. Vought Corp. * Dallas, Tex.	18	32,883	1.11	
4. Bendix Corp. * Columbia, Md.	4	94,950	3.21		17. Ford Aerospace and Communications Corp. * Houston, Tex.	16	29,632	1.00	
5. Lockheed Electronics Co., Inc. * Houston, Tex.	7	75,095	2.54		18. Planning Research Corp. * Kennedy Space Center, Fla.	17	28,550	0.97	
6. Int'l Business Machines Corp. * Houston, Tex.	8	73,000	2.47		19. Sperry Rand Corp. * Houston, Tex.	20	26,197	0.89	
7. Hughes Aircraft Co. * El Segundo, Calif.	13	72,956	2.47		20. Frank Briscoe Co., Inc. Kennedy Space Center, Fla.	—	23,757	0.80	
8. General Electric Co. * King of Prussia, Pa.	6	68,473	2.32		21. Air Products and Chemicals, Inc. * Allentown, Pa.	38	22,871	0.77	
9. Thiokol Corp. * Brigham City, Utah	9	67,757	2.29		22. Lockheed Missiles and Space Co., Inc. * Sunnyvale, Calif.	33	21,001	0.71	
10. Computer Sciences Corp. * Greenbelt, Md.	12	66,326	2.24		23. Singer Co. * Binghamton, N.Y.	19	20,436	0.69	
11. General Dynamics Corp. * San Diego, Calif.	5	64,380	2.18		24. TRW, Inc. * Redondo Beach, Calif.	15	20,021	0.68	
12. RCA Corp. * Princeton, NJ	11	52,500	1.78		25. United Space Boosters, Inc. Kennedy Space Center, Fla.	57	17,703	0.60	
13. United Technologies Corp. * East Hartford, Conn.	14	50,813	1.72		26. Ball Corp. * Boulder, Colo.	36 ^b	17,611	0.60	

^a = Awards during year represent awards on several contracts which have different principal places of performance. The place shown is that which has the largest amount of the awards.

(S) = Indicates small business concerns.

(JV) = Joint venture.

^bExcludes smaller procurements, generally those of less than \$10,000.

^bFormerly Ball Brothers Research Corp.

^cFormerly Lockheed Aircraft Corp.

^dFormerly a division of Northrop Corp.

^eFormerly Operations Research, Inc. of Md.

^fFormerly Kentron Hawaii, Ltd.

Table 5-24. Top One Hundred Contractors:^a FY 1978 (Continued)
(in thousands of dollars)

Contractor and Place of Contract Performance	Rank in FY 1977	Net Value of Awards Amount	Percentage	Contractor and Place of Contract Performance	Rank in FY 1977	Net Value of Awards Amount	Percentage
27. Perkin-Elmer Corp. * Danbury, Conn.	—	16,523	0.56	40. Honeywell, Inc. * Minneapolis, Minn.	32	7,713	0.26
28. Northrop Services, Inc. * Houston, Tex.	2	15,621	0.53	41. Int'l Tel. & Tel. Corp. * Fort Wayne, Ind.	46	7,662	0.26
29. Chicago Bridge and Iron Co. * Greenville, Pa.	28	14,432	0.49	42. SDC Integrated Services, Inc. * Slidell, La.	39	7,361	0.25
30. Computer Sciences—Technicolor Assocs. (JV) Greenbelt, Md.	31	14,266	0.48	43. Control Data Corp. * Minneapolis, Minn.	42	7,351	0.25
31. Global Associates Bay St. Louis, Miss.	21	14,143	0.48	44. Virginia Electric and Power Co. Hampton, Va.	41	7,023	0.24
32. Westinghouse Electric Corp. * Friendship Airport, Md.	40	12,328	0.42	45. Metro Contract Services, Inc. * Huntsville, Ala. (S)	35	6,726	0.23
33. Pan American World Airways, Inc. * Houston, Tex.	29	12,054	0.41	46. Holloway Corp. Kennedy Space Center, Fla. (S)	94	6,316	0.21
34. Fairchild Industries, Inc. * Germantown, Md.	47	11,775	0.40	47. General Motors Corp. * Indianapolis, Ind.	63	6,186	0.21
35. Raytheon Service Co. * Halethorpe, Md.	34	10,193	0.35	48. Informatics Information Systems Co. * Friendship Airport, Md.	48	5,824	0.20
36. J.M. Kenith Co., Inc. Hampton, Va. (S)	—	9,924	0.34	49. Northrop Worldwide Aircraft Services, Inc. Houston, Tex.	^d	5,550	0.19
37. Lockheed Corp. * Burbank, Calif.	23 ^e	9,852	0.33	50. Textron, Inc. * Fort Worth, Tex.	80	5,196	0.18
38. Teledyne Industries, Inc. * Los Angeles, Calif.	25	8,856	0.30	51. Garrett Corp. * Phoenix, Ariz.	44	5,177	0.18
39. Honeywell Information Systems, Inc. * McLean, Va.	—	8,555	0.29	52. Grumman Aerospace Corp. * Bethpage, NY	52	5,087	0.17

^a = Awards during year represent awards on several contracts which have different principal places of performance. The place shown is that which has the largest amount of the awards.

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^dExcludes smaller procurements, generally those of less than \$10,000.

^bFormerly Ball Brothers Research Corp.

^cFormerly Lockheed Aircraft Corp.

^dFormerly a division of Northrop Corp.

^eFormerly Operations Research, Inc. of Md.

^fFormerly Kentron Hawaii, Ltd.

Table 5-24. Top One Hundred Contractors: FY 1978 (Continued)
(in thousands of dollars)

Contractor and Place of Contract Performance	Rank in FY 1977	Net Value of Awards		Contractor and Place of Contract Performance	Rank in FY 1977	Net Value of Awards	
		Amount	Percentage			Amount	Percentage
53. Wyle Laboratories * Hampton, Va.	58	4,934	0.17	66. Metropolitan Contract Services, Inc. Hampton, Va. (S)	—	3,521	0.12
54. Mechanical Technology, Inc. Latham, NY (S)	—	4,908	0.17	67. Cutler Hammer, Inc. * Melville, NY	61	3,385	0.11
55. Sunstrand Corp. Rockford, Ill.	55	4,161	0.14	68. Potomac Electric Power Co. Greenbelt, Md.	64	3,367	0.11
56. Sigma Data Services Corp. * New York, NY (S)	—	4,128	0.14	69. Xerox Corp. * Pasadena, Calif.	73	3,328	0.11
57. Wackenhut Services, Inc. Kennedy Space Center, Fla.	—	4,039	0.14	70. Technology Development Corp * Mountain View, Calif. (S)	84	3,301	0.11
58. W & J Construction Corp. Kennedy Space Center, Fla.	74	4,008	0.14	71. Ford Motor Co. Dearborn, Mich.	—	3,271	0.11
59. Cleveland Electric Illuminating Co. Cleveland, Ohio	60	3,970	0.13	72. American Sciences and Engrg., Inc. Cambridge, Mass. (S)	37	3,232	0.11
60. Ampex Corp. * Bethesda, Md.	88	3,889	0.13	73. McGregor and Werner, Inc. Kennedy Space Center, Fla. (S)	—	3,204	0.11
61. OAO Corp. * Beltsville, Md. (S)	78	3,878	0.13	74. Modular Computer Systems, Inc. * Fort Lauderdale, Fla.	54	3,131	0.11
62. ORI, Inc. Silver Spring, Md. (S)	86 ^c	3,862	0.13	75. Hayes International Corp. * Huntsville, Ala.	76	3,117	0.11
63. Informatics, Inc. * Mountain View, Calif.	72	3,847	0.13	76. Serv-Air, Inc. Edwards, Calif.	51	3,019	0.10
64. Digital Equipment Corp. * Maynard, Mass.	70	3,633	0.12	77. FMC Corp. Santa Clara, Calif.	—	2,965	0.10
65. Kentron International, Inc. * Houston, Tex.	59 ^d	3,577	0.12	78. Allied Engineering and Production Corp. Alameda, Calif. (S)	—	2,932	0.10

* = Awards during year represent awards on several contracts which have different principal places of performance. The place shown is that which has the largest amount of the awards.

(S) = Indicates small business concerns.

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^cExcludes smaller procurements, generally those of less than \$10,000.

^bFormerly Ball Brothers Research Corp.

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^eFormerly Operations Research, Inc. of Md.

^fFormerly Kentron Hawaii, Ltd.

Table 5-24. Top One Hundred Contractors:^a FY 1978 (Continued)
(in thousands of dollars)

Contractor and Place of Contract Performance	Rank in FY 1977	Net Value of Awards		Contractor and Place of Contract Performance	Rank in FY 1977	Net Value of Awards	
		Amount	Percentage			Amount	Percentage
79. Expedient Services, Inc. Kennedy Space Center, Fla. (S)	83	2,714	0.09	92. Acts Computing Corp. Southfield, Mich. (S)	—	2,177	0.07
80. Hewlett-Packard Co. * Palo Alto, Calif.	77	2,675	0.09	93. W.L. Tanksley and Associates Brook Park, Ohio (S)	—	2,143	0.07
81. Gallo Mechanical Contractors, Inc. New Orleans, La. (S)	—	2,658	0.09	94. Technicolor Graphic Services, Inc. Houston, Tex.	92	2,122	0.07
82. Aerojet-General Corp. * Sacramento, Calif.	69	2,640	0.09	95. Entex Corp. Houston, Tex.	—	2,045	0.07
83. Kelsey Seybold Clinic * Houston, Tex.	—	2,588	0.09	96. Permal, Inc. Gloucester, England	—	2,024	0.07
84. Algernon Blair, Inc. Kennedy Space Center, Fla.	27	2,536	0.09	97. Aro, Inc. Mountain View, Calif.	87	2,023	0.07
85. Management Services, Inc. * Kennedy Space Center, Fla. (S)	91	2,505	0.08	98. Systems and Applied Sciences Corp. * Riverdale, Md. (S)	90	1,973	0.07
86. Klate Holt Co. Hampton, Va. (S)	71	2,493	0.08	99. Tektronix, Inc. * Beaverton, Oreg.	95	1,947	0.07
87. Bionettes Corp. * Hampton, Va.	—	2,474	0.08	100. Science Applications, Inc. * Huntsville, Ala.	75	1,938	0.07
88. Management and Technical Services Co. * Greenbelt, Md.	97	2,474	0.08	Other		358,954	12.15
89. Gates Learjet Corp. Wichita, Kan.	—	2,463	0.08				
90. Blount Brothers Corp. Kennedy Space Center, Fla.	30	2,438	0.08	TOTAL AWARDS TO BUSINESS FIRMS		2,953,846	100.00
91. Houston Lighting and Power Co. Houston, Tex.	—	2,321	0.08				

* - Awards during year represent awards on several contracts which have different principal places of performance. The place shown is that which has the largest amount of the awards.

(S) = Indicates small business concerns.

(JV) = Joint venture.

^aExcludes smaller procurements, generally those of less than \$10,000.

^bFormerly Ball Brothers Research Corp.

^cFormerly Lockheed Aircraft Corp.

^dFormerly a division of Northrop Corp.

^eFormerly Operations Research, Inc. of Md.

^fFormerly Kentron Hawaii, Ltd.

Source: NASA, *Annual Procurement Report* (Fiscal year 1978).

Table 5-25. Seventeen Largest Awards to Educational and Nonprofit Institutions During FY 1978*
(in millions of dollars)

Institution	Award Description	Award Number	FY 1978 Award	Cumulative Awards
University of Chile—Santiago, Chile	Maintenance and operation of minitrack facilities in Chile.	NAS5-1925	4.8	31.0
Charles Stark Draper Laboratory, Inc.	Technical support of orbiter avionics and software development.	NAS9-13809	4.6	16.7
National Academy of Sciences	Administration of NASA's resident research associateship program	NASW-2567	3.9	20.5
Smithsonian Institution	Conducting of an optical satellite tracking program.	NGR9-15002	2.5	64.4
Smithsonian Institution	Design, development, and operations of the High Energy Astronomy Observatory Mission B X-ray telescope.	NAS8-30751	2.1	4.5
University of California—San Diego	Space telescope scientific investigation using a faint object spectrograph.	NAS5-24463	1.9	(new award)
American Institute of Aeronautics and Astronautics	Abstracting and indexing publications and dissemination of scientific and technical information.	NASW-2532	1.7	7.8
University of New Hampshire	Hardware phase of the solar gamma ray experiment for the Solar Maximum Mission.	NAS5-23761	1.5	2.8
Universities Space Research Association	Operation of the Lunar Science Institute.	NSR9-51001	1.4	8.8
University of Michigan—Ann Arbor	An imaging spectrometric observatory for Spacelab Mission 1 experiment.	NAS8-32569	1.3	1.6

* Awards of one million dollars or more. Excludes Jet Propulsion Laboratory.

Table 5-25. Seventeen Largest Awards to Educational and Nonprofit Institutions During FY 1978* (Continued)
(in millions of dollars)

Institution	Award Description	Award Number	FY 1978 Award	Cumulative Awards
European Space Agency	Spacecab high rate demultiplexer and unit tester/simulator.	NAS8-32955	1.3	(new award)
Harvard University	Spectroheliometer experiment for Solar Maximum Mission.	NAS5-23494	1.3	4.3
New Mexico State University—Las Cruces	Engineering telemetry design and control of sounding rockets.	NAS5-24241	1.2	1.4
Purdue University	Research in remote sensing of agriculture, earth resources, and man's environment.	NAS9-15466	1.2	(new award)
California State University—Chico	Provide personnel materials and services for NASA Space Science Education Project.	NASW-2835	1.1	3.8
Massachusetts Institute of Technology	Experiment to perform X-ray astronomy on the SAS-C spacecraft.	NAS5-11450	1.0	11.3
Charles Stark Draper Laboratory, Inc.	Development and evaluation of a fault-tolerant multiprocessor computer.	NAS1-15336	1.0	(new award)

* Awards of one million dollars or more. Excludes Jet Propulsion Laboratory.

Source: NASA, *Annual Procurement Report* (Fiscal year 1978).

Table 5-26. Top One Hundred Educational and Nonprofit Institutions:^a FY 1969
(in thousands of dollars)

Institution and Address	Rank in FY 1968		Net Value of Awards		Institution and Address	Rank in FY 1968		Net Value of Awards	
	Technology		Amount	Percentage		Amount	Percentage	Amount	Percentage
1. Massachusetts Institute of Technology Cambridge, Mass.	1		27,462	16.79	14. University of Minnesota Minneapolis, Minn.	11		2,352	1.44
2. Harvard University Cambridge, Mass.	3		10,356	6.33	15. University of Maryland College Park, Md.	18		2,321	1.42
3. University of California—Berkeley Berkeley, Calif.	**		9,427	5.76	16. University of Chicago Chicago, Ill.	12		2,276	1.39
4. Smithsonian Institution Washington, D.C. (N)	4		7,098	4.34	17. IIT Research Institute Chicago, Ill. (N)	13		2,253	1.38
5. Stanford University Stanford, Calif.	6		4,910	3.00	18. University of California— Los Angeles	**		1,989	1.22
6. National Academy of Sciences Washington, D.C. (N)	5		3,823	2.34	19. University of Wisconsin—Madison Madison, Wis.	**		1,796	1.10
7. Princeton University Princeton, N.J.	10		3,503	2.14	20. University of Iowa Iowa City, Iowa	16		1,625	0.99
8. University Corporation for Atmospheric Research Boulder, Colo. (N)	9		3,161	1.93	21. New Mexico State University University Park, N.M.	15		1,598	0.98
9. University of Michigan Ann Arbor, Mich.	8		3,150	1.93	22. Rice University Houston, Texas	7		1,537	0.94
10. University of California—San Diego San Diego, Calif.	**		3,050	1.86	23. American Institute of Aeronautics and Astronautics New York, N.Y. (N)	24		1,532	0.94
11. California Institute of Technology Pasadena, Calif.	19		2,461	1.50	24. University of Colorado Boulder, Colo.	29		1,504	0.92
12. Battelle Memorial Institute Columbus, Ohio (N)	14		2,460	1.50	25. University of New Hampshire Durham, N.H.	30		1,402	0.86
13. Stanford Research Institute Menlo Park, Calif. (N)	20		2,375	1.45	26. University of Texas—Austin Austin, Texas	**		1,394	0.85

^aIn this year's report, the individual campuses of university systems are listed for the first time as separate entities. Consequently, a comparative ranking for the previous year is not available.
(N) - Nonprofit institution.

^b- Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

Table 5-26. Top One Hundred Educational and Nonprofit Institutions:^a FY 1969 (Continued)
(in thousands of dollars)

Institution and Address	Rank in		Net Value of Awards	
	FY 1968	Amount	Percentage	
27. University of Arizona Tucson, Ariz.	27	1,377	0.84	
28. SW Center for Advanced Studies Dallas, Texas (N)	17	1,370	0.84	
29. College of William and Mary Williamsburg, Va.	33	1,364	0.83	
30. University of Southern California Los Angeles, Calif.	22	1,205	0.74	
31. University of Pittsburgh Pittsburgh, Pa.	26	1,117	0.68	
32. Pennsylvania State University University Park, Pa.	39	999	0.61	
33. University of Hawaii Honolulu, Hawaii	28	999	0.61	
34. Columbia University New York, N.Y.	23	957	0.59	
35. Cornell University Ithaca, N.Y.	43	874	0.53	
36. Rensselaer Polytechnic Institute Troy, N.Y.	49	829	0.51	
37. George Washington University Washington, D.C.	37	812	0.50	
38. University of Illinois—Urbana Urbana, Ill.	**	805	0.49	
39. Cornell Aeronautical Laboratory Buffalo, N.Y. (N)	25	793	0.48	
40. University of New Mexico Albuquerque, N.M.	38	757	0.46	
41. University of Denver Denver, Colo.	45	741	0.45	
42. University of Miami Coral Gables, Fla.	42	736	0.45	
43. Case Western Reserve University Cleveland, Ohio	51	728	0.45	
44. University of Houston Houston, Texas	32	728	0.45	
45. North Carolina State University Raleigh, N.C.	62	701	0.43	
46. Georgia Institute of Technology Atlanta, Ga.	48	682	0.42	
47. University of Alaska College, Alaska	98	670	0.41	
48. Colorado State University Ft. Collins, Colo.	79	652	0.40	
49. University of Washington Seattle, Wash.	46	624	0.38	
50. Purdue University Lafayette, Ind.	53	622	0.38	
51. Research Triangle Institute Durham, N.C. (N)	73	620	0.38	
52. Lowell Technological Institute Research Foundation Lowell, Mass. (N)	—	603	0.37	

^a = Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

**In this year's report, the individual campuses of university systems are listed for the first time as separate entities. Consequently, a comparative ranking for the previous year is not available.
(N) = Nonprofit institution.

Table 5-26. Top One Hundred Educational and Nonprofit Institutions:^a FY 1969 (Continued)
(in thousands of dollars)

Institution and Address	Rank in		Net Value of Awards		Institution and Address	Rank in		Net Value of Awards	
	FY 1968	Amount	Percentage	Amount		FY 1968	Amount	Percentage	Amount
53. Southwest Research Institute San Antonio, Texas (N)	59	576	0.35		66. University of Rochester Rochester, N.Y.	78	439	0.27	
54. University of Tennessee Knoxville, Tenn.	63	574	0.35		67. Johns Hopkins University Baltimore, Md.	60	428	0.26	
55. New York University New York, N.Y.	40	562	0.34		68. University of Virginia Charlottesville, Va.	31	411	0.25	
56. Ohio State University Columbus, Ohio	44	537	0.33		69. Old Dominion College Norfolk, Va.	72	394	0.24	
57. American Society for Public Administration Washington, D.C. (N)	83	528	0.32		70. Northwestern University Evanston, Ill.	55	390	0.24	
58. Southern Methodist University Dallas, Texas	—	528	0.32		71. University of Pennsylvania Philadelphia, Pa.	91	390	0.24	
59. University of North Carolina— Chapel Hill	**	523	0.32		72. Franklin Institute Philadelphia, Pa. (N)	84	381	0.23	
60. Syracuse University Syracuse, N.Y.	41	520	0.32		73. Rutgers State University New Brunswick, N.J.	36	354	0.22	
61. University of California—Davis Davis, Calif.	**	507	0.31		74. University of Georgia Athens, Ga.	96	354	0.22	
62. University of Kansas Lawrence, Kansas	70	506	0.31		75. University of Alabama—Huntsville Huntsville, Ala.	**	352	0.22	
63. Texas A&M University College Station, Texas	58	500	0.31		76. Indiana University Bloomington, Ind.	—	351	0.21	
64. Drexel Institute of Technology Philadelphia, Pa.	74	468	0.29		77. Louisiana State University— Baton Rouge	**	351	0.21	
65. Lowell Observatory Flagstaff, Ariz. (N)	57	465	0.28		78. Mississippi State University State College, Miss.	—	349	0.21	

**In this year's report, the individual campuses of university systems are listed for the first time as separate entities. Consequently, a comparative ranking for the previous year is not available.
(N) = Nonprofit institution.

^a= Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

Table 5-26. Top One Hundred Educational and Nonprofit Institutions:^a FY 1969 (Continued)
(in thousands of dollars)

Institution and Address	Rank in		Net Value of Awards		Rank in	Net Value of Awards	
	FY 1968	Percentage	Amount	Percentage		FY 1968	Amount
79. University of Connecticut Storrs, Conn.	—	342	0.21	—	—	260	0.16
80. University of Alabama—Tuscaloosa Tuscaloosa, Ala.	**	335	0.20	—	—	259	0.16
81. Midwest Research Institute Kansas City, Mo. (N)	85	333	0.20	86	86	255	0.16
82. Auburn University Auburn, Ala.	47	321	0.20	—	—	252	0.15
83. Northeastern University Boston, Mass.	—	318	0.19	—	—	251	0.15
84. University of Utah Salt Lake City, Utah	81	318	0.19	82	82	233	0.14
85. University of Wyoming Laramie, Wyo.	—	315	0.19	80	80	227	0.14
86. Yale University New Haven, Conn.	56	311	0.19	—	—	225	0.14
87. University of Florida Gainesville, Fla.	52	293	0.18	**	**	225	0.14
88. Dartmouth College Hanover, N.H.	69	288	0.18	**	**	225	0.14
89. System Development Corp. Santa Monica, Calif. (N)	76	278	0.17	—	—	16,490	10.08
90. University of Massachusetts Amherst, Mass.	87	275	0.17	—	—	163,590	100.00
91. Yeshiva University New York, N.Y.	—	268	0.16	—	—	—	—
92. Colorado School of Mines Golden, Colo.	—	—	—	—	—	—	—
93. Harbor General Hospital Torrance, Calif. (N)	—	—	—	—	—	—	—
94. Woods Hole Oceanographic Institution Woods Hole, Mass. (N)	—	—	—	—	—	—	—
95. West Virginia University Morgantown, W. Va.	—	—	—	—	—	—	—
96. Carnegie-Mellon University Pittsburgh, Pa.	—	—	—	—	—	—	—
97. Emory University Atlanta, Ga.	—	—	—	—	—	—	—
98. Illinois Institute of Technology Chicago, Ill.	—	—	—	—	—	—	—
99. University of California—S. Barbara Santa Barbara, Calif.	—	—	—	—	—	—	—
100. University of California—S. Cruz Santa Cruz, Calif. Other	—	—	—	—	—	—	—
TOTAL AWARDS TO EDUCATIONAL AND NONPROFIT INSTITUTIONS				163,590	100.00		

^a Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

Source: NASA, *Annual Procurement Report* (Fiscal year 1969).

**In this year's report, the individual campuses of university systems are listed for the first time as separate entities. Consequently, a comparative ranking for the previous year is not available.
(N) = Nonprofit institution.

Table 5-27. Top One Hundred Educational and Nonprofit Institutions:^a FY 1970
(in thousands of dollars)

Institution and Address	Rank in		Net Value of Awards		Institution and Address	Rank in		Net Value of Awards	
	FY 1969	FY 1969	Amount	Percentage		FY 1969	FY 1969	Amount	Percentage
1. Massachusetts Institute of Technology Cambridge, Mass.	1	1	26,806	16.03	14. IIT Research Institute Chicago, Ill. (N)	17	17	2,746	1.64
2. University of California—Berkeley Berkeley, Calif.	3	3	6,694	4.00	15. University of California— Los Angeles	18	18	2,429	1.45
3. Harvard University Cambridge, Mass.	2	2	6,183	3.70	16. Stanford Research Institute Menlo Park, Calif. (N)	13	13	2,248	1.34
4. Smithsonian Institution Washington, D.C. (N)	4	4	5,941	3.55	17. New Mexico State University University Park, N.M.	21	21	2,192	1.31
5. University of Michigan Ann Arbor, Mich.	9	9	5,592	3.34	18. University Corporation for Atmospheric Research Boulder, Colo. (N)	8	8	2,173	1.30
6. National Academy of Sciences Washington, D.C. (N)	6	6	5,450	3.26	19. Battelle Memorial Institute Columbus, Ohio (N)	12	12	2,134	1.28
7. Stanford University Stanford, Calif.	5	5	4,506	2.70	20. Rice University Houston, Texas	22	22	1,946	1.16
8. Princeton University Princeton, N.J.	7	7	3,979	2.38	21. Columbia University New York, N.Y.	34	34	1,914	1.15
9. University of California—San Diego San Diego, Calif.	10	10	3,484	2.08	22. University of Iowa Iowa City, Iowa	20	20	1,880	1.12
10. University of Maryland College Park, Md.	15	15	3,313	1.98	23. American Institute of Aeronautics and Astronautics New York, N.Y. (N)	23	23	1,635	0.98
11. California Institute of Technology Pasadena, Calif.	11	11	3,239	1.94	24. University of Wisconsin—Madison Madison, Wisc.	19	19	1,591	0.95
12. University of Texas—Dallas Dallas, Texas	—	—	2,887	1.73	25. George Washington University Washington, D.C.	37	37	1,579	0.94
13. University of Chicago Chicago, Ill.	16	16	2,807	1.68	26. University of Southern California Los Angeles, Calif.	30	30	1,575	0.94

(N) = Nonprofit institution.

^a = Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

Table 5-27. Top One Hundred Educational and Nonprofit Institutions:^a FY 1970 (Continued)
(in thousands of dollars)

Institution and Address	Rank in		Net Value of Awards		Institution and Address	Rank in		Net Value of Awards	
	FY 1969	Percentage	Amount	Percentage		FY 1969	Percentage	Amount	Percentage
27. University of Colorado Boulder, Colo.	24	0.90	1,503	0.90	40. Universities Space Research Association	—	0.60	997	0.60
28. University of Arizona Tucson, Ariz.	27	0.88	1,478	0.88	Washington, D.C. (N)	56	0.56	930	0.56
29. University of Minnesota Minneapolis, Minn.	14	0.86	1,434	0.86	Ohio State University Columbus, Ohio	46	0.54	904	0.54
30. Pennsylvania State University University Park, Pa.	32	0.85	1,421	0.85	Georgia Institute of Technology Atlanta, Ga.	51	0.52	868	0.52
31. Cornell Aeronautical Laboratory Buffalo, N.Y. (N)	39	0.84	1,412	0.84	Research Triangle Institute Durham, N.C. (N)	36	0.49	819	0.49
32. Cornell University Ithaca, N.Y.	35	0.81	1,361	0.81	Rensselaer Polytechnic Institute Troy, N.Y.	38	0.48	805	0.48
33. University of New Hampshire Durham, N.H.	25	0.81	1,360	0.81	University of Illinois—Urbana Urbana, Ill.	43	0.48	804	0.48
34. University of Texas—Austin Austin, Texas	26	0.79	1,319	0.79	Case Western Reserve University Cleveland, Ohio	45	0.46	765	0.46
35. University of Houston Houston, Texas	44	0.79	1,318	0.79	North Carolina State University Raleigh, N.C.	55	0.44	734	0.44
36. University of Hawaii Honolulu, Hawaii	33	0.70	1,172	0.70	New York University New York, N.Y.	50	0.44	731	0.44
37. Northwestern University Evanston, Ill.	70	0.62	1,037	0.62	Purdue University Lafayette, Ind.	—	0.44	729	0.44
38. College of William and Mary Williamsburg, Va.	29	0.61	1,025	0.61	Oklahoma State University Stillwater, Okla.	69	0.42	703	0.42
39. University of Virginia Charlottesville, Va.	—	0.60	1,004	0.60	Old Dominion College Norfolk, Va.	86	0.42	694	0.42
					Yale University New Haven, Conn.				

(N) = Nonprofit institution.

^a = Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

Table 5-27. Top One Hundred Educational and Nonprofit Institutions:^a FY 1970 (Continued)
(in thousands of dollars)

Institution and Address	Rank in		Net Value of Awards		Institution and Address	Rank in		Net Value of Awards		
	FY 1969	Amount	Percentage	Amount		FY 1969	Amount	Percentage	Amount	Percentage
53. Washington University St. Louis, Mo.	—	688	0.41	—	66. Virginia Commonwealth University Richmond, Va.	—	521	0.31	—	0.31
54. Dudley Observatory Albany, N.Y. (N)	—	678	0.41	—	67. University of Kansas Lawrence, Kansas	62	515	0.31	—	0.31
55. Texas A&M University College Station, Texas	63	652	0.39	—	68. Lowell Observatory Flagstaff, Ariz. (N)	65	501	0.30	—	0.30
56. System Development Corporation Santa Monica, Calif. (N)	89	644	0.39	—	69. Colorado State University Ft. Collins, Colo.	48	498	0.30	—	0.30
57. University of Denver Denver, Colo.	41	636	0.38	—	70. Johns Hopkins University Baltimore, Md.	67	498	0.30	—	0.30
58. Louisiana State University— Baton Rouge	77	609	0.36	—	71. Indiana University Bloomington, Ind.	76	488	0.29	—	0.29
59. Midwest Research Institute Kansas City, Mo. (N)	81	582	0.35	—	72. University of Tennessee Knoxville, Tenn.	54	488	0.29	—	0.29
60. University of California—Davis Davis, Calif.	61	579	0.35	—	73. University of Alabama—Huntsville Huntsville, Ala.	75	482	0.29	—	0.29
61. University of Pittsburgh Pittsburgh, Pa.	31	570	0.34	—	74. Auburn University Auburn, Ala.	82	476	0.28	—	0.28
62. University of Florida Gainesville, Fla.	87	561	0.34	—	75. Brown University Providence, R.I.	—	457	0.27	—	0.27
63. University of New Mexico Albuquerque, N.M.	40	548	0.33	—	76. Rand Corporation Santa Monica, Calif. (N)	—	431	0.26	—	0.26
64. University of Washington Seattle, Wash.	49	536	0.32	—	77. Syracuse University Syracuse, N.Y.	60	417	0.25	—	0.25
65. Southwest Research Institute San Antonio, Texas (N)	53	531	0.32	—	78. University of Massachusetts Amherst, Mass.	90	407	0.24	—	0.24

(N) = Nonprofit institution.

^a— Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

Table 5-27. Top One Hundred Educational and Nonprofit Institutions:^a FY 1970 (Continued)
(in thousands of dollars)

Institution and Address	Rank in FY 1969	Net Value of Awards Amount	Percentage	Institution and Address	Rank in FY 1969	Net Value of Awards Amount	Percentage
79. University of Connecticut Storrs, Conn.	79	393	0.24	92. Virginia Polytechnic Institute Blacksburg, Va.	—	273	0.16
80. Mississippi State University State College, Miss.	78	390	0.23	93. Lehigh University Bethlehem, Pa.	—	262	0.16
81. University of Miami Coral Gables, Fla.	42	375	0.22	94. American Institute of Biological Sciences Washington, D.C. (N)	—	259	0.15
82. University City Science Center Philadelphia, Pa. (N)	—	356	0.21	95. University of Pennsylvania Philadelphia, Pa.	71	259	0.15
83. Baylor University Medical College Houston, Tex.	—	350	0.21	96. State University of New York at Albany Albany, N.Y.	—	254	0.15
84. Carnegie-Mellon University Pittsburgh, Pa.	96	346	0.21	97. Albany Medical College Albany, N.Y.	—	236	0.14
85. Emory University Atlanta, Ga.	97	341	0.20	98. Wesleyan University Middletown, Conn.	—	229	0.14
86. Franklin Institute Philadelphia, Pa. (N)	72	298	0.18	99. Mitre Corporation Bedford, Mass. (N)	—	228	0.14
87. West Virginia University Morgantown, W. Va.	95	298	0.18	100. University of Rochester Rochester, N.Y.	66	227	0.14
88. University of Alabama—Tuscaloosa Tuscaloosa, Ala.	80	295	0.18			12,460	7.45
89. University of Kentucky Lexington, Ky.	—	280	0.17				
90. University of Oregon Eugene, Ore.	—	277	0.17				
91. State University of New York— Stony Brook Stony Brook, N.Y.	—	273	0.16	TOTAL AWARDS TO EDUCATIONAL AND NONPROFIT INSTITUTIONS		167,202	100.00

^a = Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

(N) = Nonprofit institution.

Source: NASA, *Annual Procurement Report* (Fiscal year 1970).

**Table 5-28. Top One Hundred Educational and Nonprofit Institutions:^a FY 1971
(in thousands of dollars)**

Institution and Address	Rank in FY 1970		Net Value of Awards		Institution and Address	Rank in FY 1970		Net Value of Awards	
	Amount	Percentage	Amount	Percentage		Amount	Percentage		
1. Massachusetts Institute of Technology Cambridge, Mass.	1	28,381	17.40		14. Purdue University Lafayette, Ind.	49	2,681	1.64	
2. University of California—Berkeley Berkeley, Calif.	2	7,288	4.47		15. University of California— Los Angeles	15	2,578	1.58	
3. Harvard University Cambridge, Mass.	3	5,008	3.07		16. Battelle Memorial Institute Columbus, Ohio (N)	19	2,512	1.54	
4. Stanford University Stanford, Calif.	7	4,644	2.85		17. University of Texas—Dallas Dallas, Texas	12	2,363	1.45	
5. National Academy of Sciences Washington, D.C. (N)	6	4,643	2.85		18. Columbia University New York, N.Y.	21	2,334	1.43	
6. University of Michigan Ann Arbor, Mich.	5	4,473	2.74		19. Aerospace Corporation El Segundo, Calif. (N)	—	2,215	1.36	
7. Smithsonian Institution Washington, D.C. (N)	4	4,350	2.67		20. Johns Hopkins University Baltimore, Md.	70	2,212	1.36	
8. California Institute of Technology Pasadena, Calif.	11	4,140	2.54		21. University of Maryland College Park, Md.	10	2,208	1.35	
9. University of California—San Diego San Diego, Calif.	9	3,948	2.42		22. University Corporation for Atmospheric Research Boulder, Colo. (N)	18	2,193	1.34	
10. University of Chicago Chicago, Ill.	13	3,478	2.13		23. University of Iowa Iowa City, Iowa	22	1,979	1.21	
11. Princeton University Princeton, N.J.	8	3,364	2.07		24. IIT Research Institute Chicago, Ill. (N)	14	1,883	1.15	
12. University of Minnesota— Minneapolis-St. Paul	29	2,851	1.75		25. Cornell Aeronautical Laboratory, Inc. Buffalo, N.Y. (N)	31	1,851	1.13	
13. University of Wisconsin—Madison Madison, Wisc.	24	2,749	1.68		26. University of Colorado Boulder, Colo.	27	1,842	1.13	

^aDudley Observatory reclassified in FY 1971 from nonprofit to educational.

(N) = Nonprofit institution.
^a = Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

Table 5-28. Top One Hundred Educational and Nonprofit Institutions:^a FY 1971 (Continued)
(in thousands of dollars)

Institution and Address	Rank in		Net Value of Awards		Institution and Address	Rank in		Net Value of Awards	
	FY 1970	Amount	Percentage	Percentage		FY 1970	Amount	Percentage	Percentage
27. Stanford Research Institute Menlo Park, Calif. (N)	16	1,668	1.02		40. Oklahoma State University Stillwater, Okla.	50	883	0.54	
28. American Institute of Aeronautics and Astronautics New York, N.Y. (N)	23	1,596	0.98		41. University of Southern California Los Angeles, Calif.	26	880	0.54	
29. New Mexico State University— Las Cruces	17	1,593	0.98		42. Washington University St. Louis, Mo.	53	876	0.54	
30. University Park, N.M. College of William and Mary Williamsburg, Va.	38	1,579	0.97		43. Research Triangle Institute Durham, N.C. (N)	43	828	0.51	
31. University of Arizona Tucson, Ariz.	28	1,556	0.95		44. Cornell University Ithaca, N.Y.	32	816	0.50	
32. University of Texas—Austin Austin, Texas	34	1,498	0.92		45. Old Dominion College Norfolk, Va.	51	786	0.48	
33. Northwestern University Evanston, Ill.	37	1,377	0.84		46. Universities Space Research Association	40	773	0.47	
34. Rice University Houston, Texas	20	1,309	0.80		Washington, D.C. (N)	48	733	0.45	
35. University of Houston Houston, Texas	35	1,124	0.69		47. New York University New York, N.Y.	63	732	0.45	
36. University of New Hampshire Durham, N.H.	33	1,032	0.63		48. University of New Mexico Albuquerque, N.M.	45	723	0.44	
37. University of Hawaii Honolulu, Hawaii	36	1,022	0.62		49. University of Illinois—Urbana Urbana, Ill.	73	719	0.44	
38. George Washington University Washington, D.C.	25	964	0.59		50. University of Alabama—Huntsville Huntsville, Ala.	55	710	0.44	
39. Dudley Observatory Albany, N.Y. (N)	54 ^b	932	0.57		51. Texas A&M University College Station, Texas	61	681	0.42	
					52. University of Pittsburgh Pittsburgh, Pa.				

^bDudley Observatory reclassified in FY 1971 from nonprofit to educational.

(N) = Nonprofit institution.

^a = Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

Table 5-28. Top One Hundred Educational and Nonprofit Institutions:^a FY 1971 (Continued)
(in thousands of dollars)

Institution and Address	Rank in		Net Value of Awards		Institution and Address	Rank in		Net Value of Awards	
	FY 1970	Amount	Percentage			FY 1970	Amount	Percentage	
53. University of Kansas Lawrence, Kansas	67	655	0.40		66. Colorado State University Ft. Collins, Colo.	69	456	0.28	
54. Pennsylvania State University University Park, Pa.	30	631	0.39		67. Lowell Observatory Flagstaff, Ariz. (N)	68	450	0.28	
55. University of Virginia Charlottesville, Va.	39	618	0.38		68. South Dakota State University Brookings, S.D.	—	450	0.28	
56. University of Washington Seattle, Wash.	64	614	0.38		69. University of Miami Coral Gables, Fla.	81	433	0.27	
57. University of Alaska College, Alaska	—	582	0.36		70. Midwest Research Institute Kansas City, Mo. (N)	59	425	0.26	
58. Ohio State University Columbus, Ohio	41	577	0.35		71. North Carolina State University Raleigh, N.C.	47	400	0.25	
59. Rensselaer Polytechnic Institute Troy, N.Y.	44	566	0.35		72. University of Pennsylvania Philadelphia, Pa.	95	392	0.24	
60. University of Florida Gainesville, Fla.	62	530	0.32		73. Virginia Polytechnic Institute Blacksburg, Va.	92	385	0.24	
61. Case Western Reserve University Cleveland, Ohio	46	527	0.32		74. Auburn University Auburn, Ala.	74	378	0.23	
62. Yale University New Haven, Conn.	52	525	0.32		75. Northeast Radio Observatory Corp. Cambridge, Mass. (N)	—	352	0.22	
63. Southwest Research Institute San Antonio, Texas (N)	65	507	0.31		76. Gulf Universities Research Corp. San Antonio, Texas (N)	—	350	0.21	
64. State University of New York— Stony Brook	91	497	0.30		77. University of Utah Salt Lake City, Utah	—	334	0.20	
65. Georgia Institute of Technology Atlanta, Ga.	42	471	0.29		78. Dallas County Hospital District Dallas, Texas (N)	—	330	0.20	

(N) = Nonprofit institution.

^a = Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

^bDudley Observatory reclassified in FY 1971 from nonprofit to educational.

Table 5-28. Top One Hundred Educational and Nonprofit Institutions:^a FY 1971 (Continued)
(in thousands of dollars)

Institution and Address	Rank in		Net Value of Awards		Institution and Address	Rank in		Net Value of Awards	
	FY 1970	Amount	Percentage			FY 1970	Amount	Percentage	
79. University of Oregon Eugene, Ore.	90	325	0.20		92. University of Alabama—Tuscaloosa Tuscaloosa, Ala.	88	209	0.13	
80. Franklin Institute Philadelphia, Pa. (N)	86	296	0.18		93. University of Georgia Athens, Ga.	—	203	0.12	
81. Baylor University Medical College Houston, Tex.	83	286	0.18		94. University of Massachusetts Amherst, Mass.	78	199	0.12	
82. Lehigh University Bethlehem, Pa.	93	286	0.18		95. State University of New York— Buffalo	—	198	0.12	
83. University of California—Davis Davis, Calif.	60	284	0.17		96. University of Rochester Rochester, N. Y.	100	192	0.12	
84. University of Connecticut Storrs, Conn.	79	278	0.17		97. Boston University Boston, Mass.	—	190	0.12	
85. Louisiana State University— Baton Rouge	58	268	0.16		98. Virginia Commonwealth University Richmond, Va.	66	190	0.12	
86. College of the Virgin Islands St. Thomas, Virgin Islands	—	253	0.16		99. Brown University Providence, R.I.	75	182	0.11	
87. Indiana University—Bloomington Bloomington, Ind.	71	251	0.15		100. Oregon State University Corvallis, Ore.	—	181	0.11	
88. American Institute of Biological Sciences Washington, D.C. (N)	94	248	0.15				9,892	6.06	
89. University of Kentucky Lexington, Ky.	89	247	0.15						
90. University of Denver Denver, Colo.	57	243	0.15						
91. University of Tennessee—Knoxville Knoxville, Tenn.	72	237	0.15						
					TOTAL AWARDS TO EDUCATIONAL AND NONPROFIT INSTITUTIONS		163,131	100.00	

(N) — Nonprofit institution.

^a— Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

^bDudley Observatory reclassified in FY 1971 from nonprofit to educational.

Source: NASA, *Annual Procurement Report* (Fiscal year 1971).

Table 5-29. Top One Hundred Educational and Nonprofit Institutions:^a FY 1972
(in thousands of dollars)

Institution and Address	Rank in		Net Value of Awards		Institution and Address	Rank in		Net Value of Awards	
	FY 1971	FY 1972	Amount	Percentage		FY 1971	FY 1972	Amount	Percentage
1. Massachusetts Institute of Technology Cambridge, Mass.	1	1	20,305	13.84	14. Battelle Memorial Institute Columbus, Ohio (N)	16	16	2,752	1.88
2. University of Michigan Ann Arbor, Mich.	6	6	5,380	3.67	15. University of Colorado - Boulder Boulder, Colo.	26	26	2,681	1.83
3. National Academy of Sciences Washington, D.C. (N)	5	5	5,025	3.43	16. Columbia University New York, N.Y.	18	18	2,667	1.82
4. University of California—San Diego San Diego, Calif.	9	9	4,623	3.15	17. University of Minnesota— Minneapolis—St. Paul	12	12	2,568	1.75
5. Harvard University Cambridge, Mass.	3	3	4,481	3.06	18. University of Wisconsin—Madison Madison, Wisc.	13	13	2,390	1.63
6. University of California—Berkeley Berkeley, Calif.	2	2	4,012	2.74	19. University of Maryland— College Park	21	21	2,276	1.55
7. Smithsonian Institution Washington, D.C. (N)	7	7	3,858	2.63	20. University of Hawaii Honolulu, Hawaii	37	37	2,198	1.50
8. Stanford University Stanford, Calif.	4	4	3,597	2.45	21. University of Texas—Dallas Dallas, Texas	17	17	2,100	1.43
9. California Institute of Technology Pasadena, Calif.	8	8	3,407	2.32	22. University Corporation for Atmospheric Research Boulder, Colo. (N)	22	22	1,829	1.25
10. Aerospace Corporation El Segundo, Calif. (N)	19	19	3,290	2.24	23. University of Arizona Tucson, Ariz.	31	31	1,771	1.21
11. Princeton University Princeton, N.J.	11	11	2,975	2.03	24. University of Iowa Iowa City, Iowa	23	23	1,748	1.19
12. Johns Hopkins University Baltimore, Md.	20	20	2,803	1.91	25. University of California— Los Angeles	15	15	1,562	1.07
13. University of Chicago Chicago, Ill.	10	10	2,800	1.91	26. New Mexico State University— Las Cruces University Park, N.M.	29	29	1,538	1.05

^a—Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

(N)—Nonprofit institution.

Table 5-29. Top One Hundred Educational and Nonprofit Institutions:^a FY 1972 (Continued)
(in thousands of dollars)

Institution and Address	Rank in		Net Value of Awards		Institution and Address	Rank in		Net Value of Awards	
	FY 1971	Amount	Percentage	FY 1971		Amount	Percentage	FY 1971	Amount
27. IIT Research Institute Chicago, Ill. (N)	24	1,521	1.04		40. George Washington University Washington, D.C.	38	946	0.65	
28. American Institute of Aeronautics and Astronautics New York, N.Y. (N)	28	1,518	1.04		41. University of Alabama—Huntsville Huntsville, Ala.	50	826	0.56	
29. Purdue University Lafayette, Ind.	14	1,419	0.97		42. Old Dominion College Norfolk, Va.	45	801	0.55	
30. Stanford Research Institute Menlo Park, Calif. (N)	27	1,367	0.93		43. Washington University St. Louis, Mo.	42	799	0.55	
31. University of Texas—Austin Austin, Texas	32	1,215	0.83		44. University of Kansas Lawrence, Kansas	53	791	0.54	
32. University of Houston Houston, Texas	35	1,131	0.77		45. Oklahoma State University Stillwater, Okla.	40	777	0.53	
33. Universities Space Research Association Washington, D.C. (N)	46	1,078	0.74		46. University of Southern California Los Angeles, Calif.	41	775	0.53	
34. University of Illinois—Urbana Urbana, Ill.	49	1,038	0.71		47. Texas A&M University College Station, Texas	51	763	0.52	
35. University of Utah Salt Lake City, Utah	77	1,032	0.70		48. Pennsylvania State University University Park, Pa.	54	743	0.51	
36. Rice University Houston, Texas	34	992	0.68		49. University of Alaska—College College, Alaska	57	667	0.46	
37. University of Washington Seattle, Wash.	56	974	0.66		50. Colorado State University Ft. Collins, Colo.	66	653	0.45	
38. Dudley Observatory Albany, N.Y. (N)	39	973	0.66		51. College of William and Mary Williamsburg, Va.	30	638	0.43	
39. Cornell University Ithaca, N.Y.	44	972	0.66		52. Case Western Reserve University Cleveland, Ohio	61	636	0.43	

(N) = Nonprofit institution.

^a = Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

Table 5-29. Top One Hundred Educational and Nonprofit Institutions:^a FY 1972 (Continued)
(in thousands of dollars)

Institution and Address	Rank in FY 1971	Net Value of Awards Amount	Percentage	Institution and Address	Rank in FY 1971	Net Value of Awards Amount	Percentage
53. Georgia Institute of Technology Atlanta, Ga.	65	623	0.42	66. Indiana University—Bloomington Bloomington, Ind.	87	488	0.33
54. New York University New York, N.Y.	47	618	0.42	67. University of Virginia Charlottesville, Va.	55	466	0.32
55. Research Triangle Institute Durham, N.C. (N)	43	612	0.42	68. Cornell Aeronautical Laboratory, Inc. Buffalo, N.Y. (N)	25	430	0.29
56. Southwest Research Institute San Antonio, Texas (N)	63	608	0.41	69. Lowell Observatory Flagstaff, Ariz. (N)	67	430	0.29
57. State University of New York— Stony Brook	64	578	0.39	70. University of Florida Gainesville, Fla.	60	411	0.28
58. University of Pittsburgh Pittsburgh, Pa.	52	568	0.39	71. University of Texas—School of Public Health Houston, Texas	—	389	0.27
59. Auburn University—Auburn Auburn, Ala.	74	559	0.38	72. Baylor University Medical College Houston, Tex.	81	369	0.25
60. University of Denver Denver, Colo.	90	557	0.38	73. Louisiana State University— Baton Rouge Baton Rouge, La.	85	355	0.24
61. University of New Hampshire Durham, N.H.	36	547	0.37	74. Clear Lake City Water Authorities Houston, Texas (N)	—	340	0.23
62. University of New Mexico Albuquerque, N.M.	48	533	0.36	75. Michigan State University East Lansing, Mich.	—	318	0.22
63. Virginia Polytechnic Institute Blacksburg, Va.	73	531	0.36	76. National Academy of Public Administration Washington, D.C. (N)	—	310	0.21
64. Rensselaer Polytechnic Institute Troy, N.Y.	59	514	0.35	77. Newport News, City of Newport News, Va. (N)	—	300	0.20
65. Ohio State University Columbus, Ohio	58	498	0.34	78. Northeast Radio Observatory Corp. Cambridge, Mass. (N)	75	300	0.20

(N) = Nonprofit institution.

^a = Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

Table 5-29. Top One Hundred Educational and Nonprofit Institutions:^a FY 1972 (Continued)
(in thousands of dollars)

Institution and Address	Rank in FY 1971		Net Value of Awards		Institution and Address	Rank in FY 1971		Net Value of Awards	
	Amount	Percentage	Amount	Percentage		Amount	Percentage	Amount	Percentage
79. University of Santa Clara Santa Clara, Calif.	—	—	281	0.19	92. University of Oregon - Eugene Eugene, Ore.	79	—	224	0.15
80. University of Massachusetts— Amherst	94	—	275	0.19	93. Northwestern University Evanston, Ill.	33	—	213	0.15
81. Oregon State University Amherst, Mass.	100	—	271	0.18	94. Yale University New Haven, Conn.	62	—	211	0.14
82. Virginia Institute of Marine Science Corvallis, Ore.	—	—	270	0.18	95. Lovelace Foundation Albuquerque, N.M. (N)	—	—	205	0.14
83. North Carolina State University Raleigh, N.C.	71	—	269	0.18	96. Howard University Washington, D.C.	—	—	197	0.13
84. University of Kentucky Lexington, Ky.	89	—	267	0.18	97. University of Nebraska—Lincoln Lincoln, Neb.	—	—	196	0.13
85. Washington Suburban Sanitary Commission	—	—	266	0.18	98. University of Cincinnati Cincinnati, Ohio	—	—	192	0.13
86. Hyattsville, Md. (N) Methodist Hospital	—	—	264	0.18	99. University of Missouri—Columbia Columbia, Mo.	—	—	191	0.13
87. Houston, Texas (N) University of Tennessee—Knoxville	91	—	247	0.17	100. University of Texas—Galveston Galveston, Texas	—	—	190	0.13
88. Knoxville, Tenn. University of Miami	69	—	242	0.16	Other	—	—	9,586	6.54
89. Coral Gables, Fla. Lehigh University	82	—	239	0.16					
90. Bethlehem, Pa. University of Connecticut	84	—	238	0.16					
91. Storrs, Conn. American Institute of Biological Sciences	88	—	236	0.16					
Washington, D.C. (N)									
					TOTAL AWARDS TO EDUCATIONAL AND NONPROFIT INSTITUTIONS				
					146,703 100.00				

(N) = Nonprofit institution.

^a—Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

Source: NASA, *Annual Procurement Report* (Fiscal year 1972).

Table 5-30. Top One Hundred Educational and Nonprofit Institutions:^a FY 1973
(in thousands of dollars)

Institution and Address	Rank in		Net Value of Awards		Institution and Address	Rank in		Net Value of Awards	
	FY 1972	FY 1972	Amount	Percentage		FY 1972	FY 1972	Amount	Percentage
1. Massachusetts Institute of Technology Cambridge, Mass.	1	1	14,163	10.26	14. Purdue University Lafayette, Ind.	29	29	2,688	1.95
2. Harvard University Cambridge, Mass.	5	5	4,801	3.48	15. Environmental Research Institute of Mich.	^b	^b	2,403	1.74
3. Smithsonian Institution Washington, D.C. (N)	7	7	4,550	3.29	16. University of Minnesota— Minneapolis—St. Paul	17	17	2,384	1.73
4. Stanford University Stanford, Calif.	8	8	4,176	3.02	17. Princeton University Princeton, N.J.	11	11	2,342	1.70
5. University of California—Berkeley Berkeley, Calif.	6	6	4,062	2.94	18. Columbia University New York, N.Y.	16	16	2,264	1.64
6. University of Illinois—Urbana Urbana, Ill.	34	34	3,806	2.76	19. University of Chicago Chicago, Ill.	13	13	2,237	1.62
7. National Academy of Sciences Washington, D.C. (N)	3	3	3,399	2.46	20. University of Maryland— College Park	19	19	2,157	1.56
8. University of Iowa Iowa City, Iowa	24	24	3,381	2.45	21. University of Texas—Dallas Dallas, Texas	21	21	2,090	1.51
9. California Institute of Technology Pasadena, Calif.	9	9	3,308	2.40	22. Battelle Memorial Institute Columbus, Ohio (N)	14	14	2,076	1.50
10. University of California—San Diego San Diego, Calif.	4	4	2,821	2.04	23. University of Michigan—Ann Arbor Ann Arbor, Mich.	2	2	1,933	1.40
11. Aerospace Corporation El Segundo, Calif. (N)	10	10	2,814	2.04	24. University of Arizona Tucson, Ariz.	23	23	1,680	1.22
12. University of Wisconsin—Madison Madison, Wisc.	18	18	2,752	1.99	25. New Mexico State University— Las Cruces	26	26	1,680	1.22
13. University of Colorado—Boulder Boulder, Colo.	15	15	2,691	1.95	26. University Park, N.M. Atmospheric Research Boulder, Colo. (N)	22	22	1,659	1.20

(N) = Nonprofit institution.

^a—Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

^bFormerly a part of University of Michigan.

Table 5-30. Top One Hundred Educational and Nonprofit Institutions:^a FY 1973 (Continued)
(in thousands of dollars)

Institution and Address	Rank in		Net Value of Awards		Institution and Address	Rank in		Net Value of Awards	
	FY 1972	Percentage	Amount	Percentage		FY 1972	Percentage	Amount	Percentage
27. Cornell University Ithaca, N.Y.	39	1.537	1.11		40. Stanford Research Institute Menlo Park, Calif. (N)	30	876	0.63	
28. University of Hawaii Honolulu, Hawaii	20	1.504	1.09		41. Oklahoma State University Stillwater, Okla.	45	859	0.62	
29. Johns Hopkins University Baltimore, Md.	12	1.484	1.08		42. IIT Research Institute Chicago, Ill. (N)	27	806	0.58	
30. University of California— Los Angeles	25	1.453	1.05		43. Pennsylvania State University University Park, Pa.	48	775	0.56	
31. American Institute of Aeronautics and Astronautics New York, N.Y. (N)	28	1.348	0.98		44. Texas A&M University College Station, Texas	47	737	0.53	
32. George Washington University Washington, D.C.	40	1.256	0.91		45. University of Pittsburgh Pittsburgh, Pa.	58	714	0.52	
33. Dudley Observatory Albany, N.Y. (N)	38	1.251	0.91		46. New York University New York, N.Y.	54	709	0.51	
34. University of Alaska—College College, Alaska	49	1.239	0.90		47. University of Utah Salt Lake City, Utah	35	700	0.51	
35. University of Kansas Lawrence, Kansas	44	1.216	0.88		48. Rensselaer Polytechnic Institute Troy, N.Y.	64	672	0.49	
36. University of Texas—Austin Austin, Texas	31	1.178	0.85		49. University of Washington Seattle, Wash.	37	640	0.46	
37. Old Dominion University Norfolk, Va.	42	1.048	0.76		50. Virginia Polytechnic Institute Blacksburg, Va.	63	598	0.43	
38. University of Houston Houston, Texas	32	1.004	0.73		51. University of Tennessee—Knoxville Knoxville, Tenn.	87	592	0.43	
39. Rice University Houston, Texas	36	911	0.66		52. Washington University St. Louis, Mo.	43	587	0.43	

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^a = Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

Table 5-30. Top One Hundred Educational and Nonprofit Institutions:^a FY 1973 (Continued)
(in thousands of dollars)

Institution and Address	Rank in		Net Value of Awards		Institution and Address	Rank in		Net Value of Awards	
	FY 1972	Percentage	Amount	Percentage		FY 1972	Percentage	Amount	Percentage
53. University of New Hampshire Durham, N.H.	61	0.42	576	0.42	66. Ohio State University Columbus, Ohio	65	0.30	416	0.30
54. Oregon State University Corvallis, Ore.	81	0.42	576	0.42	67. University of Alabama—Tuscaloosa Tuscaloosa, Ala.	—	0.30	415	0.30
55. Research Triangle Institute Durham, N.C. (N)	55	0.38	528	0.38	68. Universities Space Research Association	33	0.29	401	0.29
56. Southwest Research Institute San Antonio, Texas (N)	56	0.38	524	0.38	69. State University of New York— Stony Brook	57	0.29	397	0.29
57. University of New Mexico Albuquerque, N.M.	62	0.37	515	0.37	70. University of Texas—Galveston Galveston, Texas	100	0.28	388	0.28
58. University of Alabama—Huntsville Huntsville, Ala.	41	0.36	495	0.36	71. University of Florida Gainesville, Fla.	70	0.27	376	0.27
59. Colorado State University Ft. Collins, Colo.	50	0.35	476	0.35	72. Case Western Reserve University Cleveland, Ohio	52	0.27	375	0.27
60. University of Virginia Charlottesville, Va.	67	0.33	455	0.33	73. University of Southern California Los Angeles, Calif.	46	0.27	373	0.27
61. Baylor University Medical College Houston, Tex.	72	0.32	445	0.32	74. Michigan State University East Lansing, Mich.	75	0.26	357	0.26
62. Lowell Observatory Flagstaff, Ariz. (N)	69	0.31	433	0.31	75. South Dakota State University Brookings, S.D.	—	0.24	335	0.24
63. Indiana University—Bloomington Bloomington, Ind.	66	0.31	430	0.31	76. University of Denver Denver, Colo.	60	0.23	322	0.23
64. Georgia Institute of Technology Atlanta, Ga.	53	0.31	428	0.31	77. Fairleigh-Dickinson University St. Croix, Virgin Islands	—	0.22	307	0.22
65. College of William and Mary Williamsburg, Va.	51	0.31	424	0.31	78. Dallas County Hospital District Dallas, Texas (N)	—	0.21	295	0.21

(N) = Nonprofit institution.

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^b Formerly a part of University of Michigan.

Table 5-30. Top One Hundred Educational and Nonprofit Institutions:^a FY 1973 (Continued)
(in thousands of dollars)

Institution and Address	Rank in FY 1972	Net Value of Awards		Institution and Address	Rank in FY 1972	Net Value of Awards	
		Amount	Percentage			Amount	Percentage
79. Lehigh University Bethlehem, Pa.	89	290	0.21	92. State of Ohio Columbus, Ohio (N)	—	196	0.14
80. University of Santa Clara Santa Clara, Calif.	79	284	0.21	93. State University of New York— Buffalo	—	194	0.14
81. Colorado School of Mines Golden, Colo.	—	255	0.18	94. University of Connecticut Storrs, Conn.	90	192	0.14
82. University of California—Davis Davis, Calif.	—	241	0.17	95. North Carolina State University Raleigh, N.C.	83	187	0.14
83. Mitre Corporation Bedford, Mass. (N)	—	230	0.17	96. Louisiana State University— Baton Rouge	73	185	0.13
84. Brown University Providence, R.I.	—	225	0.16	97. University of Nebraska—Lincoln Lincoln, Neb.	97	185	0.13
85. University of Miami Coral Gables, Fla.	88	224	0.16	98. Howard University Washington, D.C.	96	181	0.13
86. University of Wyoming Laramie, Wyo.	—	218	0.16	99. California State University—San Jose San Jose, Calif.	—	174	0.13
87. Catholic University of America Washington, D.C.	—	213	0.15	100. University of Delaware Newark, Del.	—	170	0.12
88. Yale University New Haven, Conn.	94	205	0.15			12,389	8.97
89. Auburn University—Auburn Auburn, Ala.	59	202	0.15				
90. University of Georgia Athens, Ga.	—	200	0.14				
91. University of Massachusetts— Amherst	80	196	0.14				
Amherst, Mass.							
				TOTAL AWARDS TO EDUCATIONAL AND NONPROFIT INSTITUTIONS		138,109	100.00

(N) = Nonprofit institution.

^a = Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

^b Formerly a part of University of Michigan.

Source: NASA, *Annual Procurement Report* (Fiscal year 1973).



Astronaut David R. Scott saluting the U.S. flag planted on the moon surface in August 1971. Part of the lunar module is shown on the right.

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BLACK AND WHITE PHOTOGRAPH

Table 5-31. Top One Hundred Educational and Nonprofit Institutions:^a FY 1974
(in thousands of dollars)

Institution and Address	Rank in		Net Value of Awards		Institution and Address	Rank in		Net Value of Awards	
	FY 1973	Amount	Percentage			FY 1973	Amount	Percentage	
1. Charles Stark Draper Lab., Inc. Cambridge, Mass. (N)	b	7,174	5.23		14. University of California—San Diego San Diego, Calif.	10	2,489	1.82	
2. Smithsonian Institution Washington, D.C. (N)	3	7,116	5.19		15. University of Iowa Iowa City, Iowa	8	2,413	1.76	
3. Massachusetts Institute of Technology Cambridge, Mass.	1	6,676	4.87		16. Aerospace Corporation El Segundo, Calif. (N)	11	2,081	1.52	
4. National Academy of Sciences Washington, D.C. (N)	7	6,385	4.66		17. University of Michigan—Ann Arbor Ann Arbor, Mich.	23	1,901	1.39	
5. Harvard University Cambridge, Mass.	2	5,096	3.72		18. Purdue University Lafayette, Ind.	14	1,874	1.37	
6. University of California—Berkeley Berkeley, Calif.	5	4,742	3.46		19. Battelle Memorial Institute Columbus, Ohio (N)	22	1,868	1.36	
7. Stanford University Stanford, Calif.	4	3,790	2.76		20. Princeton University Princeton, N.J.	17	1,866	1.36	
8. California Institute of Technology Pasadena, Calif.	9	3,107	2.27		21. University of Maryland— College Park	20	1,846	1.35	
9. University of Hawaii Honolulu, Hawaii	28	2,739	2.00		College Park, Md.	18	1,816	1.33	
10. University of Colorado—Boulder Boulder, Colo.	13	2,717	1.98		22. Columbia University New York, N.Y.	26	1,770	1.29	
11. University of Chicago Chicago, Ill.	19	2,597	1.89		23. University Corporation for Atmospheric Research Boulder, Colo. (N)	24	1,644	1.20	
12. University of Wisconsin—Madison Madison, Wisc.	12	2,557	1.87		24. University of Arizona Tucson, Ariz.	21	1,636	1.19	
13. Environmental Research Institute of Mich. Ann Arbor, Mich. (N)	15	2,491	1.82		25. University of Texas—Dallas Dallas, Texas	37	1,590	1.16	
					26. Old Dominion University Norfolk, Va.				

^bFormerly a division of Massachusetts Institute of Technology.

(N) = Nonprofit institution.

^a = Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

Table 5-31. Top One Hundred Educational and Nonprofit Institutions:^a FY 1974 (Continued)
(in thousands of dollars)

Institution and Address	Rank in		Net Value of Awards		Institution and Address	Rank in		Net Value of Awards	
	FY 1973	Amount	Percentage	FY 1973		Amount	Percentage		
27. New Mexico State University— Las Cruces University Park, N.M.	25	1,574	1.15	44	40. Texas A&M University College Station, Texas	926	0.68		
28. University of Texas—Austin Austin, Texas	36	1,555	1.13	32	41. George Washington University Washington, D.C.	901	0.66		
29. University of California— Los Angeles	30	1,549	1.13	41	42. Oklahoma State University Stillwater, Okla.	849	0.62		
30. University of Kansas Lawrence, Kansas	35	1,442	1.05	45	43. University of Pittsburgh Pittsburgh, Pa.	825	0.60		
31. American Institute of Aeronautics and Astronautics New York, N.Y. (N)	31	1,373	1.00	50	44. Virginia Polytechnic Institute Blacksburg, Va.	808	0.59		
32. Universities Space Research Association Washington, D.C. (N)	68	1,350	0.99	49	45. University of Washington Seattle, Wash.	784	0.57		
33. University of Minnesota— Minneapolis-St. Paul Minneapolis, Minn.	16	1,332	0.97	60	46. University of Virginia Charlottesville, Va.	773	0.56		
34. Rice University Houston, Texas	39	1,230	0.90	66	47. Ohio State University Columbus, Ohio	760	0.55		
35. Cornell University Ithaca, N.Y.	27	1,104	0.81	47	48. University of Utah Salt Lake City, Utah	751	0.55		
36. University of Illinois—Urbana Urbana, Ill.	6	1,074	0.78	46	49. New York University New York, N.Y.	743	0.54		
37. Stanford Research Institute Menlo Park, Calif. (N)	40	1,049	0.77	59	50. Colorado State University Ft. Collins, Colo.	733	0.54		
38. University of Houston Houston, Texas	38	1,003	0.73	55	51. Research Triangle Institute Durham, N.C. (N)	722	0.53		
39. IIT Research Institute Chicago, Ill. (N)	42	937	0.68	64	52. Georgia Institute of Technology Atlanta, Ga.	718	0.52		

(N) = Nonprofit institution.

^a = Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

^b Formerly a division of Massachusetts Institute of Technology.

Table 5-31. Top One Hundred Educational and Nonprofit Institutions:^a FY 1974 (Continued)
(in thousands of dollars)

Institution and Address	Rank in		Net Value of Awards		Institution and Address	Rank in		Net Value of Awards	
	FY 1973	Amount	FY 1973	Percentage		FY 1973	Amount	FY 1973	Percentage
53. Rensselaer Polytechnic Institute Troy, N.Y.	48	695	0.51		66. Dudley Observatory Albany, N.Y. (N)	33	451	0.33	
54. Pennsylvania State University University Park, Pa.	43	680	0.50		67. Baylor University Medical College Houston, Tex.	61	444	0.32	
55. Johns Hopkins University Baltimore, Md.	29	647	0.47		68. Indiana University—Bloomington Bloomington, Ind.	63	418	0.31	
56. Washington University St. Louis, Mo.	52	646	0.47		69. Auburn University—Auburn Auburn, Ala.	89	404	0.29	
57. University of Southern California Los Angeles, Calif.	73	618	0.45		70. State University of New York— Stony Brook	69	402	0.29	
58. University of Tennessee—Knoxville Knoxville, Tenn.	51	598	0.44		71. Stony Brook, N.Y. University of Florida Gainesville, Fla.	71	402	0.29	
59. Case Western Reserve University Cleveland, Ohio	72	595	0.43		72. San Francisco State University San Francisco, Calif.	—	401	0.29	
60. College of William and Mary Williamsburg, Va.	65	545	0.40		73. Louisiana State University— Baton Rouge	96	352	0.26	
61. University of Texas—Galveston Galveston, Texas	70	521	0.38		74. University of Miami Coral Gables, Fla.	85	350	0.26	
62. Southwest Research Institute San Antonio, Texas (N)	56	512	0.37		75. North Carolina State University Raleigh, N.C.	95	327	0.24	
63. University of New Mexico Albuquerque, N.M.	57	507	0.37		76. University of Alaska—College College, Alaska	34	323	0.24	
64. University of New Hampshire Durham, N.H.	53	467	0.34		77. Mississippi State University State College, Miss.	—	318	0.23	
65. University of Alabama—Huntsville Huntsville, Ala.	58	454	0.33		78. Franklin Institute Philadelphia, Pa. (N)	—	308	0.22	

^b Formerly a division of Massachusetts Institute of Technology.

(N) = Nonprofit institution.

^a = Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

Table 5-31. Top One Hundred Educational and Nonprofit Institutions:^a FY 1974 (Continued)
(in thousands of dollars)

Institution and Address	Rank in FY 1973		Net Value of Awards		Institution and Address	Rank in FY 1973		Net Value of Awards	
	Rank	Percentage	Amount	Percentage		Rank	Percentage	Amount	Percentage
79. University of Wyoming Laramie, Wyo.	86	0.21	285	0.21	92. Northeast Radio Observatory Corp. Cambridge, Mass. (N)	—	—	200	0.15
80. Am. Inst. of Biological Sciences Washington, D.C. (N)	—	0.20	281	0.20	93. University of Connecticut Storrs, Conn.	94	—	197	0.14
81. University of Denver Denver, Colo.	76	0.20	268	0.20	94. North Carolina Science and Technology Research Center Durham, N.C. (N)	—	—	196	0.14
82. University of California—Davis Davis, Calif.	82	0.20	268	0.20	95. Hampton Institute Hampton, Va.	—	—	191	0.14
83. University of Cincinnati Cincinnati, Ohio	—	0.19	263	0.19	96. Oregon State University Corvallis, Ore.	54	—	186	0.14
84. State University of New York— Albany	—	0.18	253	0.18	97. University of Santa Clara Santa Clara, Calif.	80	—	184	0.13
85. University of Nebraska—Lincoln Lincoln, Neb.	97	0.16	226	0.16	98. Lovelace Foundation Albuquerque, N.M. (N)	—	—	182	0.13
86. Howard University Washington, D.C.	98	0.16	218	0.16	99. Emory University Atlanta, Ga.	—	—	180	0.13
87. City College of New York New York, N.Y.	—	0.15	212	0.15	100. University of Massachusetts— Amherst Amherst, Mass. Other	91	—	175	0.13
88. Lehigh University Bethlehem, Pa.	79	0.15	211	0.15				11,064	8.07
89. Dartmouth College Hanover, N.H.	—	0.15	211	0.15					
90. Brown University Providence, R.I.	84	0.15	203	0.15					
91. State University of New York at Stony Brook Stony Brook, N.Y.	88	0.15	201	0.15					
					TOTAL AWARDS TO EDUCATIONAL AND NONPROFIT INSTITUTIONS			137,086	100.00

(N) = Nonprofit institution.

^a Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

^b Formerly a division of Massachusetts Institute of Technology.

Source: NASA, *Annual Procurement Report* (Fiscal year 1974).

Table 5-32. Top One Hundred Educational and Nonprofit Institutions:^a FY 1975
(in thousands of dollars)

Institution and Address	Rank in		Net Value of Awards	
	FY 1974	FY 1975	Amount	Percentage
1. Massachusetts Institute of Technology Cambridge, Mass.	3	3	7,516	5.20
2. Smithsonian Institution Washington, D.C. (N)	2	2	6,331	4.38
3. University of California—Berkeley Berkeley, Calif.	6	6	5,166	3.58
4. Stanford University Stanford, Calif.	7	7	4,567	3.16
5. National Academy of Sciences Washington, D.C. (N)	4	4	4,352	3.01
6. University of California—San Diego San Diego, Calif.	14	14	3,923	2.72
7. Charles Stark Draper Lab., Inc. Cambridge, Mass. (N)	1	1	3,712	2.57
8. Harvard University Cambridge, Mass.	5	5	3,353	2.32
9. California Institute of Technology Pasadena, Calif.	8	8	3,327	2.30
10. University of Chicago Chicago, Ill.	11	11	3,004	2.08
11. University of Chile Santiago, Chile	—	—	2,686	1.86
12. Princeton University Princeton, N.J.	20	20	2,643	1.83
13. Battelle Memorial Institute Columbus, Ohio (N)	19	19	2,492	1.73
14. University of Maryland— College Park	21	21	2,259	1.57
15. University of Colorado Boulder, Colo.	10	10	2,183	1.51
16. Aerospace Corporation El Segundo, Calif. (N)	16	16	2,149	1.49
17. University of Hawaii Honolulu, Hawaii	9	9	2,125	1.47
18. University of Texas—Dallas Dallas, Texas	25	25	2,115	1.46
19. University of Arizona Tucson, Ariz.	24	24	2,106	1.46
20. University of California— Los Angeles	29	29	1,963	1.36
21. University of Michigan—Ann Arbor Ann Arbor, Mich.	17	17	1,951	1.35
22. Purdue University West Lafayette, Ind.	18	18	1,824	1.26
23. University of Minnesota— Minneapolis-St. Paul	33	33	1,792	1.24
24. Old Dominion University Norfolk, Va.	26	26	1,791	1.24
25. University of Iowa Iowa City, Iowa	15	15	1,734	1.20
26. University of Wisconsin—Madison Madison, Wisc.	12	12	1,691	1.17

(N) = Nonprofit institution.

^a— Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

Table 5-32. Top One Hundred Educational and Nonprofit Institutions:^a FY 1975 (Continued)
(in thousands of dollars)

Institution and Address	Rank in FY 1974	Net Value of Awards Amount	Percentage	Institution and Address	Rank in FY 1974	Net Value of Awards Amount	Percentage
27. Environmental Research Institute of Mich. Ann Arbor, Mich. (N)	13	1,669	1.16	40. Washington University—St. Louis St. Louis, Mo.	56	1,095	0.76
28. Columbia University New York, N.Y.	22	1,659	1.15	41. Colorado State University Ft. Collins, Colo.	50	1,089	0.75
29. New Mexico State University— Las Cruces University Park, N.M.	27	1,591	1.10	42. Stanford Research Institute Menlo Park, Calif. (N)	37	1,075	0.74
30. University of Rome Rome, Italy	—	1,528	1.06	43. Oklahoma State University Stillwater, Okla.	42	1,061	0.73
31. American Institute of Aeronautics and Astronautics New York, N.Y. (N)	31	1,513	1.05	44. Virginia Polytechnic Institute Blacksburg, VA.	44	1,005	0.70
32. Texas A&M University College Station, Texas	40	1,510	1.05	45. University of Illinois—Urbana Urbana, Ill.	36	975	0.68
33. Cornell University Ithaca, N.Y.	35	1,510	1.05	46. Georgia Institute of Technology Atlanta, Ga.	52	916	0.63
34. George Washington University Washington, D.C.	41	1,295	0.90	47. New York University New York, N.Y.	49	908	0.63
35. University of Texas—Austin Austin, Texas	28	1,270	0.88	48. University of Southern California Los Angeles, Calif.	57	805	0.56
36. Universities Space Research Association Washington, D.C. (N)	32	1,261	0.87	49. Rice University Houston, Texas	34	793	0.55
37. University of Kansas Lawrence, Kansas	30	1,238	0.86	50. University of Alabama—Huntsville Huntsville, Ala.	65	784	0.54
38. University of Houston Houston, Texas	38	1,154	0.80	51. University of Washington Seattle, Wash.	45	767	0.53
39. University of Wyoming Laramie, Wyo.	79	1,105	0.77	52. Lowell Observatory Flagstaff, Ariz. (N)	—	745	0.52

(N) - Nonprofit institution.

^a = Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

Table 5-32. Top One Hundred Educational and Nonprofit Institutions:^a FY 1975 (Continued)
(in thousands of dollars)

Institution and Address	Rank in		Net Value of Awards		Institution and Address	Rank in		Net Value of Awards	
	FY 1974	Amount	Percentage	FY 1974		Amount	Percentage	FY 1974	Amount
53. Pennsylvania State University University Park, Pa.	54	741	0.51	66.	University Corporation for Atmospheric Research Boulder, Colo. (N)	23	527	0.36	
54. College of William and Mary Williamsburg, Va.	60	733	0.51	67.	Baylor University Medical College Houston, Tex.	67	521	0.36	
55. University of New Mexico Albuquerque, N.M.	63	733	0.51	68.	University of Denver Denver, Colo.	81	518	0.36	
56. Rensselaer Polytechnic Institute Troy, N.Y.	53	704	0.49	69.	University of Utah Salt Lake City, Utah	48	512	0.35	
57. Research Triangle Institute Durham, N.C. (N)	51	695	0.48	70.	University of Santa Clara Santa Clara, Calif.	97	493	0.34	
58. University of Pittsburgh Pittsburgh, Pa.	43	671	0.46	71.	University of Florida Gainesville, Fla.	71	484	0.34	
59. State University of New York— Albany	84	666	0.46	72.	Dudley Observatory Albany, N.Y. (N)	66	473	0.33	
60. University of Virginia Charlottesville, Va.	46	660	0.46	73.	IIT Research Institute Chicago, Ill. (N)	39	467	0.32	
61. Johns Hopkins University Baltimore, Md.	55	637	0.44	74.	Southwest Research Institute San Antonio, Texas (N)	62	455	0.32	
62. Clear Lake Water Authorities Houston, Texas (N)	—	568	0.39	75.	San Jose State University San Jose, Calif.	—	443	0.31	
63. Case Western Reserve University Cleveland, Ohio	59	562	0.39	76.	State University of New York— Stony Brook	70	419	0.29	
64. Foothill College Los Altos Hills, Calif.	—	540	0.37	77.	University of Miami Coral Gables, Fla.	74	411	0.28	
65. University of Tennessee—Knoxville Knoxville, Tenn.	58	535	0.37	78.	Auburn University—Auburn Auburn, Ala.	69	382	0.26	

(N) = Nonprofit institution.

^a—Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

Table 5-32. Top One Hundred Educational and Nonprofit Institutions:^a FY 1975 (Continued)
(in thousands of dollars)

Institution and Address	Rank in		Net Value of Awards		Institution and Address	Rank in		Net Value of Awards	
	FY 1974	1974	Amount	Percentage		FY 1974	1974	Amount	Percentage
79. University of Alaska—College College, Alaska	76	—	365	0.25	92. Oregon State University Corvallis, Ore.	96	—	263	0.18
80. University of New Hampshire Durham, N. H.	64	—	362	0.25	93. Mississippi State University State College, Miss.	77	—	249	0.17
81. Brown University Providence, R. I.	90	—	354	0.25	94. University of Pennsylvania Philadelphia, Pa.	—	—	241	0.17
82. Ohio State University Columbus, Ohio	47	—	343	0.24	95. Polytechnic Institute of New York Brooklyn, N. Y.	—	—	239	0.17
83. North Carolina State University Raleigh, N. C.	75	—	316	0.22	96. South Dakota State University Brookings, S. D.	—	—	225	0.16
84. University of Alaska—Fairbanks Fairbanks, Alaska	—	—	308	0.21	97. Iowa State University Ames, Iowa	—	—	221	0.15
85. University of California— Santa Barbara	—	—	303	0.21	98. Kansas State University Manhattan, Kansas	—	—	220	0.15
86. University of San Francisco San Francisco, Calif.	—	—	302	0.21	99. Ohio State Columbus, Ohio (N)	—	—	220	0.15
87. City College of New York New York, N. Y.	87	—	301	0.21	100. University of Alabama—Tuscaloosa Tuscaloosa, Ala.	—	—	218	0.15
88. University of Nebraska—Lincoln Lincoln, Neb.	85	—	271	0.19	Other	—	—	14,683	10.17
89. University of Connecticut Storrs, Conn.	93	—	266	0.18					
90. Methodist Hospital Houston, Texas (N)	—	—	265	0.18					
91. Indiana University—Bloomington Bloomington, Ind.	68	—	265	0.18					
					TOTAL AWARDS TO EDUCATIONAL AND NONPROFIT INSTITUTIONS			144,426	100.00

^a = Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

(N) = Nonprofit institution.

Source: NASA. *Annual Procurement Report* (Fiscal year 1975).

Table 5-33. Top One Hundred Educational and Nonprofit Institutions:^a FY 1976
(in thousands of dollars)

Institution and Address	Rank in		Net Value of Awards		Institution and Address	Rank in		Net Value of Awards	
	FY 1975	Percentage	Amount	Percentage		FY 1975	Percentage	Amount	Percentage
1. Massachusetts Institute of Technology Cambridge, Mass.	1	7.766	5.01		14. Aerospace Corporation El Segundo, Calif. (N)	16	2.898	1.87	
2. University of Hawaii Honolulu, Hawaii	17	7.716	4.98		15. University of Michigan—Ann Arbor Ann Arbor, Mich.	21	2.788	1.80	
3. Smithsonian Institution Washington, D.C. (N)	2	6.835	4.41		16. Princeton University Princeton, N.J.	12	2.741	1.77	
4. University of California—Berkeley Berkeley, Calif.	3	5.547	3.58		17. University of Texas—Dallas Dallas, Texas	18	2.539	1.64	
5. National Academy of Sciences Washington, D.C. (N)	5	5.452	3.52		18. University of Wisconsin—Madison Madison, Wisc.	26	2.372	1.53	
6. Charles Stark Draper Lab., Inc. Cambridge, Mass. (N)	7	4.777	3.08		19. University of Texas—Austin Austin, Texas	35	2.344	1.51	
7. Stanford University Stanford, Calif.	4	4.538	2.93		20. University of Arizona Tucson, Ariz.	19	2.301	1.48	
8. California Institute of Technology Pasadena, Calif.	9	4.453	2.87		21. University of California— Los Angeles	20	2.252	1.45	
9. University of California—San Diego San Diego, Calif.	6	3.826	2.47		Los Angeles, Calif.	25	2.207	1.42	
10. University of Chile Santiago, Chile	11	3.469	2.24		22. University of Iowa Iowa City, Iowa	28	2.198	1.42	
11. University of Chicago Chicago, Ill.	10	3.443	2.22		23. Columbia University New York, N.Y.	14	2.095	1.35	
12. Harvard University Cambridge, Mass.	8	3.327	2.14		24. University of Maryland - College Park College Park, Md.	36	1.920	1.24	
13. University of Colorado - Boulder Boulder, Colo.	15	2.969	1.91		25. Universities Space Research Association Washington, D.C. (N)	22	1.912	1.23	
					26. Purdue University West Lafayette, Ind.				

(N) = Nonprofit institution.

^a = Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

Table 5-33. Top One Hundred Educational and Nonprofit Institutions:^a FY 1976 (Continued)
(in thousands of dollars)

Institution and Address	Rank in		Net Value of Awards		Institution and Address	Rank in		Net Value of Awards	
	FY 1975	Amount	Percentage			FY 1975	Amount	Percentage	
27. Old Dominion University Norfolk, Va.	24	1,886	1.22		40. California State University - Chico Chico, Calif.	—	1,009	0.65	
28. University of Minnesota— Minneapolis-St. Paul	23	1,749	1.13		41. Virginia Polytechnic Institute Blacksburg, Va.	44	1,006	0.65	
29. Environmental Research Institute of Mich. Ann Arbor, Mich. (N)	27	1,663	1.07		42. University of Illinois—Urbana Urbana, Ill.	45	978	0.63	
30. University of Wyoming Laramie, Wyo.	39	1,517	0.99		43. Washington University—St. Louis St. Louis, Mo.	40	952	0.61	
31. New Mexico State University— Las Cruces	29	1,424	0.92		44. University of Southern California Los Angeles, Calif.	48	922	0.59	
32. American Institute of Aeronautics and Astronautics New York, N.Y. (N)	31	1,265	0.82		45. University of Houston Houston, Texas	38	906	0.58	
33. Cornell University Ithaca, N.Y.	33	1,264	0.82		46. Case Western Reserve University Cleveland, Ohio	63	870	0.56	
34. George Washington University Washington, D.C.	34	1,165	0.75		47. Johns Hopkins University Baltimore, Md.	61	840	0.54	
35. University of Washington Seattle, Wash.	51	1,156	0.75		48. University of Alabama—Huntsville Huntsville, Ala.	50	785	0.51	
36. Colorado State University Ft. Collins, Colo.	41	1,153	0.74		49. Research Triangle Institute Durham, N.C. (N)	57	747	0.48	
37. Stanford Research Institute Menlo Park, Calif. (N)	42	1,139	0.73		50. University of Florida Gainesville, Fla.	71	746	0.48	
38. Texas A&M University College Station, Texas	32	1,086	0.70		51. IIT Research Institute Chicago, Ill. (N)	73	736	0.47	
39. University of Kansas Lawrence, Kansas	37	1,074	0.69		52. University of Denver Denver, Colo.	68	722	0.47	

(N) = Nonprofit institution.

^a—Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

Table 5-33. Top One Hundred Educational and Nonprofit Institutions:^a FY 1976 (Continued)
(in thousands of dollars)

Institution and Address	Rank in		Net Value of Awards		Institution and Address	Rank in		Net Value of Awards	
	FY 1975		Amount			FY 1975		Amount	
53. New York University New York, N.Y.	47	712	0.46		66. University of New Mexico Albuquerque, N.M.	55	500	0.32	
54. University of Virginia Charlottesville, Va.	60	706	0.46		67. Northeast Radio Observatory Corp. Cambridge, Mass. (N)	—	490	0.32	
55. University of Pittsburgh Pittsburgh, Pa.	58	687	0.44		68. University of Santa Clara Santa Clara, Calif.	70	486	0.31	
56. University of Tennessee—Knoxville Knoxville, Tenn.	65	687	0.44		69. University of Connecticut Storrs, Conn.	89	474	0.31	
57. Georgia Institute of Technology Atlanta, Ga.	46	671	0.43		70. Foothill College Los Altos Hills, Calif.	64	458	0.30	
58. Rice University Houston, Texas	49	646	0.42		71. State University of New York— Stony Brook	76	448	0.29	
59. Ohio State University Columbus, Ohio	82	642	0.41		72. University of New Hampshire Durham, N.H.	80	433	0.28	
60. State University of New York— Albany	59	616	0.40		73. University of Oregon—Eugene Eugene, Oregon	—	417	0.27	
61. San Jose State University San Jose, Calif.	75	579	0.37		74. Mississippi State University State College, Miss.	93	392	0.25	
62. Rensselaer Polytechnic Institute Troy, N.Y.	56	577	0.37		75. City College of New York New York, N.Y.	87	367	0.24	
63. College of William and Mary Williamsburg, Va.	54	571	0.37		76. Brown University Providence, R.I.	81	361	0.23	
64. Pennsylvania State University University Park, Pa.	53	519	0.33		77. Dartmouth College Hanover, N.H.	—	350	0.23	
65. University of Miami Coral Gables, Fla.	77	507	0.33		78. Southwest Research Institute San Antonio, Texas (N)	74	346	0.22	

(N) = Nonprofit institution.

^a = Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

Table 5-33. Top One Hundred Educational and Nonprofit Institutions:^a FY 1976 (Continued)
(in thousands of dollars)

Institution and Address	Rank in		Net Value of Awards		Institution and Address	Rank in		Net Value of Awards	
	FY 1975	Amount	Percentage	FY 1975		Amount	Percentage	FY 1975	Amount
79. Florida Technological University Orlando, Fla.	—	335	0.22	—	92. North Carolina Science and Technology Research Center Durham, N.C. (N)	—	215	0.14	—
80. University of San Francisco San Francisco, Calif.	86	317	0.20	—	93. Kansas State University Manhattan, Kansas	98	204	0.13	—
81. Howard University Washington, D.C.	—	315	0.20	—	94. Hampton Institute Hampton, Va.	—	203	0.13	—
82. Lehigh University Bethlehem, Pa.	—	312	0.20	—	95. Oregon State University Corvallis, Ore.	92	202	0.13	—
83. Lowell Observatory Flagstaff, Ariz. (N)	52	310	0.20	—	96. University of Pennsylvania Philadelphia, Pa.	94	200	0.13	—
84. Baylor University Medical College Houston, Tex.	67	305	0.20	—	97. University of Utah Salt Lake City, Utah	69	190	0.12	—
85. University of California— Santa Barbara	85	305	0.20	—	98. Arizona State University Tempe, Ariz.	—	186	0.12	—
86. Utah State University Logan, Utah	—	293	0.19	—	99. University of Georgia Athens, Ga.	—	170	0.11	—
87. Indiana University—Bloomington Bloomington, Ind.	91	290	0.19	—	100. University of Missouri—Columbia Columbia, Mo.	—	161	0.10	—
88. North Carolina State University Raleigh, N.C.	83	286	0.18	—	Other	—	12,478	8.05	—
89. Rand Corporation Santa Monica, Calif. (N)	—	239	0.15	—					
90. University of California—Davis Davis, Calif.	—	229	0.15	—					
91. Polytechnic Institute of New York Brooklyn, N.Y.	95	220	0.14	—					
					TOTAL AWARDS TO EDUCATIONAL AND NONPROFIT INSTITUTIONS		155,052	100.00	

^a = Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

(N) = Nonprofit institution.

Source: NASA, *Annual Procurement Report* (Fiscal year 1976).

**Table 5-34. Top One Hundred Educational and Nonprofit Institutions:^a FY 1977
(in thousands of dollars)**

Institution and Address	Rank in		Net Value of Awards		Institution and Address	Rank in		Net Value of Awards	
	FY 1976	Percentage	Amount	Percentage		FY 1976	Percentage	Amount	Percentage
1. Massachusetts Institute of Technology Cambridge, Mass.	1	8,183	5.19		14. Universities Space Research Association Washington, D.C. (N)	25	2,853	1.81	
2. Smithsonian Institution Washington, D.C. (N)	3	6,858	4.35		15. University of Arizona Tucson, Ariz.	20	2,795	1.77	
3. National Academy of Sciences Washington, D.C. (N)	5	5,496	3.49		16. University of Hawaii Honolulu, Hawaii	2	2,513	1.60	
4. Harvard University Cambridge, Mass.	12	5,402	3.43		17. Princeton University Princeton, N.J.	16	2,432	1.54	
5. Stanford University Stanford, Calif.	7	5,334	3.39		18. University of Wisconsin—Madison Madison, Wisc.	18	2,396	1.52	
6. University of California—Berkeley Berkeley, Calif.	4	4,624	2.94		19. University of Colorado—Boulder Boulder, Colo.	13	2,386	1.51	
7. Charles Stark Draper Lab., Inc. Cambridge, Mass. (N)	6	3,916	2.49		20. University of Texas—Austin Austin, Texas	19	2,182	1.39	
8. University of Michigan—Ann Arbor Ann Arbor, Mich.	15	3,799	2.41		21. University of Minnesota— Minneapolis—St. Paul Minneapolis, Minn.	28	1,945	1.23	
9. California Institute of Technology Pasadena, Calif.	8	3,707	2.35		22. Purdue University West Lafayette, Ind.	26	1,877	1.19	
10. University of Chile Santiago, Chile	10	3,693	2.34		23. Columbia University New York, N.Y.	23	1,861	1.18	
11. University of Maryland— College Park College Park, Md.	24	3,040	1.93		24. University of Texas—Dallas Dallas, Texas	17	1,858	1.18	
12. University of California—San Diego San Diego, Calif.	9	3,027	1.92		25. New Mexico State University— Las Cruces University Park, N.M.	31	1,838	1.17	
13. University of Chicago Chicago, Ill.	11	3,006	1.91		26. University of California— Los Angeles Los Angeles, Calif.	21	1,795	1.14	

^a = Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

^bFormerly Stanford Research Institute.
(N) = Nonprofit institution.

Table 5-34. Top One Hundred Educational and Nonprofit Institutions:^a FY 1977 (Continued)
(in thousands of dollars)

Institution and Address	Rank in FY 1976	Net Value of Awards Amount	Percentage	Institution and Address	Rank in FY 1976	Net Value of Awards Amount	Percentage
27. Old Dominion University Norfolk, Va.	27	1,629	1.03	40. University of Illinois—Urbana Urbana, Ill.	42	1,088	0.69
28. George Washington University Washington, D.C.	34	1,603	1.02	41. University of Kansas Lawrence, Kansas	39	1,070	0.68
29. American Institute of Aeronautics and Astronautics New York, N.Y. (N)	32	1,601	1.02	42. Washington University—St. Louis St. Louis, Mo.	43	1,069	0.68
30. University of New Hampshire Durham, N.H.	72	1,591	1.01	43. Georgia Institute of Technology Atlanta, Ga.	57	1,044	0.66
31. Virginia Polytechnic Institute Blacksburg, Va.	41	1,536	0.98	44. Rensselaer Polytechnic Institute Troy, N.Y.	62	1,001	0.64
32. Aerospace Corporation El Segundo, Calif. (N)	14	1,448	0.92	45. Colorado State University Ft. Collins, Colo.	36	986	0.63
33. Texas A&M University College Station, Texas	38	1,316	0.84	46. University of Wyoming Laramie, Wyo.	30	982	0.62
34. California State University—Chico Chico, Calif.	40	1,264	0.80	47. University of Southern California Los Angeles, Calif.	44	911	0.58
35. Cornell University Ithaca, N.Y.	33	1,260	0.80	48. Johns Hopkins University Baltimore, Md.	47	894	0.57
36. University of Washington Seattle, Wash.	35	1,249	0.79	49. University of Denver Denver, Colo.	52	886	0.56
37. University of Pittsburgh Pittsburgh, Pa.	55	1,182	0.75	50. IIT Research Institute Chicago, Ill. (N)	51	846	0.54
38. Environmental Research Institute of Mich. Ann Arbor, Mich. (N)	29	1,146	0.73	51. University of Alabama—Huntsville Huntsville, Ala.	48	845	0.54
39. University of Iowa Iowa City, Iowa	22	1,099	0.70	52. Pennsylvania State University University Park, Pa.	64	835	0.53

^aFormerly Stanford Research Institute.
(N) = Nonprofit institution.

¹ = Includes awards on research grants and contracts of \$10,000 and over;
excludes awards to California Institute of Technology for operation of the Jet
Propulsion Laboratory.

Table 5-34. Top One Hundred Educational and Nonprofit Institutions:^a FY 1977 (Continued)
(in thousands of dollars)

Institution and Address	Rank in		Net Value of Awards		Institution and Address	Rank in		Net Value of Awards	
	FY 1975	Amount	Percentage	Percentage		FY 1975	Amount	Percentage	Percentage
53. University of Virginia Charlottesville, Va.	54	764	0.49		66. State University of New York— Stony Brook	71	570	0.36	
54. University of Houston Houston, Texas	45	755	0.48		67. University of New Mexico Albuquerque, N.M.	66	565	0.36	
55. Case Western Reserve University Cleveland, Ohio	46	748	0.47		68. Research Triangle Institute Durham, N.C. (N)	49	535	0.34	
56. State University of New York— Albany	60	730	0.46		69. Southwest Research Institute San Antonio, Texas (N)	78	486	0.31	
57. San Jose State University San Jose, Calif.	61	725	0.46		70. Northeast Radio Observatory Corp. Cambridge, Mass. (N)	67	469	0.30	
58. College of William and Mary Williamsburg, Va.	63	724	0.46		71. Utah State University Logan, Utah	86	469	0.30	
59. New York University New York, N.Y.	53	708	0.45		72. University of San Francisco San Francisco, Calif.	80	462	0.29	
60. Ohio State University Columbus, Ohio	59	687	0.44		73. Brown University Providence, R.I.	76	460	0.29	
61. University of Florida Gainesville, Fla.	50	676	0.43		74. Oregon State University Corvallis, Ore.	95	451	0.29	
62. Howard University Washington, D.C.	81	669	0.42		75. Foothill College Los Altos Hills, Calif.	70	403	0.26	
63. University of Tennessee—Knoxville Knoxville, Tenn.	56	663	0.42		76. University of Santa Clara Santa Clara, Calif.	68	379	0.24	
64. Rice University Houston, Texas	58	654	0.42		77. Public Service Satellite Consortium San Diego, Calif. (N)	—	376	0.24	
65. SRI International Corp. Menlo Park, Calif. (N)	37 ^b	611	0.39		78. University of Miami Coral Gables, Fla.	65	375	0.24	

^aFormerly Stanford Research Institute.
(N) = Nonprofit institution.

^b = Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

Table 5-34. Top One Hundred Educational and Nonprofit Institutions:^a FY 1977 (Continued)
(in thousands of dollars)

Institution and Address	Rank in		Net Value of Awards		Institution and Address	Rank in		Net Value of Awards	
	FY 1976	FY 1976	Amount	Percentage		FY 1976	FY 1976	Amount	Percentage
79. University of Connecticut Storrs, Conn.	69	357	0.23		92. Lehigh University Bethlehem, Pa.	82	287	0.18	
80. Arizona State University Tempe, Ariz.	98	355	0.23		93. North Carolina Agriculture and Technical State University Greensboro, N.C.	—	287	0.18	
81. North Carolina State University Raleigh, N.C.	88	341	0.22		94. Indianapolis Center for Advanced Research, Inc.	—	281	0.18	
82. University of Oregon—Eugene Eugene, Ore.	73	338	0.21		95. Polytechnic Institute of New York Brooklyn, N.Y.	91	258	0.16	
83. University of California— Santa Barbara	85	332	0.21		96. North Carolina Science and Technology Research Center Durham, N.C. (N)	92	256	0.16	
84. Mississippi State University State College, Miss.	74	326	0.21		97. University of California—Davis Davis, Calif.	90	255	0.16	
85. University of Alaska—Fairbanks Fairbanks, Alaska	—	322	0.20		98. Baylor University Medical College Houston, Tex.	84	250	0.16	
86. City College of New York New York, N.Y.	75	320	0.20		99. South Dakota State University Brookings, S.D.	—	250	0.16	
87. Humboldt State University Arcata, Calif.	—	320	0.20		100. Public Technology, Inc. Washington, D.C. (N)	—	235	0.15	
88. Lowell Observatory Flagstaff, Ariz. (N)	83	317	0.20				16,604	10.54	
89. University of Kentucky Lexington, Ky.	—	314	0.20						
90. Drexel University Philadelphia, Pa.	—	304	0.19						
91. Dartmouth College Hanover, N.H.	77	290	0.18						
					TOTAL AWARDS TO EDUCATIONAL AND NONPROFIT INSTITUTIONS		157,510	100.00	

^a— Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

^bFormerly Stanford Research Institute.
(N) = Nonprofit institution.

Source: NASA, *Annual Procurement Report* (Fiscal year 1977).

Table 5-35. Top One Hundred Educational and Nonprofit Institutions:^a FY 1978
(in thousands of dollars)

Institution and Address	Rank in FY 1977	Net Value of Awards Amount	Percentage	Institution and Address	Rank in FY 1977	Net Value of Awards Amount	Percentage
1. Massachusetts Institute of Technology Cambridge, Mass.	1	9,166	5.09	14. University of Texas—Austin Austin, Texas	20	3,060	1.70
2. Smithsonian Institution Washington, D.C. (N)	2	7,907	4.39	15. Battelle Memorial Institute Columbus, Ohio (N)	—	3,052	1.70
3. University of Michigan—Ann Arbor Ann Arbor, Mich.	8	6,514	3.62	16. University of Colorado—Boulder Boulder, Colo.	19	2,732	1.52
4. Charles Stark Draper Lab., Inc. Cambridge, Mass. (N)	7	6,179	3.43	17. Columbia University New York, N.Y.	23	2,571	1.43
5. Stanford University Stanford, Calif.	5	5,948	3.30	18. University of Wisconsin—Madison Madison, Wis.	18	2,523	1.40
6. National Academy of Sciences Washington, D.C. (N)	3	5,569	3.09	19. Universities Space Research Association	14	2,463	1.37
7. University of California—San Diego San Diego, Calif.	12	4,843	2.69	20. University of Maryland— College Park	11	2,438	1.35
8. University of Chicago Chicago, Ill.	13	4,807	2.67	21. University of Texas—Dallas Dallas, Texas	24	2,315	1.29
9. University of Chile Santiago, Chile	10	4,792	2.66	22. SRI International Corp. Menlo Park, Calif. (N)	65	2,201	1.22
10. University of California—Berkeley Berkeley, Calif.	6	4,339	2.41	23. University of Arizona Tucson, Ariz.	15	2,201	1.22
11. Harvard University Cambridge, Mass.	4	4,246	2.36	24. Purdue University West Lafayette, Ind.	22	2,195	1.22
12. California Institute of Technology Pasadena, Calif.	9	3,786	2.10	25. University of Hawaii Honolulu, Hawaii	16	2,130	1.18
13. University of Iowa Iowa City, Iowa	39	3,273	1.82	26. University of California— Los Angeles, Calif.	26	2,080	1.16

(N) = Nonprofit institution.

^a = Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

Table 5-35. Top One Hundred Educational and Nonprofit Institutions:^a FY 1978 (Continued)
(in thousands of dollars)

Institution and Address	Rank in FY 1977	Net Value of Awards Amount	Percentage	Institution and Address	Rank in FY 1977	Net Value of Awards Amount	Percentage
27. Old Dominion University Norfolk, Va.	27	1,913	1.06	40. Cornell University Ithaca, N.Y.	35	1,225	0.68
28. University of New Hampshire Durham, N.H.	30	1,883	1.05	41. Washington University—St. Louis St. Louis, Mo.	42	1,209	0.67
29. American Institute of Aeronautics and Astronautics New York, N.Y. (N)	29	1,701	0.94	42. Rensselaer Polytechnic Institute Troy, N.Y.	44	1,193	0.66
30. New Mexico State University— Las Cruces	25	1,650	0.92	43. Aerospace Corporation El Segundo, Calif. (N)	32	1,177	0.65
31. Virginia Polytechnic Institute Blacksburg, Va.	31	1,548	0.86	44. California State University—Chico Chico, Calif.	34	1,134	0.63
32. University of Minnesota— Minneapolis—St. Paul	21	1,546	0.86	45. Utah State University Logan, Utah	71	1,049	0.58
33. George Washington University Washington, D.C.	28	1,531	0.85	46. University of Illinois—Urbana Urbana, Ill.	40	985	0.55
34. Princeton University Princeton, N.J.	17	1,526	0.85	47. Environmental Research Institute of Mich. Ann Arbor, Mich. (N)	38	974	0.54
35. Public Service Satellite Consortium San Diego, Calif. (N)	77	1,402	0.78	48. San Jose State University San Jose, Calif.	57	966	0.54
36. European Space Agency Paris, France (N)	—	1,312	0.73	49. Case Western Reserve University Cleveland, Ohio	55	952	0.53
37. Johns Hopkins University Baltimore, Md.	48	1,308	0.73	50. Georgia Institute of Technology Atlanta, Ga.	43	938	0.52
38. Texas A&M University College Station, Texas	33	1,283	0.71	51. University of Pittsburgh Pittsburgh, Pa.	37	927	0.51
39. University of Washington Seattle, Wash.	36	1,250	0.69	52. University of Florida Gainesville, Fla.	61	840	0.47

^a = Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

(N) = Nonprofit institution.

Table 5-35. Top One Hundred Educational and Nonprofit Institutions:^a FY 1978 (Continued)
(in thousands of dollars)

Institution and Address	Rank in FY 1977		Net Value of Awards		Institution and Address	Rank in FY 1977		Net Value of Awards	
	Amount	Percentage	Amount	Percentage		Amount	Percentage	Amount	Percentage
53. Pennsylvania State University University Park, Pa.	52	0.46	836	0.46	66. Rice University Houston, Texas	64	0.34	611	0.34
54. University of Kansas Lawrence, Kansas	41	0.46	823	0.46	67. Howard University Washington, D.C.	62	0.34	607	0.34
55. Colorado State University Ft. Collins, Colo.	45	0.45	816	0.45	68. Foothill College Los Altos Hills, Calif.	75	0.33	590	0.33
56. University of Houston Houston, Texas	54	0.45	812	0.45	69. Arizona State University Tempe, Ariz.	80	0.32	578	0.32
57. University of Denver Denver, Colo.	49	0.42	756	0.42	70. Franklin Institute Philadelphia, Pa. (N)	—	0.32	573	0.32
58. Southwest Research Institute San Antonio, Texas (N)	69	0.42	753	0.42	71. State University of New York— Albany	56	0.31	559	0.31
59. Research Triangle Institute Durham, N.C. (N)	68	0.40	716	0.40	72. Northeast Radio Observatory Corp. Cambridge, Mass. (N)	70	0.31	552	0.31
60. IIT Research Institute Chicago, Ill. (N)	50	0.39	709	0.39	73. University of Tennessee—Knoxville Knoxville, Tenn.	63	0.30	538	0.30
61. College of William and Mary Williamsburg, Va.	58	0.39	705	0.39	74. New York University New York, N.Y.	59	0.28	511	0.28
62. Ohio State University Columbus, Ohio	60	0.39	697	0.39	75. University of Wyoming Laramie, Wyo.	46	0.28	508	0.28
63. University of Alabama—Huntsville Huntsville, Ala.	51	0.38	684	0.38	76. American Institute of Biological Sciences Washington, D.C. (N)	—	0.28	497	0.28
64. State University of New York— Stony Brook	66	0.35	630	0.35	77. University of Utah Salt Lake City, Utah	—	0.27	495	0.27
65. University of Southern California Los Angeles, Calif.	47	0.34	614	0.34	78. Lehigh University Bethlehem, Pa.	92	0.27	483	0.27

(N) = Nonprofit institution.

^a—Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

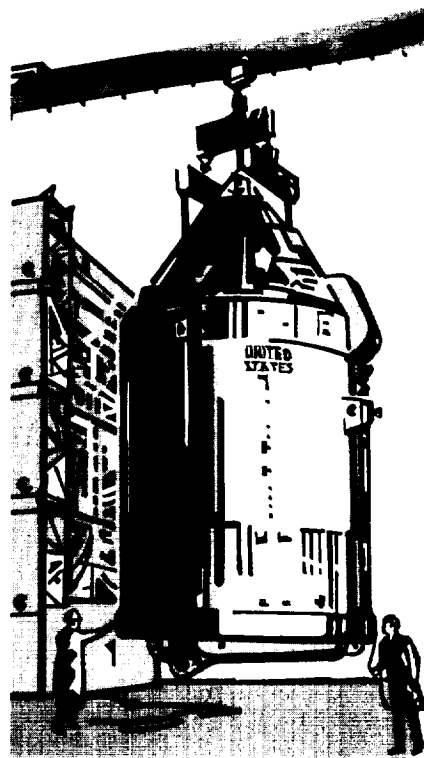
Table 5-35. Top One Hundred Educational and Nonprofit Institutions:^a FY 1978 (Continued)
(in thousands of dollars)

Institution and Address	Rank in		Net Value of Awards		Institution and Address	Rank in		Net Value of Awards	
	FY 1977	Percentage	Amount	Percentage		FY 1977	Percentage	Amount	Percentage
79. Mississippi State University State College, Miss.	84	0.26	476	0.26	92. University of Miami Coral Gables, Fla.	78	0.17	305	0.17
80. University of New Mexico Albuquerque, N.M.	67	0.24	434	0.24	93. Polytechnic Institute of New York Brooklyn, N.Y.	95	0.17	304	0.17
81. University of California— Santa Barbara	83	0.24	426	0.24	94. North Carolina State University Raleigh, N.C.	81	0.17	302	0.17
82. University of Connecticut Storrs, Conn.	79	0.24	425	0.24	95. University of Kentucky Lexington, Ky.	89	0.17	298	0.17
83. University of Virginia Charlottesville, Va.	53	0.21	386	0.21	96. San Francisco State University San Francisco, Calif.	—	0.16	297	0.16
84. Humboldt State University Arcata, Calif.	87	0.20	356	0.20	97. University of Pennsylvania Philadelphia, Pa.	—	0.16	292	0.16
85. Oregon State University Corvallis, Ore.	74	0.19	351	0.19	98. University of Oregon—Eugene Eugene, Ore.	82	0.16	286	0.16
86. University of San Francisco San Francisco, Calif.	72	0.19	348	0.19	99. Southern Illinois University— Carbondale Carbondale, Ill.	—	0.16	282	0.16
87. New York State Albany, N.Y. (N)	—	0.19	347	0.19	100. University of Dayton Dayton, Ohio	—	0.15	278	0.15
88. University of Alaska—Fairbanks Fairbanks, Alaska	85	0.19	342	0.19	Other			19,133	10.63
89. Drexel University Philadelphia, Pa.	90	0.19	335	0.19					
90. Brown University Providence, R.I.	73	0.18	328	0.18					
91. Florida Technological University Orlando, Fla.	—	0.18	323	0.18					
					TOTAL AWARDS TO EDUCATIONAL AND NONPROFIT INSTITUTIONS			180,059	100.00

^a— Includes awards on research grants and contracts of \$10,000 and over; excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

(N) = Nonprofit institution.

Source: NASA, *Annual Procurement Report* (Fiscal year 1978).



CHAPTER SIX

NASA INSTALLATIONS

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CHAPTER SIX

NASA INSTALLATIONS

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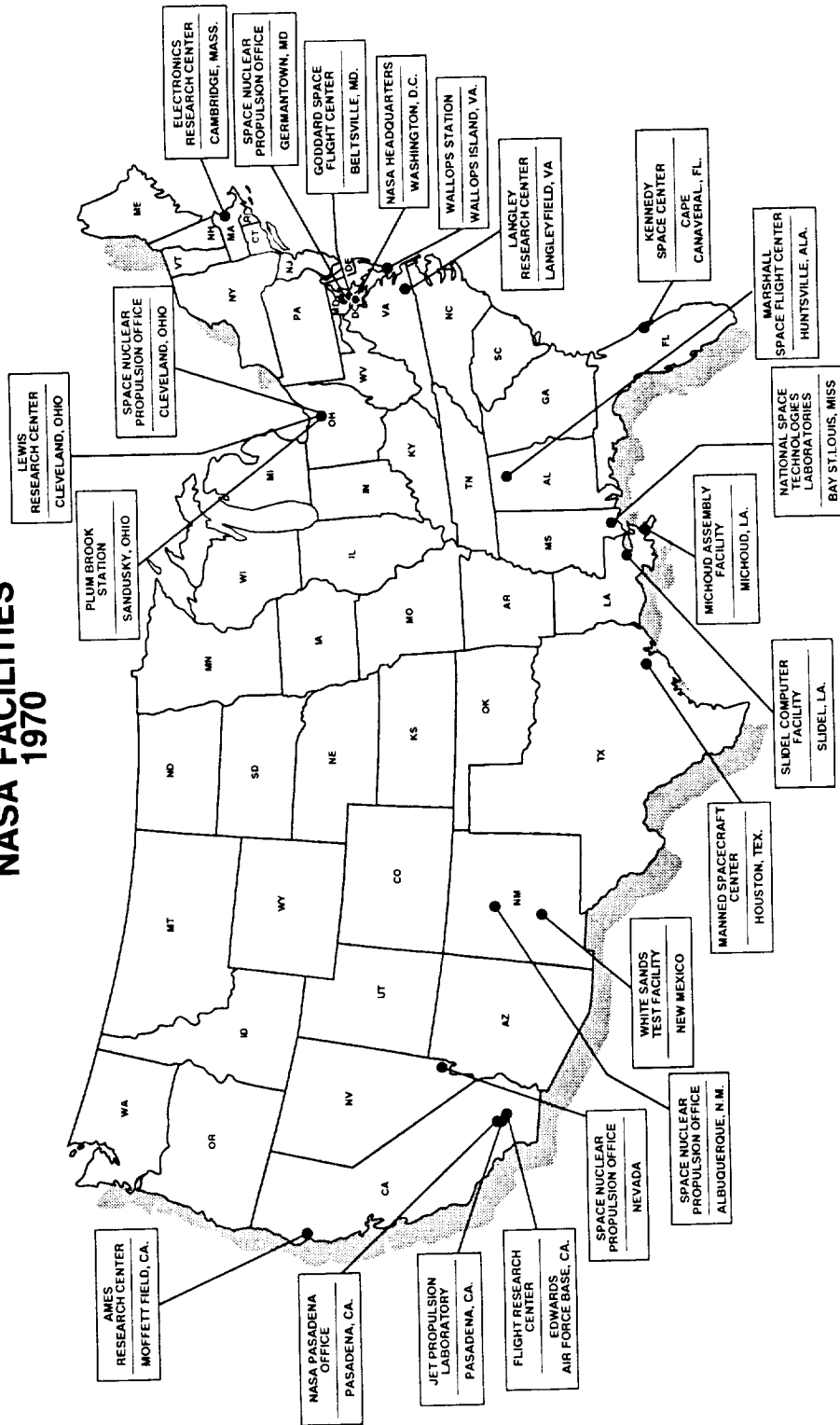
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CHAPTER SIX

NASA INSTALLATIONS

Introduction

This chapter reviews the history and the mission of NASA Headquarters and the thirteen NASA installations that were in existence during the 1969-78 decade. It also provides, in tabular form, detailed information regarding the property, personnel, funding, and procurement activity of each installation during this period.

In addition to NASA Headquarters, in 1969 there were twelve NASA field installations and the contractor-operated Jet Propulsion Laboratory. Five of the installations—the Ames Research Center, the Flight Research Center, the Langley Research Center, the Lewis Research Center, and Wallops Station—had been facilities of the National Advisory Committee for Aeronautics. With the establishment of NASA in 1958, these facilities were transferred to NASA. The Goddard Space Flight Center, the Kennedy Space Center, the Marshall Space Flight Center, and the Jet Propulsion Laboratory were transferred to NASA from the United States military space program in the next few years. The Space Nuclear Propulsion Office was established in 1961 jointly with the Atomic Energy Commission. The Electronics Research Center was established as a NASA installation in 1964. During the next decade, two installations were disestablished as NASA installations—the Electronics Research Center in 1970 and the Space Nuclear Propulsion Office (renamed the Space Nuclear Systems Office in 1970) in 1973. A new NASA installation—the National Space Technology Laboratories—was established in 1974. (For a more comprehensive history of NASA installations during the 1958-68 period, see Chapter VI of *NASA Historical Data Book*, Vol. I.)

In general, NASA's aim has been to create a relationship between NASA Headquarters and the installations that would allow the installations to have "the institutional management, resources, and freedom to perform the Agency's programs without their becoming too independent and separated from the Agency's priorities and goals." Administrative control of NASA installations has undergone several changes, reflecting the overall changes in NASA organization. In 1968 NASA installations were under the control

of three separate offices, each headed by a NASA Associate Administrator who reported to the Associate Deputy Administrator. The Ames Research Center, the Electronics Research Center, the Flight Research Center, the Langley Research Center, and the Lewis Research Center were administered by the Office of Advanced Research and Technology. The Marshall Space Flight Center, the Manned Spacecraft Center, and the Kennedy Space Center were administered by the Office of Manned Space Flight. The Goddard Space Flight Center, the Jet Propulsion Laboratory, and Wallops Station were administered by the Office of Space Science and Applications. In 1972 the Office of Space Science and Applications was split into the Office of Space Science and the Office of Applications, and the three installations formerly under the combined office were now administered by the Office of Space Science. In 1974 NASA installations were removed from under the control of the three offices that had administered them in the past and were placed under the control of the newly created Office of Associate Administrator for Center Operations. The NASA reorganization of 1978 did away with the Associate Administrator for Center Operations, and NASA installations were placed under the direct control of the Administrator himself. (For a detailed view of the changes in the NASA organizational structure, see Appendix B.)

Note: Sources for the discussion of individual installations are *NASA Historical Data Book*, 1, 1988; NASA, *The Evolution of the NASA Organization*, 1985; and NASA, *Facilities Data*, 1974.

Table 6-1. Distribution of Research and Development Budget Plan by Installation and Program Office: FY 1978
(in thousands of dollars)

Installation	Space Transportation Systems		Space Science	Space and Terrestrial Applications		Aeronautics and Space Technology	Tracking and Data Acquisition		Total Budget Plan
Ames Research Center (Percentage of total budget plan)	470 (0.4)		55,317 (49.1)	7,048 (6.3)	49,803 (44.2)	—	—	112,638 (3.7)	
Flight Research Center ^a (Percentage of total budget plan)	760 (4.1)		140 (0.7)	67 (0.4)	14,463 (77.8)	3,154 (17.0)	—	18,584 (0.6)	
Goddard Space Flight Center (Percentage of total budget plan)	66,734 (13.7)		88,631 (18.2)	127,363 (26.1)	5,303 (1.1)	199,211 (40.9)	—	487,242 (16.2)	
Jet Propulsion Laboratory (Percentage of total budget plan)	475 (0.2)		85,261 (42.8)	29,132 (14.6)	26,877 (13.5)	57,626 (28.9)	—	199,371 (6.6)	
Kennedy Space Center (Percentage of total budget plan)	169,312 (99.5)		92 (0.1)	730 (0.4)	—	—	—	170,134 (5.6)	
Langley Research Center (Percentage of total budget plan)	16,276 (10.3)		12,498 (7.9)	9,903 (6.2)	119,994 (75.6)	—	—	158,671 (5.3)	
Lewis Research Center (Percentage of total budget plan)	38,903 (28.9)		874 (0.7)	3,286 (2.4)	91,487 (68.0)	—	—	134,550 (4.5)	
Manned Spacecraft Center ^b (Percentage of total budget plan)	913,647 (94.3)		22,016 (2.3)	27,306 (2.8)	6,074 (0.6)	—	—	969,043 (32.2)	
Marshall Space Flight Center (Percentage of total budget plan)	511,067 (82.1)		85,473 (13.7)	17,314 (2.8)	8,767 (1.4)	—	—	622,621 (20.7)	
National Space Technology Laboratories ^c (Percentage of total budget plan)	16,100 (80.3)		50 (0.3)	3,890 (19.4)	—	—	—	20,040 (0.7)	
Wallops Station ^d (Percentage of total budget plan)	—		6,118 (38.1)	3,543 (22.1)	953 (5.9)	5,444 (33.9)	—	16,058 (0.5)	

^aRenamed Dryden Flight Research Center in 1976.

^bRenamed Johnson Space Center in 1973.

^cEstablished as an independent NASA field installation in 1974.

^dRenamed Wallops Flight Center in 1974.

Table 6-1. Distribution of Research and Development Budget Plan by Installation and Program Office: FY 1978
(in thousands of dollars)

Installation	Space Transportation Systems	Space Science	Space and Terrestrial Applications	Aeronautics and Space Technology	Tracking and Data Acquisition	Total Budget Plan
NASA Headquarters	17,756	48,230	14,318	9,479	12,865	102,648
(Percentage of total budget plan)	(17.3)	(47.0)	(14.0)	(9.2)	(12.5)	(3.4)
TOTAL	1,751,500	404,700	243,900	333,200	278,300	3,011,600
(Percentage of total budget plan)	(58.2)	(13.4)	(8.1)	(11.1)	(9.2)	(100.0)

^aRenamed Dryden Flight Research Center in 1976.

^bRenamed Johnson Space Center in 1973.

^cEstablished as an independent NASA field installation in 1974.

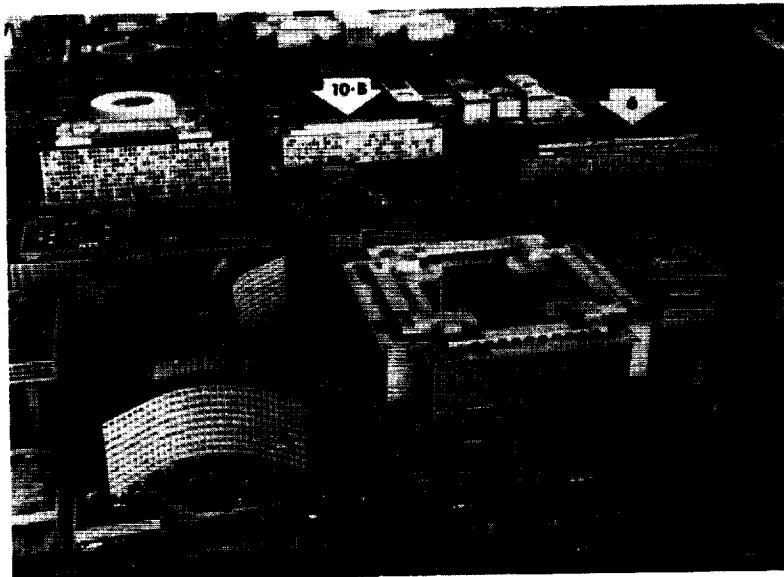
^dRenamed Wallops Flight Center in 1974

Source: NASA Budget Estimates, 1980.

NASA HEADQUARTERS

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Aerial view of the NASA Headquarters buildings in Washington, D.C. taken in March 1974. NASA Administrative Offices were located in Federal Office Building 6 on Maryland Avenue. NASA Offices for Manned Space Flight, Aeronautics and Space Technology, and Applications were located in Federal Office Building 10-B on Independence Avenue. The National Art Museum and the Capitol Mall are in the background.



A close-up of Federal Office Building 10-B.

NASA HEADQUARTERS

Location

In 1978 the main offices of NASA Headquarters were located at 400 Maryland Avenue, S.W., Washington, D.C. In addition, NASA occupied other buildings, either owned or leased by the Government, in the District of Columbia and in northern Virginia.

Administrator:

Robert A. Frosch (June 1977-)
James C. Fletcher (April 1971-May 1977)
George M. Low, Acting (September 1970-April 1971)
Thomas O. Paine (March 1969-September 1970)
Thomas O. Paine, Acting (October 1968-March 1969)
James E. Webb (February 1961-October 1968)
T. Keith Glennan (August 1958-January 1961)

Deputy Administrator:

Alan M. Lovelace (July 1976-)
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 1958-December 1965)

Associate Administrator:

John E. Naugle (November 1975-November 1977)
John E. Naugle, Acting (April 1975-November 1975)
Rocco A. Petrone (March 1974-April 1975)
Homer E. Newell (October 1967-December 1973)
Robert C. Seamans, Jr. (September 1960-October 1967)
Richard E. Horner (June 1959-July 1960)

History

The development of NASA Headquarters and its early history are described in *NASA Historical Data Book*, I. During the decade 1969-78, the agency underwent several reorganizations affecting both management control over program offices and field installations as well as the staff

structure of the Administrator's office. The changes in NASA administration wrought by the 1978 reorganization included placing both program offices and field installations directly under the Administrator and creating, among others, the positions of Assistant for Special Projects within the Administrator's office, Chief Scientist, General Counsel, and Inspector General. In addition, the role of the Office of Public Affairs and that of the Office of International Affairs was downgraded to an advisory function. The Office of Applications became the Office for Space and Terrestrial Applications, and the Office of Space Flight became the Office for Space Transportation Systems. The Office of University Affairs, the Office of Industry Affairs and Technology Utilization, and the Office of DOD and Interagency Affairs were among the offices that were disbanded.

Mission

The mission of NASA Headquarters was to maintain the overall management of all NASA installations. Headquarters set policies and determined programs and projects; it drew up procedures and performance criteria; and it evaluated and reviewed all aspects of the aerospace programs. Headquarters was responsible for the financing of NASA programs, for contracting, and for establishing security procedures. The NASA Pasadena Office, a component installation of Headquarters, was responsible for administering the contract with the California Institute of Technology for the operation of the Jet Propulsion Laboratory.

**Table 6-2. Capitalized Equipment Value
(at end of fiscal year; in thousands of dollars)**

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
	14,878	32,077	21,171	21,406	38,186	34,656	32,155	11,592	NA	11,764

NA = Not available.

Source: Table 2-15.

**Table 6-3. Personnel
(at end of fiscal year)**

Category	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Paid employees										
Permanent	2,093	2,064	1,800	1,669	1,672	1,628	1,562	1,572	1,556	1,512
Temporary	280	195	139	126	114	145	146	136	63	94
Total paid employees	2,373	2,259	1,939	1,795	1,786	1,773	1,708	1,708	1,619	1,606
Occupational code groups										
(permanent only)										
200, 700, and 900	NA	558	477	447	463	426	403	399	416	413
600 and 500	NA	1,481	1,305	1,210	1,196	1,190	1,148	1,162	1,130	1,086
300	NA	6	2	0	2	3	3	4	4	5
100	NA	19	16	12	11	9	8	7	6	8
Excepted: on duty	255	258	240	232	218	195	184	181	180	174
Minority permanent employees	NA	259	241	213	238	265	280	311	304	306
Female permanent employees	NA	NA	NA	578	582	593	600	616	592	577
Military detailees	20	21	15	13	12	6	6	5	3	8

NA = Not available.

Source: Tables 3-8, 3-11 to 3-13, 3-15, 3-24 to 3-27, 3-32, and 3-37.

Table 6-4. Funding by Fiscal Year
(in millions of dollars)

Appropriation Title	1969	1970	1971	1972	1973	1974	1975	1976 + TQ	1977	1978
Research and development	134.8	149.5	121.3	124.3	104.6	87.6	87.9	109.8	95.7	95.0
Administrative operations ^a	60.8	63.2	64.9	61.6	61.2	63.0	68.9	93.5	78.4	83.4
TOTAL	195.6	212.7	186.2	185.9	165.8	150.6	156.8	203.3	174.1	178.4

^aRenamed Research and program management in 1970.

Source: Tables 4-18 and 4-19.

Table 6-5. Total Procurement Activity by Fiscal Year
(in millions of dollars)

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Net value of contract awards	397.7	422.2	382.8	400.9	412.9	430.2	468.7	520.1	151.2	154.0
Percentage of NASA total	10.9	12.4	13.4	14.6	15.4	15.9	16.3	16.2	4.3	4.2

Source: Table 5-12.

NASA Headquarters Major Functional Organizations

1969

Code A	Office of the Administrator
Code B	Office of the Associate Administrator for Administration
Code C	Office of the Assistant Administrator for Legislative Affairs
Code D	Office of the Associate Administrator for Organization and Management
Code E	Office of the Assistant Administrator for Policy
Code F	Office of the Assistant Administrator for Public Affairs
Code G	Office of the General Counsel
Code I	Office of the Assistant Administrator for International Affairs
Code J	Office of the Assistant Administrator for Special Contracts and Review
Code K	Office of the Assistant Administrator for Industry Affairs
Code L	Office of the Assistant Administrator for Management Development
Code M	Office of the Associate Administrator for Manned Space Flight
Code P	Office of the Assistant Administrator for Program Plans and Analysis
Code R	Office of the Associate Administrator for Advanced Research and Technology
Code S	Office of the Associate Administrator for Space Science and Applications
Code T	Office of the Associate Administrator for Tracking and Data Acquisition
Code U	Office of the Assistant Administrator for Technology Utilization
Code W	Office of the Assistant Administrator for DOD and Inter-agency Affairs
Code X	Executive Secretary
Code Y	Office of the Assistant Administrator for University Affairs
Code Z	GAO Representatives

1978

Code A	Office of the Administrator
Code B	Office of the Associate Administrator/Comptroller
Code C	Office of Legislative Affairs
Code D	Office of the Chief Engineer
Code E	Office of the Associate Administrator for Space and Terrestrial Applications
Code G	Office of the General Counsel
Code H	Office of Procurement
Code L	Office of the Associate Administrator for External Relations
Code M	Office of the Associate Administrator for Space Transportation Systems
Code N	Office of the Associate Administrator for Management Operations
Code P	Office of the Chief Scientist
Code R	Office of the Associate Administrator for Aeronautics and Space Technology
Code S	Office of the Associate Administrator for Space Science
Code T	Office of the Associate Administrator for Tracking and Data Systems
Code U	Office of the Equal Opportunity Programs
Code W	Office of the Inspector General

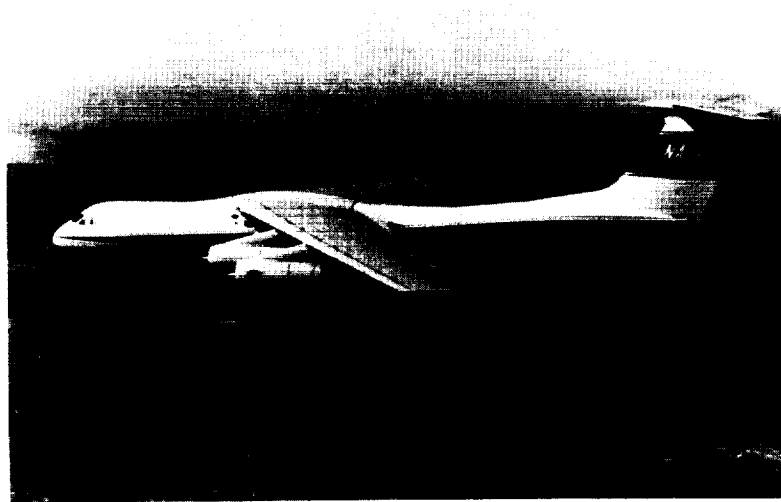
AMES RESEARCH CENTER

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An aerial view of Ames Research Center at Mountain View, California, adjacent to the United States Naval Air Station at Moffett Field, California taken on February 11, 1976.



A C-141A carrier aircraft based at Ames Research Center served as NASA's Airborne Infrared Observatory.

AMES RESEARCH CENTER

Location

The Ames Research Center was located at the south end of San Francisco Bay, thirty-five miles southeast of San Francisco, California. It was adjacent to the United States Naval Air Station at Moffett Field, California.

Director:

Clarence A. Syverston (April 1978-)
Clarence A. Syverston, Acting (August 1977-April 1978)
Hans Mark (February 1969-August 1977)
H. Julian Allen (October 1965-February 1969)
Smith J. DeFrance (October 1958-October 1965)

Deputy Director:

A. Thomas Young (February 1979-)
Clarence A. Syverston (February 1969-April 1978)

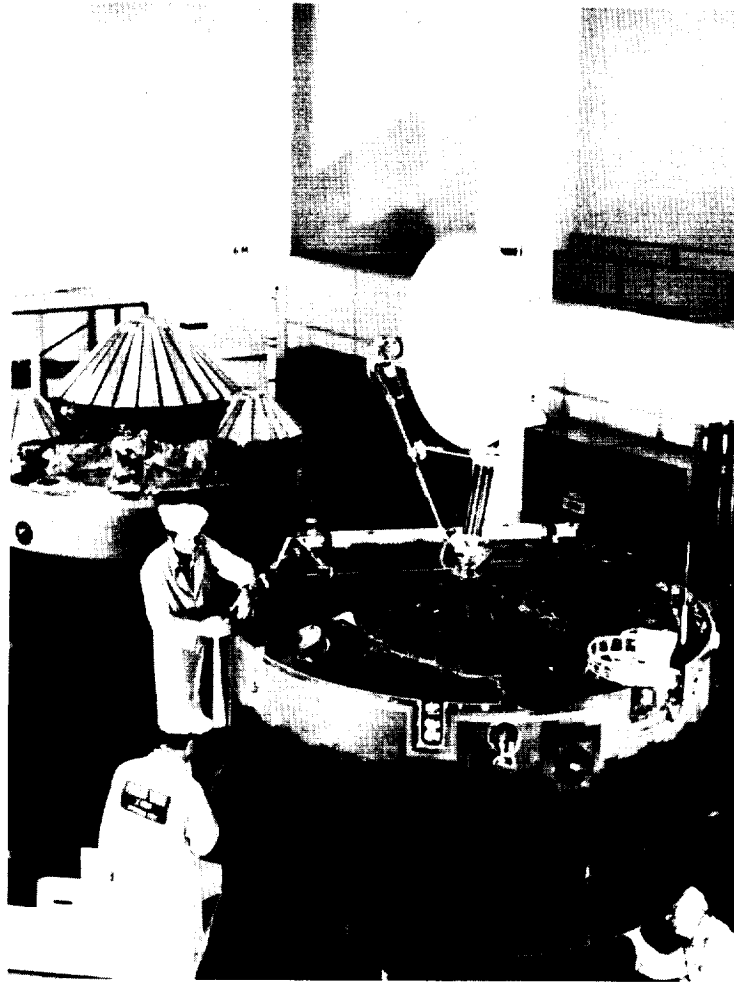
History

The Moffett Field Laboratory began operations as a facility of the National Advisory Committee for Aeronautics (NACA) in early 1941. In 1944 it was renamed the Ames Aeronautical Laboratory in honor of Dr. Joseph S. Ames, chairman of NACA from 1927 to 1939, former president of Johns Hopkins University, and a leading authority on aerodynamics. With the establishment of NASA in 1958, the facility became one of the original NASA installations and was renamed the Ames Research Center. (For a more detailed history of the Ames Research Center, see Chapter VI of *NASA Historical Data Book*, Vol. I.)

Mission

Equipped with some of the most advanced, specialized facilities—such as wind tunnels with speed ranges from subsonic to hypersonic, motion-based flight simulators, and experimental aircraft—the Ames Research Center's mission has been to conduct basic and applied research and to

develop technology in the fields of aeronautics, space science, life science, and spacecraft technology. The Ames Research Center was responsible for the Pioneer and Biosatellite space projects. It contributed to the development of short take-off and landing (STOL) and vertical take-off and landing (VTOL) technology and supported the development of NASA's Space Shuttle program.



Technicians at Ames Research Center work on an orbiter to be launched into orbit around the planet Venus in 1978. Next to it is a Pioneer spacecraft to be used to probe the planet's atmosphere and weather.

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**Table 6-6. Property
(at end of fiscal year; money amounts in thousands of dollars)**

Category	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
In-house and contractor-held property										
Land, in acres	NA	NA	366	374	374	430	430	430	430	430
Number of buildings	NA	NA	129	129	129	123	124	128	133	153
Area of buildings, in square feet	NA	NA	1,886,736	2,006,888	2,060,021	2,114,797	2,109,355	2,336,655	2,350,060	2,433,145
Value of in-house and contractor-held property										
Land	2,372	2,374	2,372	2,373	2,373	2,928	2,928	2,928	2,928	2,928
Buildings	167,146	170,901	175,801	176,188	180,858	183,260	196,541	198,848	204,998	208,900
Other structures and facilities	2,987	3,302	3,894	3,962	4,487	4,496	6,166	7,282	7,922	8,313
Total real property value	172,505	176,577	182,067	182,523	187,718	190,684	205,635	209,058	215,848	220,141
Capitalized equipment value	60,811	73,617	82,684	87,432	100,011	110,274	114,810	115,308	NA	136,331
Contractor-held land, in acres	0	0	0	0	0	0	0	0	0	0
Number of contractor-held buildings	NA	NA	15	13	13	0	0	0	0	0
Contractor-held buildings, in square feet	NA	NA	11,016	6,666	6,666	0	0	0	0	0
Value of contractor-held real property										
Land	0	0	0	0	0	0	0	0	0	0
Buildings	47	NA	158	125	125	0	0	0	0	0
Other structures and facilities	0	0	0	0	0	0	0	0	0	0
Total contractor-held real property	47	NA	158	125	125	0	0	0	0	0

NA = Not available.

Source: Tables 2-5 to 2-15, 2-21, 2-23, 2-25, and 2-27.

Table 6-7. Value of Real Property Components as a Percentage of Total
(total real property value in thousands of dollars)

Component	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Land	1.4	1.3	1.3	1.3	1.3	1.5	1.4	1.4	1.3	1.3
Buildings	96.9	96.8	96.6	96.5	96.3	96.1	95.6	95.1	95.0	94.9
Other structures and facilities	1.7	1.9	2.1	2.2	2.4	2.4	3.0	3.5	3.7	3.8
Total real property value	172,505	176,578	182,067	182,523	187,718	190,684	205,635	209,058	215,848	220,141

Source: Tables 2-11 through 2-14.

Table 6-8. Personnel
(at end of fiscal year)

Category	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Paid employees										
Permanent	1,992	1,953	1,890	1,766	1,708	1,683	1,678	1,646	1,603	1,662
Temporary	125	80	78	78	32	93	76	78	42	29
Total, paid employees	2,117	2,033	1,968	1,844	1,740	1,776	1,754	1,724	1,645	1,691
Occupational code groups (permanent only)										
200, 700, and 900	NA	882	872	841	824	817	810	804	801	832
600 and 500	NA	373	376	378	374	380	390	402	388	400
300	NA	323	297	268	245	231	217	180	174	153
100	NA	375	345	279	265	255	261	260	240	277
Excepted: on duty	47	46	45	37	33	30	26	24	23	25
Minority permanent employees	NA	148	183	166	172	175	201	207	215	243
Female permanent employees	NA	NA	NA	311	301	299	303	313	297	320
Military detailees	13	6	2	4	4	6	5	4	3	3

NA = Not available.

Source: Tables 3-8, 3-11 to 3-13, 3-15, 3-24 to 3-27, 3-32, and 3-37.

Table 6-9. Funding by Fiscal Year
(in millions of dollars)

Appropriation Title	1969	1970	1971	1972	1973	1974	1975	1976 + TQ	1977	1978
Research and development	66.4	70.4	91.9	75.1	73.5	83.2	112.6	171.5	113.1	115.5
Construction of facilities	0.4	0.3	1.1	6.5	3.2	—	3.7	2.6	4.4	—
Administrative operations ^a	34.0	37.6	40.6	42.2	42.4	46.4	48.6	63.9	53.1	57.7
TOTAL	100.8	108.3	133.6	123.8	119.1	129.6	164.9	238.0	170.6	173.2

^aRenamed Research and program management in 1970.

Source: Tables 4-18 to 4-20.

Table 6-10. Total Procurement Activity by Fiscal Year
(in millions of dollars)

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Net value of contract awards	75.4	80.4	103.9	88.5	88.8	104.0	135.1	162.7	140.3	142.5
Percentage of NASA total	2.1	2.4	3.6	3.2	3.3	3.8	4.7	5.1	4.0	3.9

Source: Table 5-12.

**ELECTRONICS RESEARCH
CENTER**

ELECTRONICS RESEARCH CENTER

Location

The Electronics Research Center was located in Cambridge, Massachusetts.

Director:

James C. Elms (October 1966-June 1970)
Winston E. Kock (September 1964-October 1966)

Deputy Director:

Albert J. Kelly (September 1964-June 1967)

History

An electronics research facility for NASA was first considered in 1961. In 1962 NASA proposed in its FY 1964 budget request that such a facility be established in the Greater Boston area. After considerable delays and extensive hearings in Congress, construction funds for the proposed facility were appropriated in the 1965 NASA Authorization Act, signed by President Lyndon B. Johnson on July 11, 1964. The Electronics Research Center formally opened as a NASA installation on September 1, 1964. It was in operation, however, for only about five and one-half years. On December 29, 1969, NASA announced its decision to close the center because of budgetary reductions. The Electronics Research Center ceased operations on June 30, 1970, when it was transferred to the Department of Transportation. (For a more detailed history of the Electronics Research Center, see Chapter VI of *NASA Historical Data Book*, Vol. I.)

Mission

Despite its short-lived existence, the Electronics Research Center carried out its mission to organize, sponsor, and conduct programs to improve the performance and reliability of space and aeronautical electronics systems. The center became the focal point for national aerospace electronics research and was the coordinating institution for nationwide research efforts in this field.

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Table 6-11. Property
(at end of fiscal year; money amounts in thousands of dollars)

Category	1969	1970
In-house and contractor-held property		
Land, in acres	NA	NA
Number of buildings	NA	NA
Area of buildings, in square feet	NA	NA
Value of in-house and contractor-held property		
Land	1,384	1,573
Buildings	0	18,468
Other structures and facilities	4	1,716
Total real property value	1,388	21,757
Capitalized equipment value	20,613	28,255
Contractor-held land, in acres	NA	NA
Number of contractor-held buildings	NA	NA
Contractor-held buildings, in square feet	NA	NA
Value of contractor-held real property		
Land	NA	NA
Buildings	NA	NA
Other structures and facilities	NA	NA
Total contractor-held real property	NA	NA

NA = Not available.

Source: Tables 2-5 to 2-15, 2-21, 2-23, 2-25, and 2-27.

Table 6-12. Value of Real Property Components as a Percentage of Total (total real property value in thousands of dollars)

Component	1969	1970
Land	99.7	7.2
Buildings	0.0	84.9
Other structures and facilities	0.3	7.9
Total real property value	1,388	21,757

Source: Tables 2-11 through 2-14.

Table 6-13. Personnel (at end of fiscal year)

Category	1969	1970
Paid employees		
Permanent	802	592
Temporary	149	0
Total, paid employees	951	592
Occupational code groups (permanent only)		
200, 700, and 900	NA	338
600 and 500	NA	175
300	NA	68
100	NA	11
Excepted: on duty	16	16
Minority permanent employees	NA	20
Female permanent employees	NA	NA
Military detailees	8	0

NA = Not available.

Source: Tables 3-8, 3-11 to 3-13, 3-15, 3-24 to 3-27, 3-32, and 3-37.

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**Table 6-14. Funding by Fiscal Year
(in millions of dollars)**

Appropriation Title	1969	1970
Research and development	21.9	7.2
Construction of facilities	—	—
Administrative operations ^a	17.2	19.1
TOTAL	39.1	26.3

^aRenamed Research and program management in 1970.

Source: Tables 4-18 to 4-20.

**Table 6-15. Total Procurement Activity by Fiscal Year
(in millions of dollars)**

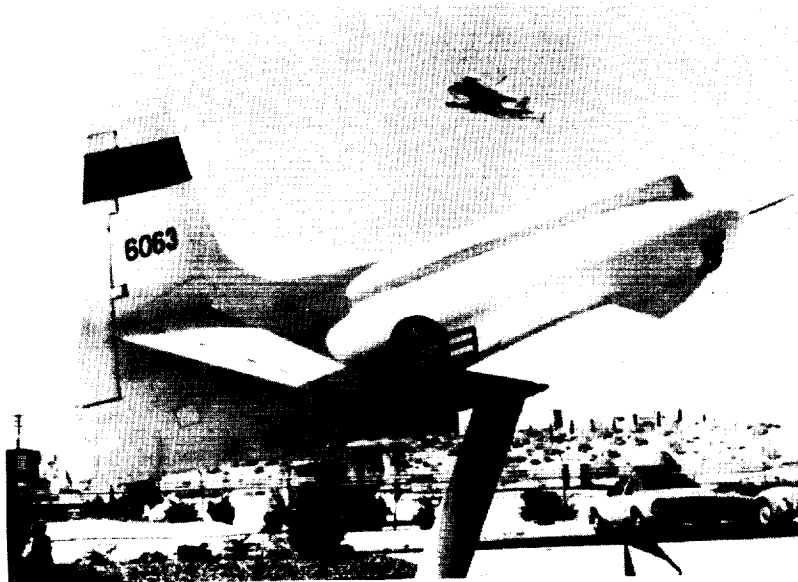
	1969	1970
Net value of contract awards	31.7	11.7
Percentage of NASA total	0.9	0.3

Source: Table 5-12.

**FLIGHT RESEARCH/DRYDEN
FLIGHT RESEARCH CENTER**



The Flight Research Center next to Edwards Air Force Base in California's Mojave Desert has served as a major NASA facility for aeronautical flight research.



The Space Shuttle Orbiter Enterprise flies over the X-1E aircraft at Dryden Flight Research Center. In 1977, the Space Shuttle performed its approach and landing tests here.

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FLIGHT RESEARCH/DRYDEN FLIGHT RESEARCH CENTER

Location

The Flight Research Center was located at Edwards, California, in the Mojave Desert, about sixty miles north of Los Angeles. It was adjacent to Edwards Air Force Base.

Director:

Isaac T. Gilliam (June 1978-)
Isaac T. Williams, 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)

Deputy Director:

Isaac T. Gilliam (August 1977-June 1978)
David R. Scott (August 1973-August 1977)
D. E. Beeler (April 1961-August 1973)

History

Originally a facility of the National Advisory Committee for Aeronautics, the High Speed Flight Station became part of NASA upon NASA's formation in 1958 and was renamed the Flight Research Center in September 1959. In January 1976, NASA again renamed the installation, calling it the Hugh L. Dryden Flight Research Center in honor of Dr. Hugh L. Dryden, an aeronautical research pioneer and the first Deputy Administrator of NASA. (For a more detailed history of the Flight Research Center, see Chapter VI of *NASA Historical Data Book*, Vol. I.)

Mission

The Flight Research Center's mission under NASA was to perform research and evaluation of aeronautical flight. It included tests on problems

of takeoff, reentry, and landing for space flight; low speed, supersonic, and hypersonic flight; and other problems associated with both unmanned and manned flight within and beyond the atmosphere. Among its most important research programs were tests of the X-15 rocket aircraft flight, research on the X-24 heavyweight lifting body, and flight investigations of the Space Shuttle vehicle. The center also carried out a research program involving remotely piloted research vehicles, life sciences studies into aircraft ride qualities, wing-wake-vortex operating studies, and aerodynamic and propulsion system noise studies.

Table 6-16. Property
(at end of fiscal year; money amounts in thousands of dollars)

Category	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
In-house and contractor-held property										
Land, in acres	NA	NA	0	0	0	0	0	0	0	0
Number of buildings	NA	NA	36	36	40	48	54	58	62	62
Area of buildings, in square feet	NA	NA	374,702	374,702	375,189	386,276	399,353	409,573	434,872	446,897
Value of in-house and contractor-held property										
Land	0	0	0	0	0	0	0	0	0	0
Buildings	7,658	7,726	8,147	8,479	8,989	9,175	9,853	10,401	11,972	12,094
Other structures and facilities	2,135	2,222	2,260	2,629	2,571	2,833	3,037	3,286	3,562	3,765
Total real property value	9,793	9,948	10,407	11,108	11,560	12,008	12,890	13,687	15,534	15,859
Capitalized equipment value	36,744	52,914	56,198	47,477	52,882	61,307	63,823	61,437	NA	62,310
Contractor-held land, in acres										
Number of contractor-held buildings	0	0	0	0	0	0	0	0	0	0
Contractor-held buildings, in square feet	NA	NA	0	0	2	0	0	0	0	0
Value of contractor-held real property	NA	NA	0	0	1,100	0	0	0	0	0
Land										
Buildings	0	0	0	0	0	0	0	0	0	0
Other structures and facilities	0	NA	0	0	8	0	0	0	0	0
Total contractor-held real property	0	NA	0	104	8	0	0	0	0	0

NA = Not available.

Source: Tables 2-5 to 2-15, 2-21, 2-23, 2-25, and 2-27.

**Table 6-17. Value of Real Property Components as a Percentage of Total
(total real property value in thousands of dollars)**

Component	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Land	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Buildings	78.2	77.7	78.3	76.3	77.8	76.4	76.4	76.0	77.1	76.3
Other structures and facilities	21.8	22.3	21.7	23.7	22.2	23.6	23.6	24.0	22.9	23.7
mTotal real property value	9,793	9,948	10,407	11,108	11,560	12,008	12,890	13,687	15,534	15,859

Source: Tables 2-11 through 2-14.

**Table 6-18. Personnel
(at end of fiscal year)**

Category	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Paid employees										
Permanent	539	534	532	493	470	484	483	492	510	489
Temporary	62	49	47	46	39	47	61	74	36	25
Total, paid employees	601	583	579	539	509	531	544	566	546	514
Occupational code groups (permanent only)										
200, 700, and 900	NA	196	195	182	177	181	180	191	191	185
600 and 500	NA	94	94	84	76	86	88	91	103	101
300	NA	71	72	224	214	214	213	208	214	201
100	NA	173	171	3	3	3	2	2	2	2
Excepted: on duty	12	13	12	13	12	12	10	12	10	8
Minority permanent employees	NA	34	39	32	30	33	39	45	55	59
Female permanent employees	NA	NA	NA	52	46	55	59	65	69	68
Military detailees	2	9	9	7	7	9	3	2	0	2

NA = Not available.

Source: Tables 3-8, 3-11 to 3-13, 3-15, 3-24 to 3-27, 3-32, and 3-37.

Table 6-19. Funding by Fiscal Year
(in millions of dollars)

Appropriation Title	1969	1970	1971	1972	1973	1974	1975	1976 + TQ	1977	1978
Research and development	16.9	11.3	16.1	14.1	16.0	16.7	17.6	29.8	23.8	18.6
Construction of facilities	—	0.9	—	—	—	—	—	—	0.8	0.4
Administrative operations ^a	9.7	10.3	11.1	11.7	11.7	12.2	13.2	19.7	17.2	18.2
TOTAL	26.6	22.5	27.2	25.8	27.7	28.9	30.8	49.5	41.8	37.2

^aRenamed Research and program management in 1970.

Source: Tables 4-18 to 4-20.

Table 6-20. Total Procurement Activity by Fiscal Year
(in millions of dollars)

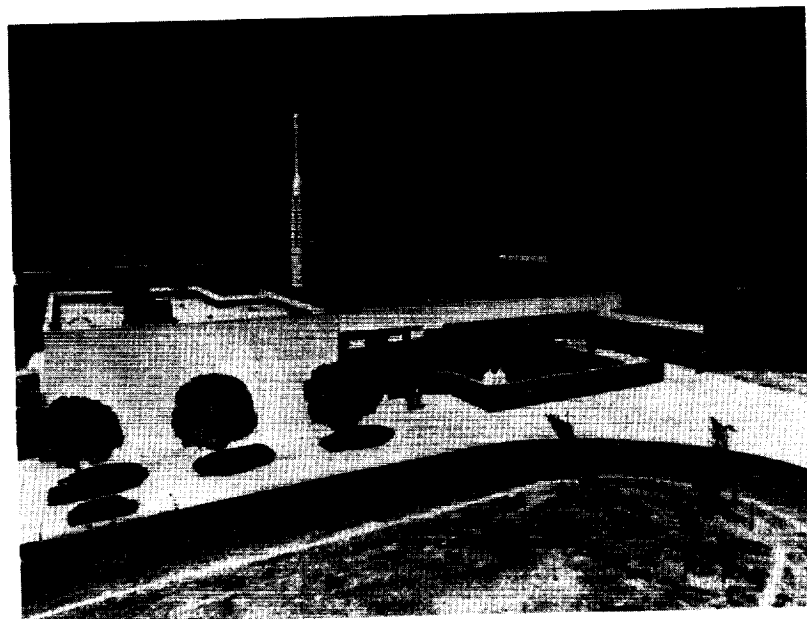
	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Net value of contract awards	12.3	18.1	16.7	18.7	14.7	19.5	21.8	26.9	32.1	23.5
Percentage of NASA total	0.3	0.5	0.6	0.7	0.5	0.7	0.8	0.8	0.9	0.6

Source: Table 5-12.

**GODDARD SPACE FLIGHT
CENTER**



Aerial view of NASA's Goddard Space Flight Center in Greenbelt, Md. as of 1973.



NASA Visitors Center in Greenbelt, Md. where the public can view demonstrations of many NASA programs.

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GODDARD SPACE FLIGHT CENTER

Location

The Goddard Space Flight Center was located in Greenbelt, Maryland, fifteen miles northeast of Washington, D.C. In addition to its main site, Goddard leased 620 acres of land, located nearby, 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.

Director:

Robert S. Cooper (August 1976-)
John F. Clark (May 1966-August 1976)
Harry J. Goett (September 1959-July 1965)

Deputy Director:

Robert E. Smylie (December 1976-)
Donald P. Hearsh (April 1970-September 1975)
Vacant (July 1968-April 1970)
John W. Townsend (July 1965-July 1968)

Associate Director:

Eugene W. Wasielewski (October 1960-August 1972)

History

In 1958 Congress authorized construction of a NASA "space projects center" in the vicinity of Washington, D.C. Originally named the Beltsville Space Center, the facility officially opened in January 1959. In May 1959, it was renamed the Goddard Space Flight Center in honor of Dr. Robert H. Goddard, the father of American rocketry. Initially, the center was housed at the Naval Research Laboratory until construction of its own facility was complete, on a site that was part of the Department of Agriculture's Beltsville Agricultural Research Center. The Goddard Space Flight

Center was officially dedicated in its new location in March 1961. (For a more detailed history of the Goddard Space Flight Center, see Chapter VI of *NASA Historical Data Book*, Vol. I.)

Mission

The Goddard Space Flight Center was responsible for automated spacecraft and sounding rocket experiments in support of basic and applied research. Research programs were carried out in such disciplines as aeronomy, energetic particles and fields, ionospheric physics, astronomy, planetary atmospheres, geophysics, and solar physics. The center also managed the development of meteorological and advanced technology satellites, including the Earth Resources Technology Satellite, Nimbus, Applications Technology Satellite F, Atmosphere Explorer, Interplanetary Monitoring Platform, Small Astronomy Satellite, and Synchronous Meteorological Satellite.



A 30-ft Apollo Unified S-Band System antenna and operating console at Goddard's Network Test and Training Facility at Goddard Space Flight Center.

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Table 6-21. Property
(at end of fiscal year; money amounts in thousands of dollars)

Category	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
In-house and contractor-held property										
Land, in acres	NA	NA	12,003	12,003	12,003	12,003	12,003	12,003	12,003	12,003
Number of buildings	NA	NA	262	286	278	278	276	268	260	262
Area of buildings, in square feet	NA	NA	2,730,170	2,776,199	2,767,353	2,758,596	2,718,910	2,719,150	2,698,057	2,698,348
Value of in-house and contractor-held property										
Land	1,544	1,640	1,647	1,647	1,661	1,661	1,661	1,661	1,675	1,675
Buildings	86,019	87,283	88,224	91,628	91,769	92,607	91,830	97,108	98,377	101,115
Other structures and facilities	53,565	62,798	62,027	64,147	62,329	62,067	58,670	58,906	56,169	57,840
Total real property value	141,128	151,721	151,898	157,422	155,759	156,335	152,161	157,675	156,221	160,630
Capitalized equipment value	421,902	474,147	507,499	521,949	534,371	555,188	549,170	484,554	NA	521,134
Contractor-held land, in acres										
Number of contractor-held buildings	NA	NA	3	3	3	1	1	1	1	1
Contractor-held buildings, in square feet	NA	NA	2,352	2,352	2,352	80	80	80	80	80
Value of contractor-held real property										
Land	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Buildings	88	NA	88	88	88	1	1	1	1	1
Other structures and facilities	45	NA	45	45	45	45	45	45	45	45
Total contractor-held real property	133	NA	133	133	133	46	46	46	46	46

NA = Not available.

Source: Tables 2-5 to 2-15, 2-21, 2-23, 2-25, and 2-27.

**Table 6-22. Value of Real Property Components as a Percentage of Total
(total real property value in thousands of dollars)**

Component	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Land	1.1	1.1	1.1	1.0	1.1	1.1	1.1	1.0	1.1	1.0
Buildings	61.0	57.5	58.1	58.2	58.9	59.2	60.3	61.6	63.0	63.0
Other structures and facilities	37.9	41.4	40.8	40.8	40.0	39.7	38.6	37.4	35.9	36.0
Total real property value	141,128	151,721	151,898	157,422	155,759	156,335	152,161	157,675	156,221	160,630

Source: Tables 2-11 through 2-14.

**Table 6-23. Personnel
(at end of fiscal year)**

Category	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Paid employees										
Permanent	4,129	4,411	4,404	4,061	3,802	3,808	3,750	3,676	3,607	3,570
Temporary	166	76	55	117	50	128	121	132	59	71
Total, paid employees	4,295	4,487	4,459	4,178	3,852	3,936	3,871	3,808	3,666	3,641
Occupational code groups										
(permanent only)										
200, 700, and 900	NA	1,956	1,975	1,891	1,784	1,766	1,765	1,738	1,718	1,757
600 and 500	NA	1,284	1,340	1,207	1,158	1,194	1,174	1,145	1,149	1,154
300	NA	990	912	796	704	694	657	634	584	513
100	NA	181	177	167	156	154	154	159	156	146
Excepted: on duty	67	67	67	66	55	50	45	46	44	42
Minority permanent employees	NA	290	253	247	234	269	282	300	352	382
Female permanent employees	NA	NA	NA	701	654	714	706	694	720	750
Military detailees	9	8	9	1	0	0	0	0	0	0

NA = Not available.

Source: Tables 3-8, 3-11 to 3-13, 3-15, 3-24 to 3-27, 3-32, and 3-37.

Table 6-24. Funding by Fiscal Year*
(in millions of dollars)

Appropriation Title	1969	1970	1971	1972	1973	1974	1975	1976 + TQ	1977	1978
Research and development	422.3	430.7	469.4	458.7	490.3	401.1	386.5	462.4	381.2	492.9
Construction of facilities	—	0.7	1.4	0.7	0.6	1.3	1.9	—	—	4.5
Administrative operations ^a	73.2	86.4	93.1	96.5	95.7	97.3	104.8	136.6	114.3	123.5
TOTAL	495.5	517.8	563.9	555.9	586.6	499.7	493.2	599.0	495.5	620.9

^aRenamed Research and program management in 1970.

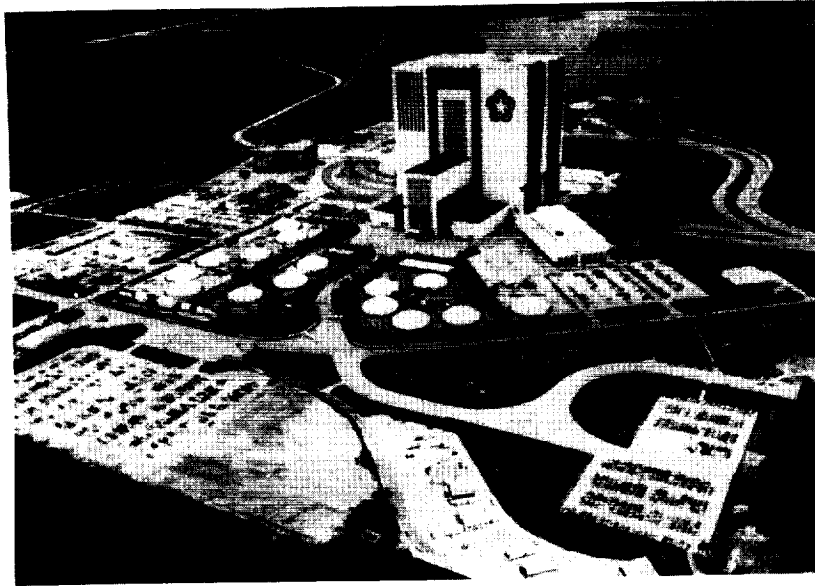
Source: Tables 4-18 to 4-20.

Table 6-25. Total Procurement Activity by Fiscal Year
(money amounts in millions of dollars)

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Net value of contract awards	435.6	401.5	480.0	433.9	405.1	363.6	393.3	394.3	520.7	594.6
Percentage of NASA total	11.9	11.8	16.8	15.8	15.2	13.4	13.7	12.3	14.7	16.2

Source: Table 5-12.

KENNEDY SPACE CENTER



Aerial photograph of Kennedy Space Center showing some of the facilities at KSC's Launch Complex 39. The tall building, dominating the view, is the Vehicle Assembly Building; the low structure to the right of it is the Launch Control Center. The 15,000 foot long runway is in the background to the left.



A launching of a Viking II spacecraft aboard a Titan-Centaur rocket on September 19, 1975 to begin a half-billion mile, 11-month journey through space to explore the planet Mars.

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KENNEDY SPACE CENTER

Location

The John F. Kennedy Space Center was located on the east coast of Florida, immediately north and west of Cape Canaveral. It lay approximately 150 miles south of Jacksonville and fifty miles east of Orlando.

Director:

Lee R. Scherer (January 1975-)
Kurt H. Debus (March 1962-October 1974)

Deputy Director:

Gerald D. Griffin (July 1977-August 1981)
Miles Ross (June 1970-May 1977)

Deputy Director Center Management:

Albert F. Siepert (February 1963-December 1969)

Deputy Director Center Operations:

Miles Ross (June 1967-December 1969)

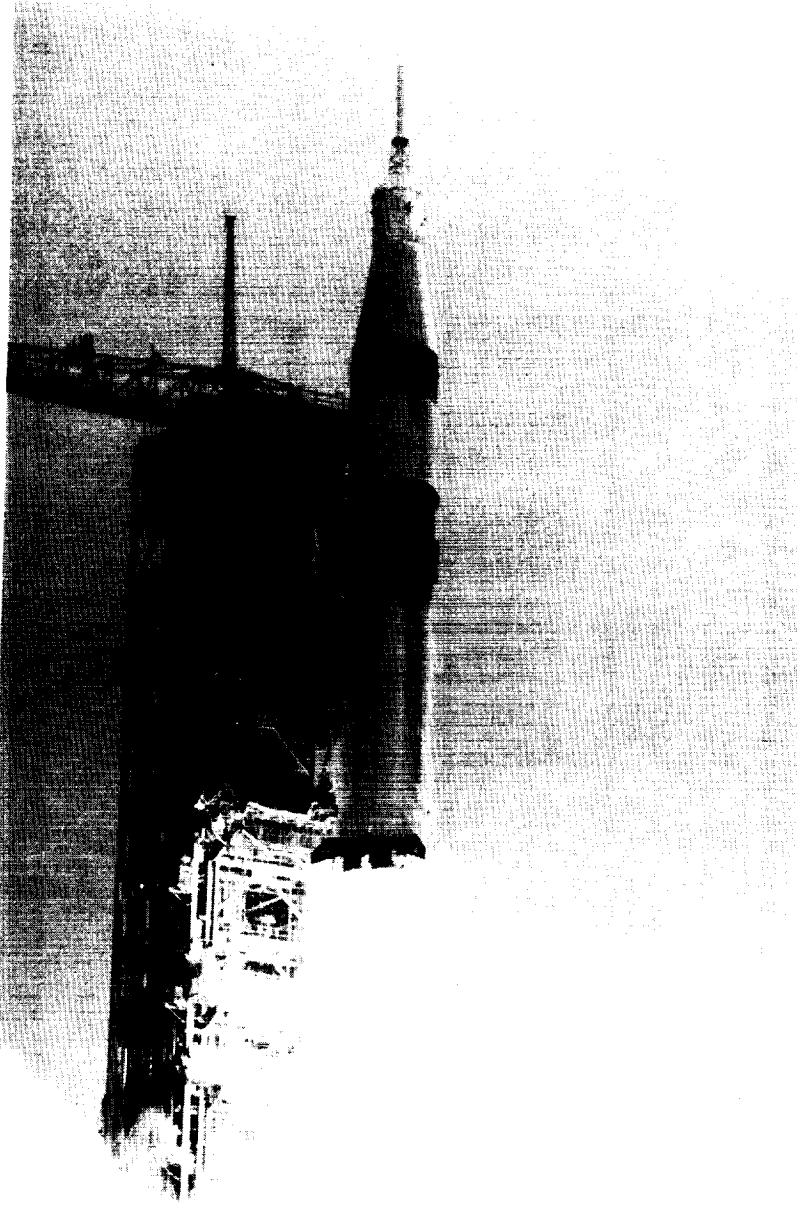
History

The present site of the Kennedy Space Center has been used as a missile launching ground since the late 1940s. Called the Long Range Proving Ground, it became in 1951 the site for test flights of the United States Army's Redstone intermediate-range ballistic missile. In January 1953, the site was renamed the Missile Firing Laboratory, and in July 1960 it became part of NASA's Marshall Space Flight Center's Launch Operations Directorate. The Launch Operations Directorate was disbanded in March 1962. In July 1962, the Cape Canaveral site was established as a separate NASA installation and renamed the Launch Operations Center. In November 1963, less than a week after the death of President John F. Kennedy, President Lyndon B. Johnson renamed it the John F. Kennedy Space Center. In addition to the Cape Canaveral site, since January 1963 the Launch Operations Center also managed and operated the Merritt Island Launch Area adjacent to Cape Canaveral. In July 1965, the headquarters of the Kennedy Space Center moved to new facilities on Merritt Island.

and the whole complex was designated the Kennedy Space Center. (For a more detailed history of the Kennedy Space Center, see Chapter VI of *NASA Historical Data Book*, Vol. I.)

Mission

The Kennedy Space Center has been the primary NASA center charged with the testing and launching of space vehicles. It was responsible for the launching of manned and unmanned vehicles not only at the Kennedy Space Center but also at the Air Force Eastern Test Range and the Air Force Western Test Range. Among its greatest successes in the 1969-78 decade were the Apollo lunar landings, the joint Soviet-American Apollo/Soyuz launches, and participation in the development of the Space Shuttle program. All launching of unmanned space vehicles at the Air Force Western Test Range were under the management and supervision of the Western Test Range Operations Division, a component installation of the Kennedy Space Center located at Vandenberg Air Force Base in California.



Astronauts Charles Conrad, Jr., Dr. Joseph P. Kerwin, and Paul J. Wertz lifting off aboard a Saturn IB rocket from Kennedy Space Center's launch site on May 25, 1973. They will dock their spacecraft with a Skylab space station orbiting the Earth.

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**Table 6-26. Property
(at end of fiscal year; money amounts in thousands of dollars)**

Category	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
In-house and contractor-held property										
Land, in acres	NA	NA	84,021	84,031	84,031	84,031	82,944	82,943	82,943	82,943
Number of buildings	NA	NA	538	484	470	413	405	350	333	344
Area of buildings, in square feet	NA	NA	5,232,145	5,049,372	5,172,427	5,131,877	5,133,170	5,134,774	5,121,605	5,297,528
Value of in-house and contractor-held property										
Land	71,018	72,173	72,173	72,171	72,171	72,172	71,345	71,345	71,345	71,345
Buildings	281,739	285,847	290,392	286,274	291,191	291,853	297,723	297,983	299,588	332,226
Other structures and facilities	423,552	415,583	420,793	350,028	317,001	310,336	310,931	334,938	310,473	314,580
Total real property value	776,309	773,603	783,358	708,473	680,363	674,361	679,999	704,266	681,406	718,151
Capitalized equipment value	169,769	222,097	464,972	588,968	562,581	616,791	589,556	773,035	NA	494,442

NA = Not available.

Source: Tables 2-5 to 2-15, 2-21, 2-23, 2-25, and 2-27.

**Table 6-27. Value of Real Property Components as a Percentage of Total
(total real property value in thousands of dollars)**

Component	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Land	9.1	9.3	9.2	10.2	10.6	10.7	10.5	10.1	10.5	9.9
Buildings	36.3	37.0	37.1	40.4	42.8	43.3	43.8	42.3	44.0	46.3
Other structures and facilities	54.6	53.7	53.7	49.4	46.6	46.0	45.7	47.6	45.5	43.8
Total real property value	776,309	773,603	783,358	708,473	680,363	674,361	679,999	704,266	681,406	718,151

Source: Tables 2-11 through 2-14.

**Table 6-28. Personnel
(at end of fiscal year)**

Category	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Paid employees										
Permanent	2,877	2,762	2,600	2,463	2,403	2,309	2,259	2,250	2,215	2,182
Temporary	181	133	104	105	113	99	118	154	55	52
Total, paid employees	3,058	2,895	2,704	2,568	2,516	2,408	2,377	2,404	2,270	2,234
Occupational code groups										
(permanent only)										
200, 700, and 900	NA	1,338	1,308	1,278	1,259	1,241	1,239	1,237	1,232	1,216
600 and 500	NA	995	908	828	806	756	749	763	748	754
300	NA	426	381	354	334	308	266	246	232	209
100	NA	3	3	3	4	4	5	4	3	3
Excepted: on duty	39	38	38	38	38	34	30	29	28	27
Permanent minority employees	NA	55	53	48	59	72	93	120	135	140
Permanent female employees	NA	NA	NA	427	420	407	402	426	424	435
Military detailees	5	2	0	0	0	1	1	5	6	5

NA = Not available.

Source: Tables 3-8, 3-11 to 3-13, 3-15, 3-24 to 3-27, 3-32, and 3-37.

Table 6-29. Funding by Fiscal Year
(in millions of dollars)

Appropriation Title	1969	1970	1971	1972	1973	1974	1975	1976 + TQ	1977	1978
Research and development	385.5	273.4	179.9	159.6	182.0	111.6	98.5	136.0	138.9	170.0
Construction of facilities	7.4	10.5	0.3	15.6	9.7	-	-	-	2.6	1.7
Administrative operations ^a	95.8	97.6	98.3	92.6	92.4	94.4	95.9	128.0	110.1	116.3
TOTAL	488.7	381.5	278.5	267.8	284.1	206.0	194.4	264.0	251.6	288.0

^aRenamed Research and program management in 1970.

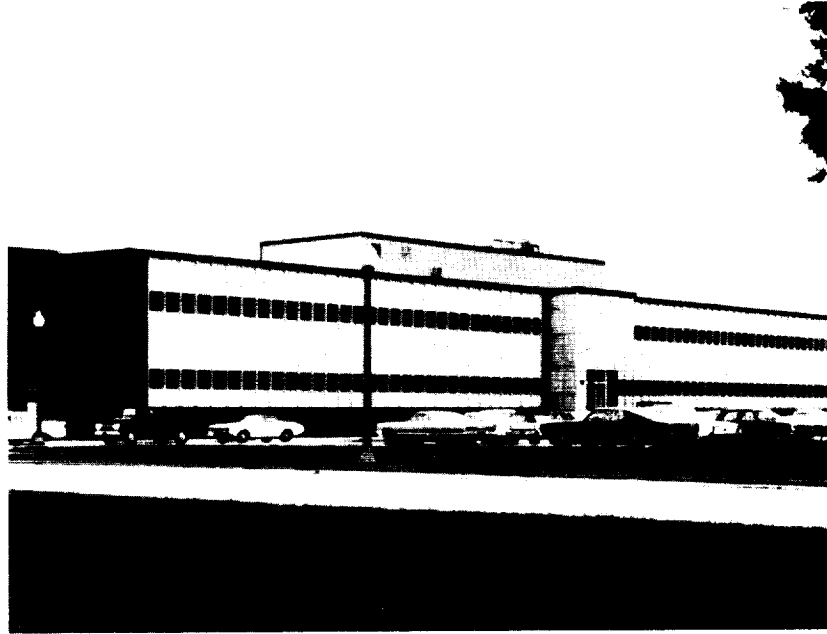
Source: Tables 4-18 to 4-20.

Table 6-30. Total Procurement Activity by Fiscal Year
(in millions of dollars)

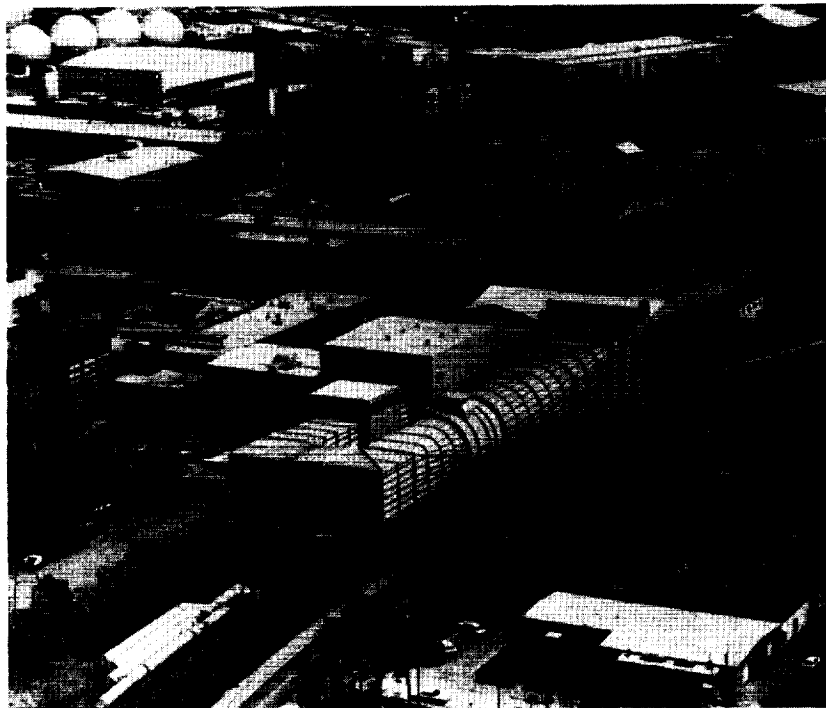
	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Net value of contract awards	456.6	327.9	237.1	215.0	217.7	180.6	169.0	190.8	239.1	279.6
Percentage of NASA total	12.5	9.6	8.3	7.9	8.1	6.7	5.9	6.0	6.8	7.6

Source: Table 5-12.

LANGLEY RESEARCH CENTER



Flight Control Research Facility at NASA's Langley Research Center in Hampton, Va. was built in 1968 to be used for guidance and control research to support flight missions.



The Langley 14-by-22-Ft Subsonic Tunnel (formerly the 4-by-7-Meter Tunnel) is used for low-speed testing of powered and unpowered models of various fixed- and rotary wing civil and military aircraft. The tunnel is powered by an 8000-hp electrical drive system.

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LANGLEY RESEARCH CENTER

Location

The Langley Research Center was located at Langley Field in Hampton, Virginia, approximately 150 miles southeast of Washington, D.C.

Director:

Donald P. Heath (September 1975-)
Edgar M. Cortright (May 1968-September 1975)
Floyd L. Thompson (May 1960-May 1968)
Henry J. E. Reid (October 1958-May 1960)

Deputy Director:

Oran W. Nicks (November 1970-)
Charles J. Donlan (November 1967-May 1968)

Associate Director:

J. E. Duberg (1968-)
Charles J. Donlan (March 1961-November 1967)

History

In 1916 a site near Hampton, Virginia, was selected as the National Advisory Committee for Aeronautics's (NACA) experimental air station. It was called Langley Field in honor of Dr. Samuel P. Langley, the third Secretary of the Smithsonian Institution and a pioneer aviator, scientist, and astronomer. Construction of NACA's first field station at Langley Field began a year later, and in 1920 the new facility was named the Langley Memorial Aeronautical Laboratory. It was the only NACA laboratory until 1940. In October 1958, the laboratory became an installation of NASA and was renamed the Langley Research Center. (For a more detailed history of the Langley Research Center, see Chapter VI of *NASA Historical Data Book*, Vol. I.)

Mission

Throughout its existence, the Langley Research Center has conducted research in the fields of aeronautical and space flight. Much of the research

work has been dedicated toward the development of advanced concepts and technology for future aircraft, both military and civilian. The Langley Research Center had management responsibility for NASA's Lunar Orbiter and Viking Mars Lander programs. It provided support for the unmanned spacecraft programs and many ground-based research programs intended to improve the performance and capability of space vehicles.



Shuttle in transonic dynamics tunnel.

Table 6-31. Property
(at end of fiscal year; money amounts in thousands of dollars)

Category	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
In-house and contractor-held property										
Land, in acres	540	540	540	540	540	540	540	898	898	898
Number of buildings	NA	NA	155	156	144	144	142	142	144	152
Area of buildings, in square feet	NA	NA	1,933,184	1,938,041	1,997,466	2,042,659	2,057,768	2,057,768	2,105,510	2,153,591
Value of in-house and contractor-held property										
Land	116	116	116	116	116	116	116	162	162	162
Buildings	121,397	121,891	126,472	125,024	123,301	127,837	132,810	132,810	139,340	144,442
Other structures and facilities	134,449	143,955	145,887	149,007	150,833	153,628	155,400	155,451	165,445	189,847
Total real property value	255,962	265,962	272,475	274,147	274,250	281,581	288,326	288,423	304,947	334,451
Capitalized equipment value	114,575	122,671	140,009	138,525	145,256	166,062	169,343	145,903	NA	163,301
Contractor-held land, in acres										
Number of contractor-held buildings	NA	NA	110	110	110	110	110	110	110	110
Contractor-held buildings, in square feet	NA	NA	1	1	1	1	1	1	1	1
Value of contractor-held real property	NA	NA	65,990	65,990	65,990	65,990	65,990	65,990	65,990	65,990
Land										
Buildings	6	NA	6	6	6	6	6	6	6	6
Other structures and facilities	15,217	NA	15,478	15,404	15,404	15,404	15,404	15,404	15,404	14,400
Total contractor-held real property	15,248	NA	15,509	15,435	15,435	15,435	15,435	15,486	15,486	14,482

NA = Not available.

Source: Tables 2-5 to 2-15, 2-21, 2-23, 2-25, and 2-27.

Table 6-32. Value of Real Property Components as a Percentage of Total*
(total real property value in thousands of dollars)

Component	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Land	*	*	*	*	*	*	*	*	*	*
Buildings	47.4	45.8	46.4	45.6	45.0	45.4	46.1	46.1	45.7	43.2
Other structures and facilities	52.5	54.1	53.5	54.4	55.0	54.6	53.9	53.9	54.3	56.8
Total real property value	255,962	265,962	272,475	274,147	274,250	281,581	288,326	288,423	304,947	334,451

* = Less than 0.05%.

*Figures may not add to 100.0% due to rounding.

Source: Tables 2-11 through 2-14.

**Table 6-33. Personnel
(at end of fiscal year)**

Category	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Paid employees										
Permanent	3,912	3,853	3,740	3,455	3,305	3,355	3,315	3,233	3,118	3,065
Temporary	175	117	90	137	84	149	157	174	89	102
Total, paid employees	4,087	3,970	3,830	3,592	3,389	3,504	3,472	3,407	3,207	3,167
Occupational code groups										
(permanent only)										
200, 700, and 900	NA	1,610	1,606	1,515	1,459	1,468	1,441	1,426	1,400	1,360
600 and 500	NA	578	562	528	524	530	544	542	538	548
300	NA	1,401	1,480	1,352	1,287	1,306	1,288	1,219	1,139	1,114
100	NA	264	92	60	35	51	42	46	41	43
Excepted: on duty	63	64	62	54	52	42	32	29	29	30
Permanent minority employees	NA	179	157	148	160	191	213	229	231	248
Permanent female employees	NA	NA	NA	472	463	481	490	495	490	500
Military detailees	4	2	1	0	0	0	1	1	1	0

NA = Not available.

Source: Tables 3-8, 3-11 to 3-13, 3-15, 3-24 to 3-27, 3-32, and 3-37.

Table 6-34. Funding by Fiscal Year
(in millions of dollars)

Appropriation Title	1969	1970	1971	1972	1973	1974	1975	1976 + TQ	1977	1978
Research and development	84.5	103.4	102.2	202.2	241.4	288.2	171.0	195.5	143.0	157.1
Construction of facilities	—	5.6	0.6	—	4.3	4.0	3.2	1.6	6.1	1.6
Administrative operations ^a	63.0	69.8	75.3	80.2	78.6	83.3	88.6	115.7	94.7	100.7
TOTAL	147.5	178.8	178.1	282.4	324.3	375.5	262.8	312.8	243.8	259.4

^aRenamed Research and program management in 1970.

Source: Tables 4-18 to 4-20.

Table 6-35. Total Procurement Activity by Fiscal Year
(in millions of dollars)

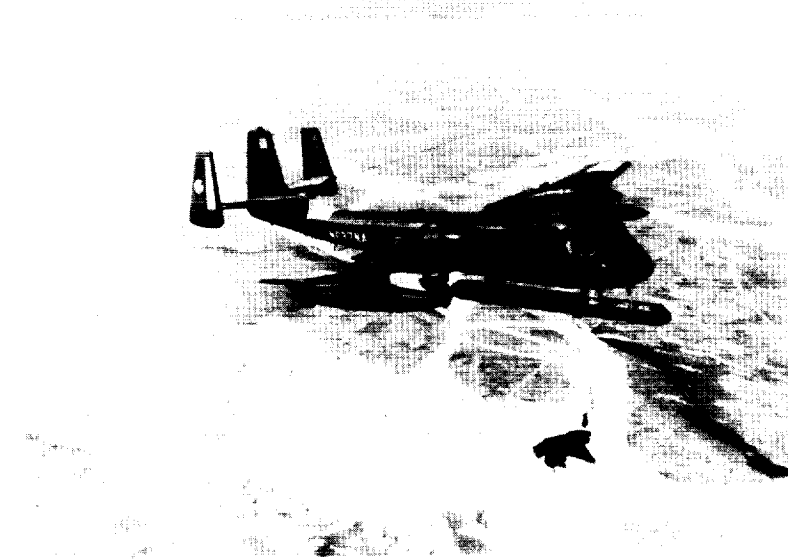
	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Net value of contract awards	90.4	119.2	122.9	220.6	248.2	292.3	231.0	156.6	206.9	211.3
Percentage of NASA total	2.5	3.5	4.3	8.1	9.3	10.8	8.1	4.9	5.8	5.8

Source: Table 5-12.

LEWIS RESEARCH CENTER



Lewis Research Center in Cleveland, Ohio consists of laboratory buildings, shops, wind tunnels, space environmental tanks, and other facilities built for conducting research on advanced propulsion systems or power-generating systems.



The OV-10B aircraft pictured here is used by scientists at Lewis Research Center to map the distribution and patterns of ice on the Great Lakes. An example of NASA activity, other than space exploration, this effort is part of a federally-funded Winter Navigation Program.

LEWIS RESEARCH CENTER

Location

The Lewis Research Center was located in Cleveland, Ohio, adjacent to the Cleveland Airport.

Director:

John F. McCarthy (October 1978-)
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)

Deputy Director:

Bernard Lubarsky (1974-)
Eugene J. Manganiello (December 1961-1972)

Deputy Director Center Management:

Henry C. Barnett (1973-1974)

Deputy Director Center Technology:

Bernard Lubarsky (1973-1974)

History

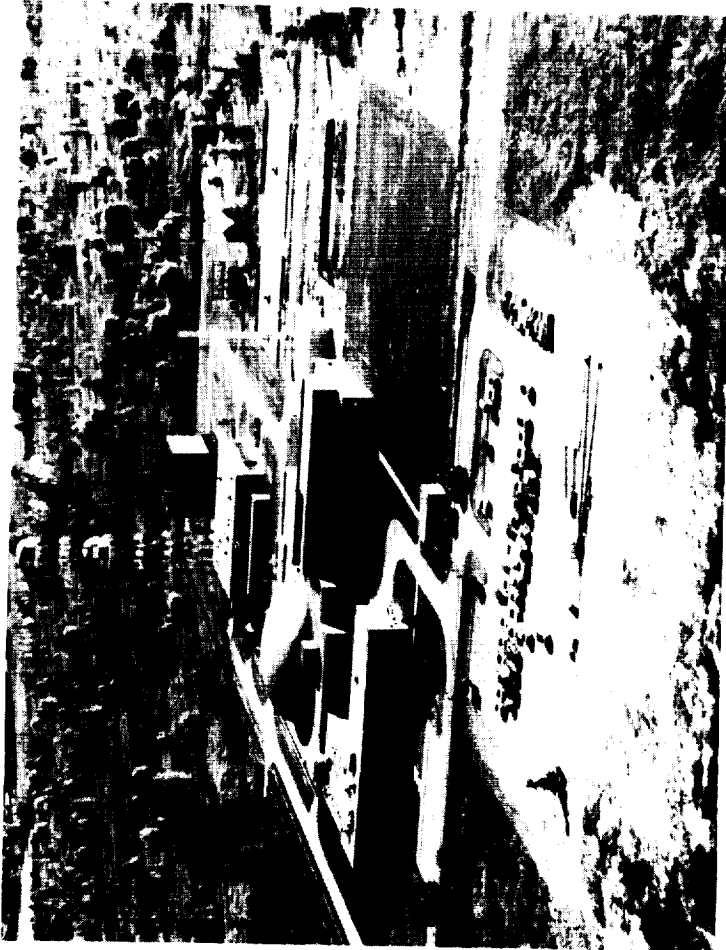
Authorized by Congress in 1940, the National Advisory Committee for Aeronautics' (NACA's) Aircraft Engine Research Laboratory began operations in 1942. In 1948 this flight propulsion laboratory, adjacent to the Cleveland Airport, was renamed the Lewis Flight Propulsion Laboratory in honor of Dr. George W. Lewis, a leading aeronautical engineer who served as NACA's Director of Aeronautical Research from 1919 to 1947. In 1958 the facility became a NASA installation and was renamed the Lewis Research Center. (For a more detailed history of the Lewis Research Center, see Chapter VI of *NASA Historical Data Book*, Vol. I.)

Mission

The Lewis Research Center has been responsible for research and development on advanced propulsion and space power systems. Its research

programs included work on turbojet engines, supersonic aircraft, high-energy chemicals, electric rocket engines, and experiments on converting chemical and solar energy into electricity. It has used its wind tunnels, space environmental tanks, and other special facilities to simulate flight conditions. Among major programs at the Lewis Flight Center were management responsibilities for the Agena and Centaur launch vehicle stages.

A component installation of the Lewis Research Center, the Plum Brook Station, located on Lake Erie near Sandusky, Ohio, performed large-scale testing of nuclear propulsion components in NASA's nuclear test reactor and conducted full-scale static and dynamic tests of completed space vehicles.



The Plum Brook Reactor within the domed structure and the adjacent facilities are part of the Plum Brook Station in Sandusky, Ohio, a component installation of Lewis Research Center.

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Table 6-36. Property
(at end of fiscal year; money amounts in thousands of dollars)

Category	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
In-house and contractor-held property										
Land, in acres	NA	NA	15,760	15,760	8,350	8,398	8,402	8,402	8,402	8,357
Number of buildings	NA	NA	289	292	262	264	263	264	265	259
Area of buildings, in square feet	NA	NA	3,264,126	3,247,008	3,166,684	3,172,115	3,169,856	3,161,247	3,162,721	3,123,410
Value of in-house and contractor-held property										
Land	1,696	3,391	3,739	3,692	3,624	3,657	3,661	3,662	3,662	3,651
Buildings	189,287	191,979	197,673	198,193	200,097	202,332	206,375	213,168	214,690	215,729
Other structures and facilities	60,975	61,493	62,229	63,164	70,989	73,113	74,588	74,983	76,034	76,819
Total real property value	251,958	256,863	263,641	265,049	274,710	279,102	284,624	291,813	294,386	296,199
Capitalized equipment value	99,970	122,032	122,657	139,478	139,525	142,504	123,300	118,544	NA	120,441
Contractor-held land, in acres	NA	NA	6,871	6,868	0	0	0	0	0	0
Number of contractor-held buildings	NA	NA	15	17	0	0	0	0	0	0
Contractor-held buildings, in square feet	NA	NA	87,236	68,106	0	0	0	0	0	0
Value of contractor-held real property										
Land	99	NA	99	79	0	0	0	0	0	0
Buildings	4,240	NA	4,164	3,051	0	0	0	0	0	0
Other structures and facilities	4,007	NA	3,651	3,649	0	0	0	0	0	0
Total contractor-held real property	8,346	NA	7,914	6,779	0	0	0	0	0	0

NA = Not available.

Source: Tables 2-5 to 2-15, 2-21, 2-23, 2-25, and 2-27.

Table 6-37. Value of Real Property Components as a Percentage of Total*
(total real property value in thousands of dollars)

Component	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Land	0.8	1.3	1.4	1.4	1.3	1.3	1.3	1.3	1.2	1.2
Buildings	75.0	74.7	75.0	74.8	72.8	72.5	72.5	73.0	72.9	72.8
Other structures and facilities	24.2	23.9	23.6	23.8	25.8	26.2	26.2	25.7	25.8	25.9
Total real property value	251,958	256,863	263,641	265,049	274,710	279,102	284,624	291,813	294,386	296,199

*Figures may not add to 100.0% due to rounding.

Source: Tables 2-11 through 2-14.

Table 6-38. Personnel
(at end of fiscal year)

Category	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Paid employees										
Permanent	4,268	4,200	4,036	3,796	3,343	3,088	3,042	3,025	2,994	2,899
Temporary	131	40	47	70	25	84	139	143	67	65
Total, paid employees	4,399	4,240	4,083	3,866	3,368	3,172	3,181	3,168	3,061	2,964
Occupational code groups										
(permanent only)										
200, 700, and 900	NA	1,778	1,736	1,628	1,458	1,363	1,343	1,348	1,339	1,314
600 and 500	NA	573	542	545	509	479	481	476	486	475
300	NA	345	338	324	273	272	271	246	244	236
100	NA	1,504	1,420	1,299	1,103	974	947	955	925	874
Excepted: on duty	51	51	51	48	39	32	28	28	28	28
Permanent minority employees	NA	205	164	144	129	126	127	143	157	159
Permanent female employees	NA	NA	NA	392	351	344	346	352	370	374
Military detailees	19	10	5	0	0	0	0	0	0	0

NA = Not available.

Source: Tables 3-8, 3-11 to 3-13, 3-15, 3-24 to 3-27, 3-32, and 3-37.

Table 6-39. Funding by Fiscal Year
(in millions of dollars)

Appropriation Title	1969	1970	1971	1972	1973	1974	1975	1976 + TQ	1977	1978
Research and development	109.1	113.9	128.7	138.3	198.4	182.1	129.9	204.5	148.6	133.6
Construction of facilities	—	0.3	0.7	0.8	10.0	—	3.7	—	2.7	0.8
Administrative operations*	67.9	73.9	78.0	82.5	81.2	79.6	80.3	102.4	83.3	84.7
TOTAL	177.0	188.1	207.4	221.6	289.6	261.7	213.9	306.9	234.6	219.1

*Renamed Research and program management in 1970.

Source: Tables 4-18 to 4-20.

Table 6-40. Total Procurement Activity by Fiscal Year
(in millions of dollars)

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Net value of contract awards	119.8	149.5	175.4	196.1	231.9	259.1	243.4	237.1	242.5	237.0
Percentage of NASA total	3.3	4.4	6.1	7.2	8.7	9.5	8.5	7.4	6.9	6.5

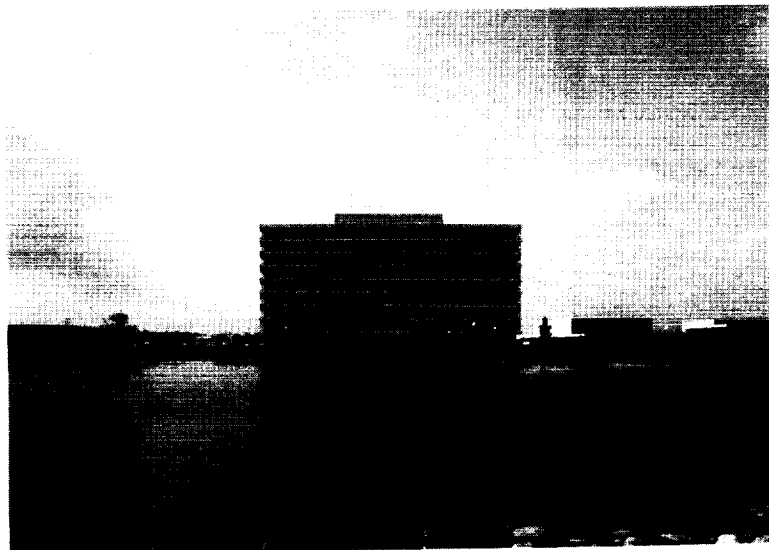
Source: Table 5-12.

MANNED SPACECRAFT/ JOHNSON SPACE CENTER

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Aerial view of Manned Spacecraft Center near Houston, Texas, a center for human spaceflight.



A close-up of the Project Management Building at Manned Spacecraft Center.

MANNED SPACECRAFT/ JOHNSON SPACE CENTER

Location

The Manned Spacecraft Center was located at Clear Lake, near Houston, Texas. Additional facilities of the center were located at Ellington Air Force Base, approximately seven miles north of the main facility.

Director:

Christopher C. Kraft, Jr. (January 1972-)
Robert R. Gilruth (November 1961-January 1972)

Deputy Director:

Sigurd A. Sjoberg (January 1972-)
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

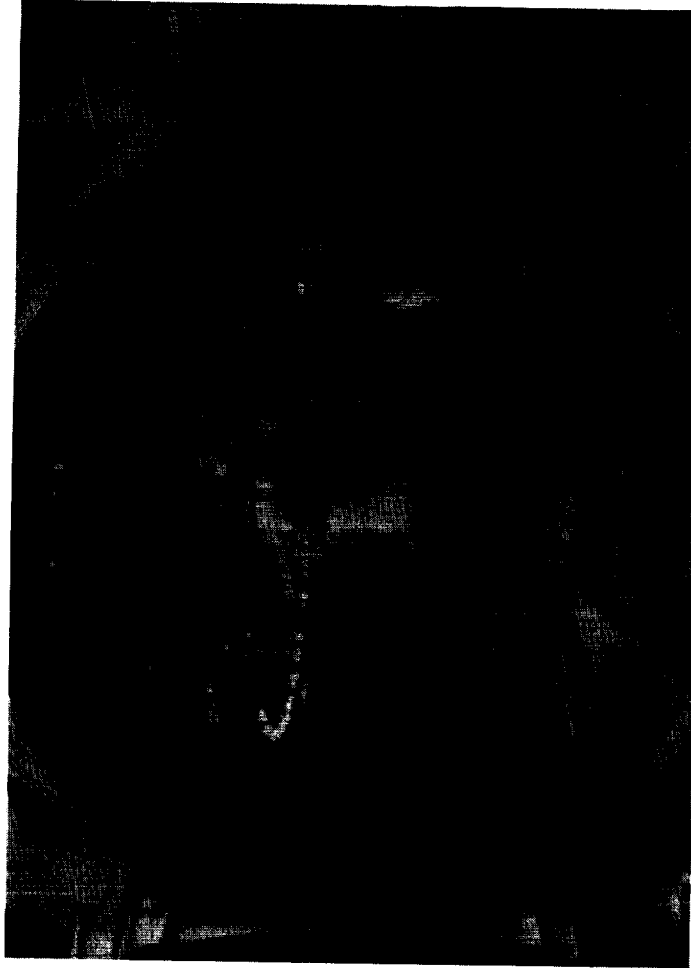
In January 1961, the Space Task Group, an autonomous component of the Goddard Space Flight Center that was located at the Langley Research Center, became an independent NASA installation. Later that year, the installation was renamed the Manned Spacecraft Center, and construction of its new facilities, near Houston, Texas, was begun. In February 1973, the Manned Spacecraft Center was renamed the Lyndon B. Johnson Space Center. (For a more detailed history of the Manned Spacecraft Center, see Chapter VI of *NASA Historical Data Book*, Vol. 1.)

Mission

The Manned Spacecraft Center was NASA's primary center for the design, development, and testing of manned spacecraft, selection and training of astronaut crews, and operation of manned spaceflight missions. The center was responsible for many of NASA's most successful space flight

programs, including the Mercury, Gemini, Apollo, and Skylab missions, as well as the joint Soviet-American Apollo-Soyuz Test Project. It was designated as the lead NASA center for the Space Shuttle and for the Earth Observations Program.

The White Sands Test Facility, a component installation of the Manned Spacecraft Center, was established in 1962 at Las Cruces, New Mexico, for testing Apollo propulsion and power systems.



Thermal-vacuum testing of an Apollo spacecraft inside Chamber A of the Space Environmental Simulation Laboratory at Manned Spacecraft Center.

Table 6-41. Property
(at end of fiscal year; money amounts in thousands of dollars)

Category	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
In-house and contractor-held										
Land, in acres	NA	NA	3,195	3,195	3,195	3,195	3,195	3,195	3,195	3,195
Number of buildings	NA	NA	274	280	273	269	263	257	255	253
Area of buildings, in square feet	NA	NA	4,585,189	4,738,065	4,739,099	4,753,454	4,793,419	4,795,311	4,832,326	4,826,481
Value of in-house and contractor-held property										
Land	9,029	9,029	9,029	9,029	9,029	9,029	9,036	9,047	9,107	9,107
Buildings	164,949	172,787	173,677	178,011	179,061	183,042	189,215	191,551	194,275	194,928
Other structures and facilities	51,608	53,158	52,534	52,859	53,014	54,824	57,854	58,986	60,684	61,080
Total real property value	225,586	234,974	235,240	239,899	241,104	246,895	256,105	259,584	264,066	265,115
Capitalized equipment value	230,086	500,607	572,736	622,132	605,637	639,702	612,243	409,576	NA	421,745
Contractor-held land, in acres	NA	NA	166	166	166	166	166	166	166	166
Number of contractor-held buildings	NA	NA	74	75	71	71	69	64	60	61
Contractor-held buildings, in square feet	NA	NA	1,717,163	1,717,563	1,715,193	1,720,996	1,716,577	1,711,377	1,733,668	1,734,673
Value of contractor-held real property										
Land	3,570	NA	3,570	3,570	3,570	3,570	3,570	3,570	3,570	3,570
Buildings	24,415	NA	24,770	25,022	25,016	25,063	24,978	25,981	26,172	26,082
Other structures and facilities	5,142	NA	4,979	5,041	5,020	4,994	5,025	5,030	5,036	5,076
Total contractor-held real property	33,127	NA	33,319	33,633	33,606	33,627	33,573	34,581	34,778	34,728

NA = Not available.

Source: Tables 2-5 to 2-15, 2-21, 2-23, 2-25, and 2-27.

Table 6-42. Value of Real Property Components as a Percentage of Total^a
(total real property value in thousands of dollars)

Component	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Land	4.0	3.8	3.8	3.8	3.7	3.7	3.5	3.5	3.4	3.4
Buildings	73.1	73.5	73.8	74.2	74.3	74.1	73.9	73.8	73.6	73.5
Other structures and facilities	22.9	22.6	22.3	22.0	22.0	22.2	22.6	22.7	23.0	23.0
Total real property value	225,586	234,974	235,240	239,899	241,104	246,895	256,105	259,584	264,066	265,115

^aFigures may not add to 100.0% due to rounding.

Source: Tables 2-11 through 2-14.

**Table 6-43. Personnel
(at end of fiscal year)**

Category	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Paid employees										
Permanent	4,384	4,270	4,147	3,817	3,717	3,676	3,660	3,613	3,548	3,523
Temporary	367	269	151	118	179	210	217	183	92	94
Total, paid employees	4,751	4,539	4,298	3,935	3,896	3,886	3,877	3,796	3,640	3,617
Occupational code groups										
(permanent only)										
200, 700, and 900	NA	2,462	2,389	2,259	2,215	2,198	2,233	2,210	2,188	2,187
600 and 500	NA	1,190	1,222	1,098	1,077	1,047	1,012	1,015	991	986
300	NA	570	496	427	398	406	389	362	343	327
100	NA	48	40	33	27	25	26	26	26	23
Excepted: on duty	64	58	57	51	51	48	46	43	47	47
Permanent minority employees	NA	179	220	188	216	252	290	296	337	352
Permanent female employees	NA	NA	NA	627	638	626	617	641	640	658
Military detailees	170	158	120	80	44	38	28	36	33	45

NA = Not available.

Source: Tables 3-8, 3-11 to 3-13, 3-15, 3-24 to 3-27, 3-32, and 3-37.

Table 6-44. Funding by Fiscal Year
(in millions of dollars)

Appropriation Title	1969	1970	1971	1972	1973	1974	1975	1976 + TQ	1977	1978
Research and development	1,083.6	1,013.8	601.7	442.4	485.5	607.8	785.1	1,241.9	1,085.0	970.7
Construction of facilities	0.9	—	1.1	—	0.6	—	0.7	—	2.2	2.0
Administrative operations ^a	98.9	106.6	111.1	113.0	110.6	117.6	121.3	165.2	139.1	146.2
TOTAL	1,183.4	1,120.4	713.9	555.4	596.7	725.4	907.1	1,407.1	1,226.3	1,118.9

^aRenamed Research and program management in 1970.

Source: Tables 4-18 to 4-20.

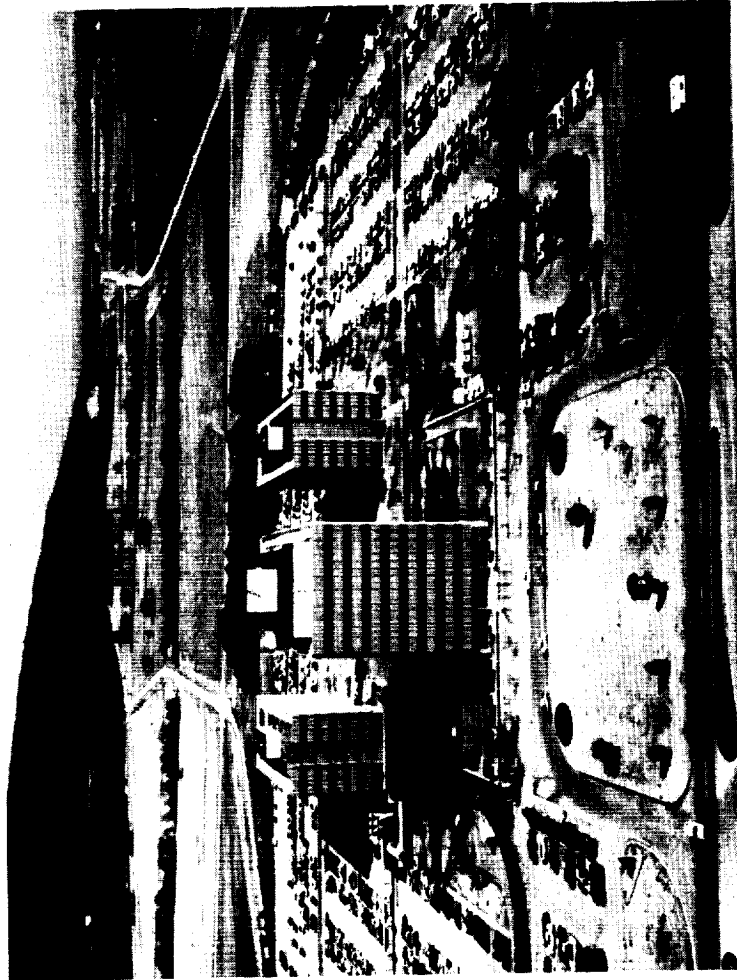
Table 6-45. Total Procurement Activity by Fiscal Year
(in millions of dollars)

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Net value of contract awards	1,156.0	1,059.0	609.0	449.4	492.4	676.5	831.6	1,024.7	1,115.3	1,015.7
Percentage of NASA total	31.6	31.2	21.3	16.4	18.4	24.9	29.0	32.0	31.6	27.7

Source: Table 5-12.

MARSHALL SPACE FLIGHT CENTER

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The three-building complex of Marshall Space Flight Center in Huntsville, Ala. houses administrative, engineering, and program management offices.

MARSHALL SPACE FLIGHT CENTER

Location

The George C. Marshall Space Flight Center was located at the United States Army's Redstone Arsenal in Huntsville, Alabama.

Director: William R. Lucas (June, 1974-)
Rocco A. Petrone (January, 1973-March, 1974)
Eberhard F. M. Rees (March, 1970-January, 1973)
Wernher von Braun (July, 1960-January, 1970)

Deputy Director:
R. G. Smith (November, 1974-August, 1978)
William R. Lucas (February, 1971-June, 1974)

Deputy Director Technical:
William R. Lucas (1970-February, 1971)
Erich W. Neubert (1970)
Eberhard F. M. Rees (July, 1960-March, 1970)

Deputy Director Management:
R. W. Cook (October, 1969-June, 1970)
Harry H. Gorman (November, 1961-October, 1969)
Delmar M. Morris (July 1, 1960-September, 1961)

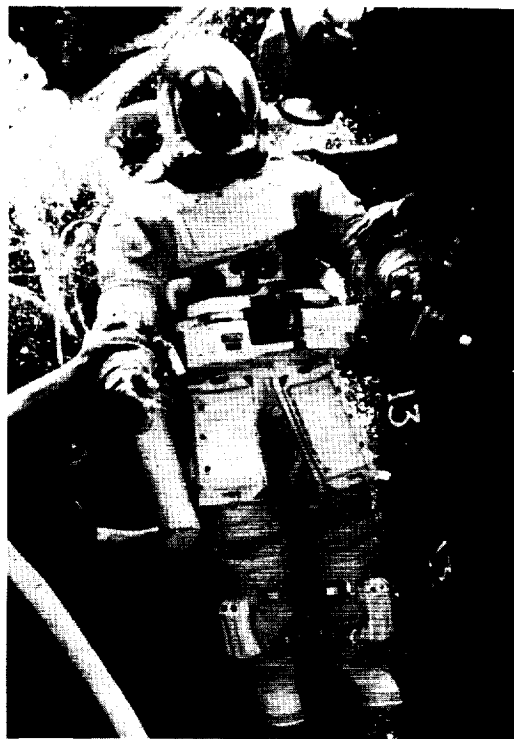
History

In April 1950, the United States Army established the Ordnance Guided Missile Center at Redstone Arsenal in Huntsville, Alabama. When in February 1956 the Army Ballistic Missile Agency (ABMA) was formed at the Redstone Arsenal, the Ordnance Guided Missile Center became ABMA's Development Operations Division. After the establishment of NASA in October 1958, President Dwight D. Eisenhower requested Congress to transfer the facilities and personnel involved in ABMA's space missions to NASA. In March 1960, the Development Operations Division was transferred to NASA and renamed the George C. Marshall Space Flight Center

in honor of General of the Army George C. Marshall, who had been Chief of Staff during World War II and Secretary of State from 1948 to 1949. (For a more detailed history of the Marshall Space Flight Center, see Chapter VI of *NASA Historical Data Book, I.*)

Mission

The primary mission of the Marshall Space Flight Center was to develop space transportation systems, orbital systems, and scientific payloads for space exploration. The center was responsible for the development of the Saturn launch vehicles used in the Apollo manned lunar-landing program, in the Skylab space station program, and in the joint Soviet-American Apollo-Soyuz Test Project. The center also was involved in the development of the solid-fueled rocket booster, the main engine, and the external tank for the Space Shuttle. In addition, the Marshall Space Flight Center managed and directed operations of its three component installations—the Michoud Assembly Facility near New Orleans, Louisiana; the Mississippi Test Facility (until June 1974, when it became the independent National Space Technology Laboratories) located in Bay St. Louis, Mississippi; and the Slidell Computer Complex in Slidell, Louisiana.



An astronaut undergoing tests in the Neutral Buoyancy Simulator at Marshall Space Flight Center in preparation for one of the manned missions of the Skylab Program.

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Last of the original order of booster stages for Saturn V launch vehicle in final assembly and checkout at the Michoud Assembly Facility near New Orleans, La., a component installation of Marshall Space Flight Center.

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Table 6-46. Property
(at end of fiscal year; money amounts in thousands of dollars)

Category	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
In-house and contractor-held property										
Land, in acres	NA	NA	21,821	21,821	21,821	905	1,314	1,314	1,314	1,256
Number of buildings	NA	NA	455	433	408	254	249	236	221	226
Area of buildings, in square feet	NA	NA	9,073,961	9,046,354	8,952,586	7,714,176	7,712,053	7,608,269	7,534,902	7,529,877
Value of in-house and contractor-held property										
Land	30,822	30,810	26,270	26,271	26,271	7,568	7,568	7,587	7,587	7,137
Buildings	269,190	272,439	287,688	289,415	266,767	193,595	197,558	198,136	196,797	199,266
Other structures and facilities	276,739	281,852	302,434	300,650	271,458	103,552	109,156	111,500	97,134	105,543
Total real property value	576,751	585,101	616,392	616,336	564,496	304,715	314,282	317,223	301,518	311,946
Capitalized equipment value	347,703	468,775	505,252	532,570	554,524	485,165	476,560	427,131	NA	686,106
Contractor-held land, in acres	NA	NA	905	21,821	21,821	905	1,314	1,314	1,314	1,256
Number of contractor-held buildings	NA	NA	84	178	166	80	84	77	65	66
Contractor-held buildings, in square feet	NA	NA	4,922,499	5,266,919	5,169,378	3,972,054	3,969,272	3,896,729	3,845,115	3,845,892
Value of contractor-held real property										
Land	11,058	NA	7,567	26,271	26,271	7,568	7,568	7,587	7,587	7,137
Buildings	94,712	NA	94,827	176,577	151,849	78,515	78,789	78,004	74,967	75,475
Other structures and facilities	64,601	NA	65,405	248,792	219,051	50,934	54,615	54,840	40,110	42,672
Total contractor-held real property	170,371	NA	167,799	451,640	397,171	137,017	140,972	140,431	122,664	125,284

NA = Not available.

Source: Tables 2-5 to 2-15, 2-21, 2-23, 2-25, and 2-27.

Table 6-47. Value of Real Property Components as a Percentage of Total*
(total real property value in thousands of dollars)

Component	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Land	5.3	5.3	4.3	4.3	4.7	2.5	2.4	2.4	2.5	2.3
Buildings	46.7	46.6	46.7	47.0	47.3	63.5	62.9	62.5	65.3	63.9
Other structures and facilities	48.0	48.2	49.0	48.8	48.1	34.0	34.7	35.2	32.2	33.8
Total real property value	576,751	585,101	616,392	616,336	564,496	304,715	314,282	317,223	301,518	311,946

*Figures may not add to 100.0% due to rounding.

Source: Tables 2-11 through 2-14.

**Table 6-48. Personnel
(at end of fiscal year)**

Category	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Paid employees										
Permanent	6,149	5,994	5,760	5,414	5,115	4,400	4,100	4,059	3,922	3,760
Temporary	490	331	300	141	172	174	237	277	92	48
Total, paid employees	6,639	6,325	6,060	5,555	5,287	4,574	4,337	4,336	4,014	3,808
Occupational code groups										
(permanent only)										
200, 700, and 900	NA	2,561	2,511	2,442	2,350	2,215	2,133	2,142	2,114	2,046
600 and 500	NA	1,864	1,840	1,721	1,644	1,361	1,255	1,238	1,166	1,104
300	NA	1,323	1,358	1,208	1,080	793	683	647	601	570
100	NA	246	51	43	41	31	29	32	41	40
Excepted: on duty	94	93	93	89	81	51	56	61	59	59
Permanent minority employees	NA	112	103	89	95	97	108	139	137	130
Permanent female employees	NA	NA	NA	828	805	672	654	671	651	619
Military detailees	17	14	10	13	11	1	1	3	7	8

NA = Not available.

Source: Tables 3-8, 3-11 to 3-13, 3-15, 3-24 to 3-27, 3-32, and 3-37.

Table 6-49. Funding by Fiscal Year
(in millions of dollars)

Appropriation Title	1969	1970	1971	1972	1973	1974	1975	1976 + TQ	1977	1978
Research and development	693.2	732.2	633.5	668.6	472.6	295.4	289.8	545.6	509.2	630.9
Construction of facilities	—	—	1.3	—	—	—	3.8	—	—	—
Administrative operations ^a	116.3	125.7	145.1	138.9	137.2	137.5	129.1	170.0	140.2	143.6
TOTAL	809.5	857.9	779.9	807.5	609.8	432.9	422.7	715.6	649.4	774.5

^aRenamed Research and program management in 1970.

Source: Tables 4-18 to 4-20.

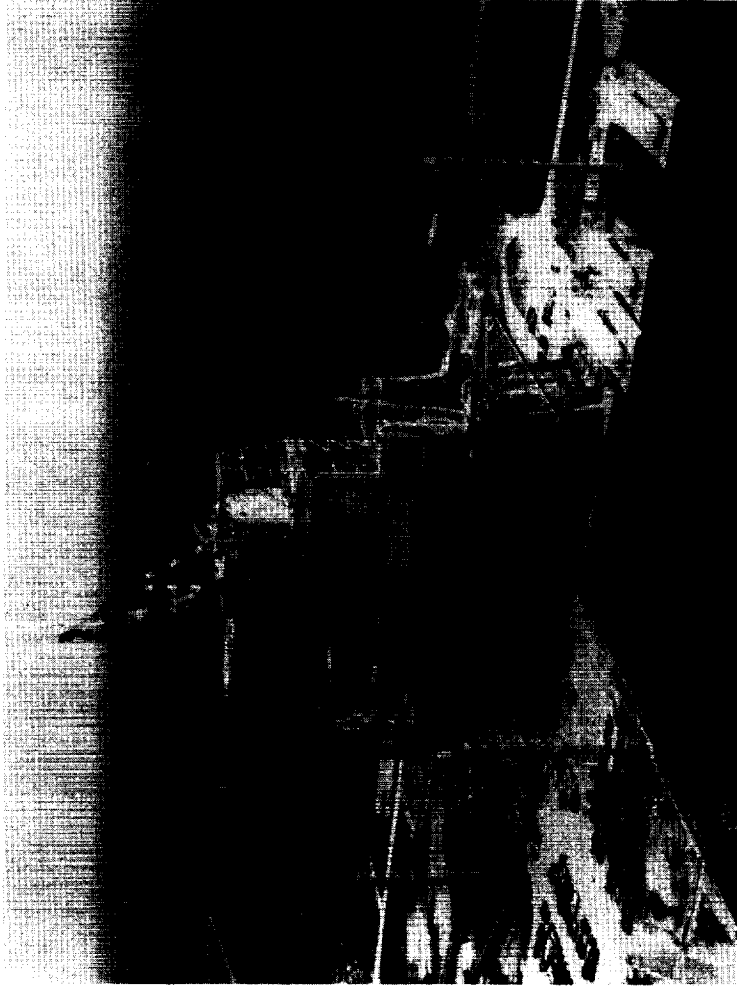
Table 6-50. Total Procurement Activity by Fiscal Year
(in millions of dollars)

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Net value of contract awards	802.3	740.4	671.3	670.5	536.0	367.7	352.0	445.6	541.1	658.5
Percentage of NASA total	22.0	21.7	23.5	24.5	20.1	13.6	12.3	13.9	15.3	18.0

Source: Table 5-12.

**NATIONAL SPACE
TECHNOLOGY
LABORATORIES**

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The first series of tests on the Space Shuttle Main Propulsion Test Article were completed on this stand at the National Space Technology Laboratories located in Hancock County, Mississippi.

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NATIONAL SPACE TECHNOLOGY LABORATORIES

Location

The National Space Technology Laboratories was located approximately fifty-five miles northeast of New Orleans in Bay St. Louis, Mississippi.

Manager: Jackson M. Balch (June, 1974-)

History

The National Space Technology Laboratories, previously called the Mississippi Test Facility, became an independent NASA installation in June 1974. This change came as a consequence of a shift in emphasis in the national space program from manned exploration to include the exploration of the earth's natural resources and environment. (For a more detailed history of the Mississippi Test Facility, see Chapter VI of *NASA Historical Data Book, I.*)

Mission

Whereas the Mississippi Test Facility's main mission had been to test-fire Saturn rockets, the main task of the National Space Technology Laboratories was to provide NASA with the capabilities of conducting remote sensing, environmental, and related research. Also, NASA encouraged other NASA supporting activities that could complement research carried out at the National Space Technology Laboratories to move to the same location.

Table 6-51. Property
(at end of fiscal year; money amounts in thousands of dollars)

Category	1974	1975	1976	1977	1978
In-house and contractor-held property					
Land, in acres	20,916	20,643	20,643	20,642	20,642
Number of buildings	95	107	109	111	113
Area of buildings, in square feet	975,274	988,990	1,034,864	1,054,469	1,064,511
Value of in-house and contractor-held property					
Land	18,703	18,703	18,074	18,074	18,061
Buildings	60,848	69,902	64,865	64,374	64,204
Other structures and facilities	165,460	190,515	187,283	193,287	194,077
Total real property value	245,011	279,120	270,222	275,735	276,342
Capitalized equipment value	68,236	40,901	47,304	NA	30,919
Contractor-held land, in acres	20,916	0	0	0	0
Number of contractor-held buildings	95	0	0	0	0
Contractor-held buildings, in square feet	975,274	0	0	0	0
Value of contractor-held real property					
Land	18,703	0	0	0	0
Buildings	60,848	0	0	0	0
Other structures and facilities	165,460	0	0	0	0
Total contractor-held real property	245,011	0	0	0	0

NA = Not available.

Source: Tables 2-5 to 2-15, 2-21, 2-23, 2-25, and 2-27.

**Table 6-52. Value of Real Property Components as a Percentage of Total*
(total real property value in thousands of dollars)**

Component	1974	1975	1976	1977	1978
Land	7.6	6.7	6.7	6.6	6.5
Buildings	24.8	25.0	24.0	23.3	23.2
Other structures and facilities	67.5	68.3	69.3	70.1	70.2
Total real property value	245,011	279,120	270,222	275,735	276,342

*Figures may not add to 100.0% due to rounding.

Source: Tables 2-11 through 2-14.

**Table 6-53. Personnel
(at end of fiscal year)**

Category	1975	1976	1977	1978
Paid employees				
Permanent	69	69	90	102
Temporary	7	3	4	6
Total, paid employees	76	72	94	108
Occupational code groups (permanent only)				
200, 700, and 900	24	23	43	48
600 and 500	45	46	47	54
300	0	0	0	0
100	0	0	0	0
Excepted: on duty	2	1	2	2
Permanent minority employees	5	5	3	7
Permanent female employees	19	19	23	26
Military detailees	0	0	0	0

Source: Tables 3-8, 3-11 to 3-13, 3-15, 3-24 to 3-27, 3-32, and 3-37.

Table 6-54. Funding by Fiscal Year
(in millions of dollars)

Appropriation Title	1974	1975	1976 + TQ	1977	1978
Research and development	—	1.7	10.8	7.7	10.0
Construction of facilities	—	—	—	—	—
Administrative operations ^a	—	—	—	—	—
TOTAL	—	1.7	10.8	7.7	10.0

^aRenamed Research and program management in 1970.

Source: Tables 4-18 to 4-20.

Table 6-55. Total Procurement Activity by Fiscal Year
(in millions of dollars)

	1974	1975	1976	1977	1978
Net value of contract awards	0	0	22.8	28.4	35.1
Percentage of NASA total	0	0	0.7	0.8	1.0

Source: Table 5-12.

**SPACE NUCLEAR
PROPULSION OFFICE**

SPACE NUCLEAR PROPULSION OFFICE

Location

The Space Nuclear Propulsion Office was located in Germantown, Maryland.

Manager: Milton Klein (March 1967-)
Harold B. Finger (August 1960-March 1967)

History

In August 1960, the Atomic Energy Commission and NASA established a joint single project office responsible for all aspects of the nuclear rocket research program. In February 1961, another agreement between the two agencies led to the establishment of jointly staffed field extensions of the Space Nuclear Propulsion Office in Cleveland, Ohio, and Albuquerque, New Mexico. A third field facility, the Nuclear Rocket Development Station at Jackass Flats, Nevada, was placed under the supervision of the Space Nuclear Propulsion Office in February 1962. In June 1970, the Space Nuclear Propulsion Office was renamed the Space Nuclear Systems Office. It was disestablished in 1973. (For a more detailed history of the Space Nuclear Propulsion Office, see Chapter VI of *NASA Historical Data Book*, Vol. I.)

Mission

The mission of the Space Nuclear Propulsion Office was to supervise and conduct all research and testing necessary to develop nuclear rocket systems suitable for advanced space exploration. It also had management responsibility for ground static-testing of reactors, engines, and vehicles associated with nuclear rocket development at the Nuclear Rocket Development Station in Jackass Flats, Nevada.

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Table 6-56. Property
(at end of fiscal year; money amounts in thousands of dollars)

Category	1969	1970	1971	1972
In-house and contractor-held property				
Land, in acres	NA	NA	0	0
Number of NASA-owned buildings	NA	NA	16	16
Area of buildings, in square feet	NA	NA	189,220	189,220
Value of in-house and contractor-held property				
Land	0	0	0	0
Buildings	18,957	19,000	19,000	18,988
Other structures and facilities	6,917	6,928	6,930	6,930
Total real property value	25,874	25,928	25,930	25,918
Capitalized equipment value	24,133	27,217	27,594	27,985

NA = Not available.

Source: Tables 2-5 to 2-15, 2-21, 2-23, 2-25, and 2-27.

Table 6-57. Value of Real Property Components as a Percentage of Total
 (total real property value in thousands of dollars)

Component	1969	1970	1971	1972
Land	0	0	0	0
Buildings	73.3	73.3	73.3	73.3
Other structures and facilities	26.7	26.7	26.7	26.7
Total real property value	25,874	25,928	25,930	25,918

Source: Tables 2-11 through 2-14.

Table 6-58. Personnel
 (at end of fiscal year)

Category	1969	1970	1971	1972
Paid employees				
Permanent	104	101	89	45
Temporary	0	2	0	0
Total, paid employees	104	103	89	45
Occupational code groups (permanent only)				
200, 700, and 900	NA	57	52	30
600 and 500	NA	44	37	15
300	NA	0	0	0
100	NA	0	0	0
Excepted: on duty	9	8	9	6
Permanent minority employees	NA	1	1	2
Permanent female employees	NA	NA	NA	7
Military detailees	0	0	0	0

NA = Not available.

Source: Tables 3-8, 3-11 to 3-13, 3-15, 3-24 to 3-27, 3-32, and 3-37.

Table 6-59. Funding by Fiscal Year
(in millions of dollars)

Appropriation Title	1969	1970	1971	1972	1973
Research and development	30.3	32.1	33.3	7.9	2.2
Construction of facilities	—	—	—	—	—
Administrative operations ^a	2.1	2.3	2.4	2.2	—
TOTAL	32.4	34.4	35.7	10.1	2.2

^aRenamed Research and program management in 1970.

Source: Tables 4-18 to 4-20.

Table 6-60. Total Procurement Activity by Fiscal Year
(in millions of dollars)

	1969	1970	1971	1972	1973
Net value of contract awards	62.2	61.3	45.5	27.9	5.5
Percentage of NASA total	1.7	1.8	1.6	1.0	0.2

Source: Table 5-12.

WALLOPS STATION/FLIGHT CENTER

WALLOPS STATION/FLIGHT CENTER

Location

Wallops Station was located on Wallops Island, off the Delmarva Peninsula in Virginia and on an additional property nearby on the mainland. It was approximately fifty miles southeast of Salisbury, Maryland, and seventy miles north of the Chesapeake Bay Bridge Tunnel.

Director:

Robert L. Krieger (June 1948-)

Associate Director:

Abraham D. Spinak (August 1966-)

History

Wallops Island's association with NASA dates back to 1945, when NASA's predecessor organization, the National Advisory Committee for Aeronautics (NACA), established a test-launching facility for its Langley Memorial Aeronautical Laboratory on the island in May of that year and named it the Auxiliary Flight Research Station. In August 1946, the Wallops facility was placed under the Operations Section of the Pilotless Aircraft Research Division, a division of Langley's Research Department. The Wallops facility was renamed the Pilotless Aircraft Research Station, popularly known simply as Wallops. In May 1959, some seven months after NACA's absorption by NASA, the Wallops facility became an independent NASA installation called Wallops Station. In April 1974, Wallops Station was renamed the Wallops Flight Center, reflecting more closely its mission and operations. (For a more detailed history of Wallops Station, see Chapter VI of *NASA Historical Data Book*, Vol. I.)

Mission

Wallops Station has served primarily as NASA's rocket flight-test range. By 1974 alone, more than 8,000 launches, including many orbiting satellites, had been fired off from Wallops Station. Scientists and engineers from

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other NASA installations, other governmental agencies, colleges and universities, and the international scientific community throughout the world have participated in tracking and acquiring scientific information from space vehicles launched from Wallops Island. Wallops Station exercised project management responsibility over such NASA projects as GEOS C, the Experimental Inter-American Meteorological Rocket Network, the Polar Cusp, the operation of remote site launching and tracking facilities, and the operation of NASA's portable range facilities.

**Table 6-61. Property
(at end of fiscal year; money amounts in thousands of dollars)**

Category	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
In-house and contractor-held property										
Land, in acres		NA	6,615	6,615	6,615	6,615	6,563	6,166	6,166	6,166
Number of buildings	NA	NA	355	356	360	361	358	337	306	280
Area of buildings, in square feet	NA	NA	1,040,160	1,045,007	1,045,990	1,051,496	1,049,094	1,043,396	1,039,391	1,053,264
Value of in-house and contractor-held property										
Land	986	1,072	1,083	1,083	1,176	1,179	1,161	1,277	1,277	1,283
Buildings	23,967	22,225	21,800	22,328	23,125	23,817	24,029	23,577	24,042	25,769
Other structures and facilities	41,899	43,208	44,436	45,063	46,226	47,366	48,999	51,073	52,440	52,295
Total real property value	66,852	66,505	67,319	68,474	70,527	72,362	74,189	75,927	77,759	79,347
Capitalized equipment value	38,860	42,516	47,759	48,762	47,842	50,275	50,045	55,915	NA	52,826

NA = Not available.

Source: Tables 2-5 to 2-15, 2-21, 2-23, 2-25, and 2-27.

**Table 6-62. Value of Real Property Components as a Percentage of Total^a
(total real property value in thousands of dollars)**

Component	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Land	1.5	1.6	1.6	1.6	1.7	1.6	1.6	1.7	1.6	1.6
Buildings	35.8	33.4	32.4	32.6	32.8	32.9	32.4	31.0	30.9	32.5
Other structures and facilities	62.7	65.0	66.0	65.8	65.5	65.5	66.0	67.3	67.4	65.9
Total real property value	66,852	66,505	67,319	68,474	70,527	72,362	74,189	75,927	77,759	79,347

^aFigures may not add to 100.0% due to rounding.

Source: Tables 2-11 through 2-14.

**Table 6-63. Personnel
(at end of fiscal year)**

Category	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Paid employees										
Permanent	484	489	480	449	420	423	415	404	406	405
Temporary	70	33	17	16	14	24	26	33	20	24
Total, paid employees	554	522	497	465	434	447	441	437	426	429
Occupational code groups (permanent only)										
200, 700, and 900	NA	101	106	103	96	95	94	94	102	107
600 and 500	NA	118	115	107	105	104	105	105	107	108
300	NA	186	182	177	166	176	167	158	154	154
100	NA	84	77	62	53	48	49	47	43	36
Excepted: on duty	3	3	3	3	3	3	3	3	3	3
Permanent minority employees	NA	12	12	13	13	15	22	25	32	35
Permanent female employees	NA	NA	NA	54	55	56	62	64	69	73
Military detailees	1	1	1	1	0	0	0	0	0	0

NA = Not available.

Source: Tables 3-8, 3-11 to 3-13, 3-15, 3-24 to 3-27, 3-32, and 3-37.

Table 6-64. Funding by Fiscal Year
(in millions of dollars)

Appropriation Title	1969	1970	1971	1972	1973	1974	1975	1976 + TQ	1977	1978
Research and development	7.9	10.2	11.3	13.3	15.5	15.1	14.6	19.8	17.6	156.3
Construction of facilities	0.5	0.5	—	—	0.6	0.9	1.1	—	—	—
Administrative operations ^a	9.1	9.7	10.3	10.9	10.8	11.6	12.4	17.0	13.3	15.1
TOTAL	17.5	20.4	21.6	24.2	26.9	27.6	28.1	36.8	30.9	171.4

^aRenamed Research and program management in 1970.

Source: Tables 4-18 to 4-20.

Table 6-65. Total Procurement Activity by Fiscal Year
(in millions of dollars)

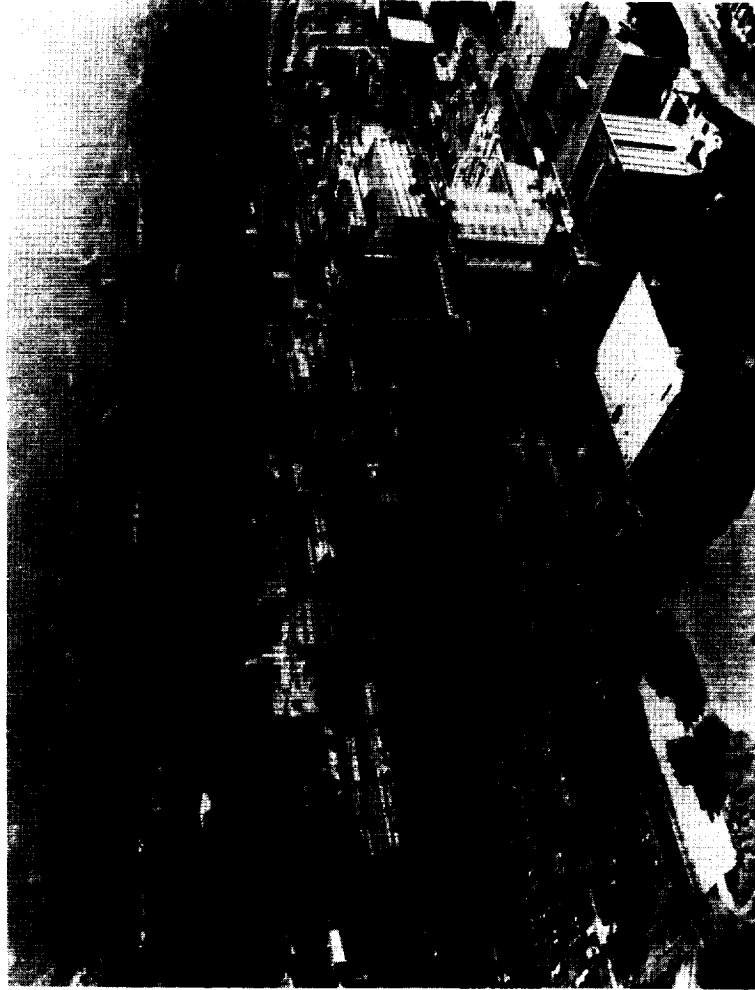
	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Net value of contract awards	12.0	14.4	13.6	16.3	20.2	20.1	20.5	23.0	25.7	24.1
Percentage of NASA total	0.3	0.4	0.5	0.6	0.8	0.7	0.7	0.7	0.7	0.7

Source: Table 5-12.

JET PROPULSION LABORATORY

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The Jet Propulsion Laboratory is a Government-owned facility at the California Institute of Technology in Pasadena, Ca. The Laboratory, which is under a NASA contract, is staffed and managed by the California Institute of Technology.

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JET PROPULSION LABORATORY

Location

The Jet Propulsion Laboratory was located in Pasadena, California, approximately twenty miles northeast of Los Angeles.

Director:

Bruce C. Murray (April 1976-)
William H. Pickering (September 1954-March 1976)
L. G. Dunn (1947-1954)
F. J. Malina (1944-1946)

Deputy Director:

C. H. Terhune, Jr. (July 1971-)
John E. Clark (February 1968-July 1971)
A. R. Luedecke (August 1964-August 1967)
B. O. Sparks (February 1960-July 1964)

History

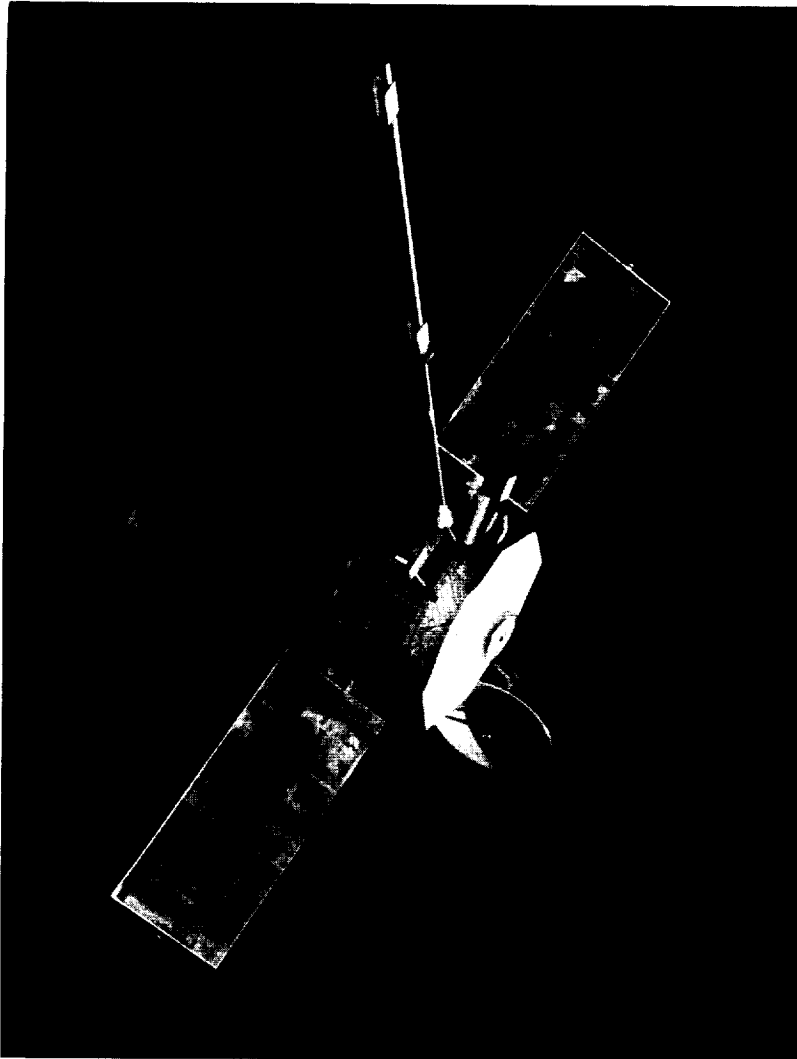
The Jet Propulsion Laboratory was a Government-owned facility staffed and managed by the California Institute of Technology in Pasadena, California. In 1936 faculty and students began design and experimental work with liquid-propellant rocket engines at the Guggenheim Aeronautical Laboratory of the California Institute of Technology (GALCIT).

In June 1940, the Army awarded GALCIT a contract to develop solid- and liquid-propellant rocket engines. This program, called the GALCIT Rocket Research Project, continued for the duration of World War II. In the postwar period, the facility, renamed the Jet Propulsion Laboratory in 1944, conducted research and development for the United States Army on tactical guided missiles and aerodynamics. In 1958, shortly after NASA was established, the Jet Propulsion Laboratory was transferred from the Army to NASA. It retained its special position as a laboratory of the California Institute of Technology under contract to NASA. (For a more

detailed history of the Jet Propulsion Laboratory, see Chapter VI of *NASA Historical Data Book*, Vol. I.)

Mission

The Jet Propulsion Laboratory has engaged in research associated with such activities as deep-space automated scientific missions, tracking, data acquisition, development of advanced solid- and liquid-propellant spacecraft engines, and development of advanced spacecraft guidance and control systems. It has managed projects in NASA's unmanned lunar and planetary exploration programs and has operated worldwide deep-space tracking and data acquisition networks.



A Mariner Venus Mercury "73" spacecraft designed for a 1973 mission to Venus and Mercury built by the Boeing Company under project management of Jet Propulsion Laboratory.

Table 6-66. Property
(at end of fiscal year; money amounts in thousands of dollars)

Category	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
In-house and contractor-held										
Land, in acres	NA	NA	146	146	146	146	146	146	146	156
Number of buildings	NA	NA	386	351	353	339	342	317	322	320
Area of buildings, in square feet	NA	NA	1,790,964	1,853,783	1,904,695	1,864,394	1,896,330	1,940,062	1,993,168	1,997,380
Value of in-house and contractor-held property										
Land	1,067	1,067	1,067	1,067	1,067	1,067	1,067	1,067	1,067	1,188
Buildings	53,172	53,864	55,821	59,887	63,133	62,966	71,754	79,370	85,498	86,131
Other structures and facilities	27,966	28,401	32,189	33,343	63,232	61,955	66,999	66,846	69,238	69,309
Total real property value	82,205	83,332	89,077	94,297	127,432	125,988	139,820	147,283	155,803	156,628
Capitalized equipment value	110,806	131,587	173,299	192,777	204,856	221,808	218,625	217,765	NA	231,701
Contractor-held land, in acres	NA	NA	146	146	146	146	146	146	146	156
Number of contractor-held buildings	NA	NA	386	351	353	339	342	317	322	320
Contractor-held buildings, in square feet	NA	NA	1,790,964	1,853,783	1,904,695	1,864,394	1,896,330	1,940,062	1,993,168	1,997,380
Value of contractor-held real property										
Land	1,067	1,067	1,067	1,067	1,067	1,067	1,067	1,067	1,067	1,188
Buildings	53,172	53,864	55,821	59,887	63,133	62,966	71,754	79,370	85,498	86,131
Other structures and facilities	27,966	28,401	32,189	33,343	63,232	61,955	66,999	66,846	69,238	69,309
Total contractor-held real property	82,205	83,332	89,077	94,297	127,432	125,988	139,820	147,283	155,803	156,628

NA = Not available.

Source: Tables 2-5 to 2-15, 2-21, 2-23, 2-25, and 2-27.

**Table 6-67. Value of Real Property Components as a Percentage of Total
(total real property value in thousands of dollars)**

Component	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Land	1.3	1.3	1.2	1.1	0.8	0.8	0.8	0.7	0.7	0.8
Buildings	64.7	64.6	62.7	63.5	49.5	50.0	51.3	53.9	54.9	55.0
Other structures and facilities	34.0	34.1	36.1	35.4	49.6	49.2	47.9	45.4	44.4	44.2
Total real property value	82,205	83,332	89,077	94,297	127,432	125,988	139,820	147,283	155,803	156,628

Source: Tables 2-11 through 2-14.

**Table 6-68. Funding by Fiscal Year
(in millions of dollars)**

Appropriation Title	1969	1970	1971	1972	1973	1974	1975	1976+TQ	1977	1978
Research and development	143.1	169.8	154.3	207.1	207.6	219.0	211.4	250.5	195.2	201.4
Construction of facilities	—	—	1.9	—	0.5	1.3	9.2	—	—	3.1
Administrative operations ^a	—	—	—	—	—	—	—	—	—	—
TOTAL	143.1	169.8	156.2	207.1	208.1	220.3	220.6	250.5	195.2	204.5

^aRenamed Research and program management in 1970.

Source: Tables 4-18 to 4-20.

Table 6-69. Total Procurement Activity by Fiscal Year*
(in millions of dollars)

	1977	1978
Net value of contract awards	289.0	283.7
Percentage of NASA total	8.2	7.8

*Data comprise awards on contracts for operation of Jet Propulsion Laboratory. Awards to Jet Propulsion Laboratory for fiscal years 1969-1976 are included in the awards to Headquarters.

Source: Table 5-12.

APPENDIX A
**SELECTED AEROSPACE
AWARDS**



APPENDIX A
SELECTED AEROSPACE AWARDS

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APPENDIX A

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HONOR AWARDS

Certificate of Appreciation

The NASA Certificate of Appreciation is usually granted to an individual upon separation from Headquarters to mark dedicated and significant service, or a substantial contribution, to his or her organization.

- | | | | |
|------|------------------------|------|-----------------------|
| 1969 | Luis W. Alvarez | 1971 | Charles F. Bingman |
| | Stanley H. Bennett | | Melvin S. Day |
| | Francis H. Clauser | | Alfred J. Eggers |
| | H. Lester Cooke | | Dave W. Lang |
| | Lee A. Dubridge | 1972 | Hugh Odishaw |
| | Leo Goldberg | | Robert F. Packard |
| | Harry H. Hess | 1973 | Howard N. Braithwaite |
| | T. William Lambe | | J. Allen Crocker |
| | Gordon J. F. MacDonald | | Robert H. Hood |
| | Francis J. Magliato | | James J. Owens |
| | John S. Patton | | Jacob E. Smart |
| | William G. Shepherd | | Madison B. Smith |
| | William B. Shockley | | Demarquis D. Wyatt |
| | William H. Sweet | 1975 | Sherwood L. Butler |
| | Charles H. Towns | | Henry E. Clements |
| | John R. Whinnery | | C. Guy Ferguson |
| | George D. Zuidema | | Boyd C. Myers |
| 1970 | Paul A. Barron | | Leonard Rawicz |
| | Helen G. Frey | 1978 | Jeff Cockran |
| | Clarence J. George | | Alex Liebenson |
| | Charles G. Haynes | | E. C. Magette |
| | Leona L. Kempainen | | Kathryn C. Walker |
| | Antonio P. Marin | | |
| | Franklyn W. Phillips | | |

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Distinguished Service Medal

The NASA Distinguished Service Medal, NASA's highest award, is given to any person in Federal service who, "by distinguished service, ability, or courage, has personally made a contribution representing substantial progress to aeronautical or space exploration in the interests of the United States." Recommendations for this award are reviewed by the NASA Incentive Awards Board.

- | | | |
|------|------------------------|------------------------|
| 1969 | William A. Anders | Russell L. Schweickart |
| | Frank A. Bogart | David R. Scott |
| | Carroll H. Bolender | Robert C. Seamans |
| | Frank Borman | Willis H. Shapley |
| | Robert E. Bourdeau | Albert F. Siefert |
| | Eugene A. Cernan | Donald K. Slayton |
| | Roger B. Chaffee | Thomas P. Stafford |
| | John F. Clark | Gerald M. Truszynski |
| | Raymond L. Clark | Wernher von Braun |
| | Ozro M. Covington | Hermann K. Weidner |
| | Kurt H. Debus | Edward H. White |
| | Maxime A. Faget | John J. Williams |
| | Robert R. Gilruth | John W. Young |
| | Harry H. Gorman | 1970 Edwin E. Aldrin |
| | Virgil I. Grissom | Nail A. Armstrong |
| | Hans F. Gruene | Alan L. Bean |
| | George H. Hage | Michael Collins |
| | Wesley L. Hjornevik | Charles Conrad |
| | Lee B. James | Richard F. Gordon |
| | David M. Jones | Fred W. Haise |
| | Kenneth S. Kleinknecht | James A. Lovell |
| | Christopher C. Kraft | Thomas O. Paine |
| | James A. Lovell | John L. Swigert |
| | George M. Low | 1971 Charles J. Donlan |
| | Charles W. Matthews | James B. Irwin |
| | James A. McDivitt | Vincent L. Johnson |
| | Jessie L. Mitchell | Walter J. Kapryan |
| | George E. Mueller | Eugene F. Kranz |
| | John E. Naugle | Bruce T. Lundin |
| | Edmund F. O'Connor | Glynn S. Lunney |
| | Rocco A. Petrone | James A. McDivitt |
| | Samuel C. Phillips | Edgar D. Mitchell |
| | Joseph Purcell | Bernard Moritz |
| | Eberhard F. M. Rees | Dale D. Myers |
| | Ludie G. Richard | Oran W. Nicks |
| | Arthur L. H. Rudolph | Stuart A. Roosa |
| | Julian W. Scheer | David R. Scott |
| | William C. Schneider | Alan B. Shepard |

- Sigurd A. Sjoberg
 John W. Townsend
 Alfred M. Worden
 1972 Charles M. Duke
 Paul W. Gast
 William R. Lucas
 Hans M. Mark
 Thomas K. Mattingly
 Richard C. McCurdy
 William T. Pecora
 Dan Schneiderman
 John W. Young
 1973 George W. S. Abbey
 Alan L. Bean
 Leland F. Belew
 Charles A. Berry
 Aleck C. Bond
 Anthony J. Calio
 Eugene A. Cernan
 Aaron Cohen
 Charles Conrad
 Richard W. Cook
 John H. Disher
 Paul C. Donnelly
 Ronald E. Evans
 Arnold W. Frutkin
 Owen K. Garriott
 Ernst D. Geissler
 Roy E. Godfrey
 Robert H. Gray
 George B. Hardy
 Robert C. Hock
 William P. Horton
 S. Neil Hosenball
 Roy P. Jackson
 Richard S. Johnston
 Joseph P. Kerwin
 James E. Kingsbury
 Jack A. Kinzler
 Kenneth S. Kleinknecht
 Joseph N. Kotanchik
 Chester M. Lee
 William E. Lilly
 Jack R. Lousma
 Owen G. Morris
 Rocco A. Petrone
 Isom A. Rigell
 Miles Ross
 George T. Sasseen
 Harrison H. Schmitt
 William C. Schneider
 Richard G. Smith
 Howard W. Tindall
 Paul J. Weitz
 1974 Donald D. Buchanan
 Gerald P. Carr
 Walker E. Giberson
 Edward G. Gibson
 Charles F. Hall
 Robert L. Krieger
 Dale D. Myers
 William R. Pogue
 Norman Pozinsky
 Martin L. Raines
 Lee R. Scherer
 John M. Thole
 Robert F. Thompson
 1975 Vance D. Brand
 Robert H. Curtin
 M. P. Frank
 Donald P. Heath
 Chester M. Lee
 Glynn S. Lunney
 Joseph B. Mahon
 Ellery B. May
 John L. McLucas
 William Nordberg
 George F. Page
 Donald K. Slayton
 Thomas P. Stafford
 David Williamson
 1976 Charles J. Donlan
 Isaac T. Gillam
 Charles R. Gunn
 William M. Lohse
 Charles W. Mathews
 John J. Neilon
 Leonard Roberts
 William R. Schindler
 1977 Edgar M. Cortright
 Malcolm R. Currie
 James C. Fletcher
 Noel W. Hinners
 Leonard Jaffe

Harriett G. Jenkins
 Robert S. Kraemer
 Bruce T. Lundin
 Hans M. Mark
 James S. Martin
 John E. Naugle
 Henry W. Norris
 A. Thomas Young

1978 Kenneth R. Chapman
 Duward Crow
 Robert H. Curtin
 Marvin L. McNickle
 David R. Scott
 Milton O. Thompson
 Gerald M. Truszynski

Distinguished Public Service Medal

The NASA Distinguished Public Service Medal is granted only to individuals whose meritorious contributions produced results which measurably improved, expedited, or clarified administrative procedures, scientific progress, work methods, manufacturing techniques, personnel practices, public information services, and other efforts related to the accomplishment of the mission of NASA. It is granted to any United States citizen who is not an employee of the Federal Government or was not an employee during the period in which the service was performed.

1969 Harry H. Hess
 Frederick Seitz
 Charles H. Townes
 1971 Joseph G. Gavin
 George E. Stoner
 1972 Riccardo Giacconi
 Brian O'Brien
 Gerald J. Wasserburg
 1973 Paul B. Blasingame
 Joseph F. Clayton
 Leo Goldberg
 Clinton H. Grace
 Robert E. Greer
 George W. Jeffs
 Thomas J. Kelly
 H. Douglas Lowrey
 Joseph P. McNamara
 Richard H. Nelson
 Frank Press
 Theodore D. Smith
 1974 Ben G. Bromberg
 Jack M. Campbell
 Edwin G. Czarnecki

Harry Dornbrand
 Jesse L. Greenstein
 Bruce C. Murray
 William G. Purdy
 1975 Grant L. Hansen
 Willis M. Hawkins
 Richard B. Kershner
 1976 Edward W. Bonnett
 Antonio Ferri
 Theodore D. Smith
 Lyman Spitzer
 1977 Laurence J. Adams
 Franklin W. Kolk
 Walter O. Lowrie
 Thomas G. Pownall
 Carl Sagan
 Francis B. Sayre
 Ronald Smelt
 Kurt Waldheim
 1978 Edward O. Buckbee
 Gerald J. Wasserburg

Exceptional Bravery Medal

The NASA Medal for Exceptional Bravery is given for exemplary and courageous handling of an emergency in NASA program activities by an individual who, independent of personal danger, has acted to prevent the loss of human life or government property.

1969 Charles J. Beverlin	1970 Herbert W. Grandy
Billy B. McClure	1974 Paul D. Sebesta

Exceptional Scientific Achievement Medal

The NASA Exceptional Scientific Achievement Medal is an award given for unusually significant scientific accomplishments which contribute to the programs of NASA, the Department of Defense, and other government agencies.

1969 Charles A. Berry	David Q. Wark
William F. Brown	Richard T. Whitcomb
Thomas N. Canning	Donald U. Wise
Moustafa T. Chahine	1970 Wilhelm Angele
Hong-Yee Chiu	James R. Arnold
Clarence D. Cone	Paul J. Coleman
James A. Downey	Leverett Davis
Erwin Fehlberg	Milner H. Eskew
Richard J. Green	Herbert Friedman
Rudolf A. Hanel	Paul W. Gast
Webb E. Haymaker	Peter F. Macdoran
Gerhard Heller	Warren L. Martin
Harvey H. Hubbard	Maurice K. Morin
James W. Humphreys	Marcia M. Neugebauer
Mark W. Kelly	Edward W. Perkins
James E. Kupperian	Edward J. Smith
Dale R. Lumb	Conway W. Snyder
Wolfgang E. Moeckel	Nelson W. Spencer
Paul M. Muller	Patrick Thaddeus
Robert J. Naumann	Robert M. Walker
William T. O'Bryant	Gerald J. Wasserburg
George F. Pieper	1971 Richard J. Allenby
Henry Plotkin	Clyde D. Baker
Joseph L. Randall	Ivan E. Beckwith
Donald G. Rea	Mitchel H. Bertram
Nancy G. Roman	Anthony J. Calio
Lee R. Scherer	Frederick J. Doyle
William L. Sjogren	Farouk el-Baz
Charles P. Sonett	Stanley Ellis
Robert G. Stone	Carl E. Fichtel

John C. Freche	Giuseppe J. Luigi
Riccardo Giacconi	Harold Masursky
Larry A. Haskin	Eugene C. McKannan
James W. Head	Gerry Neugebauer
Noel W. Hinners	William C. Phinney
Alton E. Jones	Helmut R. Poppa
Harold R. Kaufman	Carl Sagan
Gary Latham	William L. Sjogren
Robert B. Leighton	Bradford Smith
Gerald S. Levy	Charles P. Sonett
Charles A. Lundquist	Lyman Spitzer
Bruce C. Murray	Robert H. Steinbacher
Werner M. Neupert	David W. Strangway
Robert O. Pepin	Hubert C. Vykukal
Floyd I. Roberson	1973 John B. Adams
Sherman M. Seltzer	Joseph P. Allen
Robert P. Sharp	Carrol O. Alley
Leon T. Silver	Edward Anders
M. Gene Simmons	William J. Anderson
Charles T. Stelzried	P. Robin Brett
Gordon A. Swann	Robert P. Bryson
John H. Wolfe	Donald S. Burnett
Hans F. Wuenscher	Edward C. T. Chao
1972 Charles H. Acton	Joan Vernikos Danellis
Isidore Adler	Robert H. Drake
Vernon H. Alley	Michael B. Duke
Kinsey A. Anderson	Geoffrey Eglinton
James R. Arnold	Anthony W. England
Charles A. Barth	James E. Faller
Jacques E. Blamont	William G. Fastie
Geoffrey A. Briggs	William A. Fischer
Richard S. Brokaw	John W. Freeman
George R. Carruthers	Robert Fleischer
Edward L. Chupp	Johannes Geiss
Paul J. Coleman	Paul Gorenstein
Thomas C. Duxbury	Herbert F. Hardrath
Palmer Dyal	John H. Hoffman
Rudolf A. Hanel	Robert A. Hoffman
Melvin J. Hartmann	Marvin R. Holter
Klaus Heinemann	Warren Hovis
James P. Heppner	H. Taylor Howard
William F. Hoffmann	E. Dale Jackson
Billy P. Jones	Philip C. Johnson
Hans F. Kennel	Robert L. Johnson
A. J. Kliore	Robert L. Kovach
Arthur L. Lane	David A. Landgrebe
Conway Leovy	Marcus G. Langseth

- Harvard Lomax
 Harold Masursky
 William R. Mehler
 Albert Metzger
 James K. Mitchell
 William R. Muehlberger
 James J. Papike
 Archibald B. Park
 Robert A. Parker
 Robert A. Phinney
 P. Buford Price
 David L. Reasoner
 John H. Reynolds
 Wilbur A. Riehl
 Edwin Roedder
 Irving M. Salzberg
 Eric C. Silverberg
 Henry J. Smith
 Conway W. Snyder
 Floyd W. Stecker
 Manik Talwani
 Sandor Trajmar
 Jacob I. Trombka
 Harold C. Urey
 Joel S. Watkins
 John A. Wood
 1974 John D. Anderson
 Siegfried J. Bauer
 Reinhard Beer
 Albert E. Belon
 Ralph Bernstein
 Herbert S. Bridge
 William A. Brooks
 Victor C. Clarke
 James A. Dunne
 Crofton B. Farmer
 R. Walker Fillius
 James D. Frost
 Harry C. Gatos
 Thomas Gehrels
 Ashton Graybiel
 Curtis L. Hemenway
 Karl G. Henize
 George W. Hoffer
 Jerry L. Homick
 Carolyn L. Huntoon
 Robert L. Johnson
 Darrell L. Judge
 Hongsuk H. Kim
 Stephen L. Kimzey
 William H. Kinard
 Henry G. Kosmahl
 Norman H. MacLeod
 Robert M. MacQueen
 Joseph T. McGoogan
 Edward L. Michel
 John M. Miller
 James E. Milligan
 Guido Munch
 Thornton Page
 Edward C. Polhamus
 S. Ichtiaque Rasool
 Edmund M. Reeves
 John A. Rummel
 Gary R. Russell
 John R. Sevier
 John A. Simpson
 David E. Smith
 William C. Snoddy
 John E. Taber
 William E. Thornton
 Richard Tousey
 James H. Trainor
 Guiseppi S. Vaiana
 James A. van Allen
 Hans U. Walter
 G. Gordon Whedon
 Herbert Wiedemeir
 Thomas T. Wilheit
 August F. Witt
 John T. Yue
 1975 John D. Bird
 Brent Y. Creer
 William B. Demore
 R. Thomas Giuli
 Samuel Gulkis
 James D. Lawrence
 Francis J. Lerch
 Howard G. Nelson
 Matthew P. Thekaekara
 Eugene W. Urban
 Edward J. Walsh
 Dell P. Williams

- 1976 Arden L. Albee
 Robert E. Alexovich
 Peter M. Bell
 Stuart Bowyer
 Horst Bucker
 Sherwood Chang
 Robert N. Clayton
 Peter X. Eberhardt
 Howard E. Goldstein
 Frank Hohl
 Kenneth W. Iliff
 Klaus Keil
 Robert A. Kilgore
 Robert F. Landel
 Leslie M. Mack
 Lucio Maestrello
 Laurence E. Nyquist
 Dimitri A. Papanastassiou
 James B. Pollack
 Vincent V. Salomonson
 Tito T. Serafini
 Gerald R. Taylor
 M. Nafi Toksoz
 Friedrich O. Vonbun
 Jeffrey L. Warner
 James G. Williams
- 1977 Donald L. Anderson
 Otto E. Berg
 Klaus Biemann
 Michael H. Carr
 Alphonso V. Diaz
 James L. Elliot
 Fereidoun Farassat
 Barney C. Farmer
 Robert C. Finke
 Ronald I. Gilje
 John D. Goodlette
- Robert B. Hargraves
 Seymour L. Hess
 Stephen S. Holt
 Hugh H. Kieffer
 Harold P. Klein
 Janos K. Lanyi
 B. Gentry Lee
 Jay H. Lieske
 Harold Masursky
 William H. Michael
 Thomas A. Mutch
 Alfred O. C. Nier
 Tobias C. Owen
 James D. Porter
 George W. Reed
 Albert R. Schallenmuller
 Conway W. Snyder
 Gerald A. Soffen
 Glenn R. Taylor
 G. Leonard Tyler
- 1978 Albert Boggess
 Elihu A. Boldt
 Hale V. Bradt
 John C. Brandt
 Herbert Friedman
 Gordon P. Garmir
 Herbert Gursky
 Forrest G. Hall
 Walter H. G. Lewin
 Gunnar F. Lindal
 Frank B. McDonald
 Thomas A. Parnell
 Laurence E. Peterson
 Alvin Seiff
 Robert H. Tolson
 Robert Vessot

Exceptional Service Medal

The NASA Exceptional Service Medal is the second highest award in the NASA Incentive Awards Program. It is granted for significant achievement or service characterized by unusual initiative or creative ability that clearly demonstrates substantial improvement in engineering, administrative, space flight, or space-related endeavors which contribute to NASA programs.

1969 George W. S. Abbey	Charles O. Brooks
Robert M. Aden	B. Porter Brown
Joseph S. Algranti	William D. Brown
Alfred P. Alibrando	Herbert S. Brownstein
Robert O. Aller	Rudolph H. Bruns
Ernest A. Amman	Donald D. Buchanan
Donald D. Arabian	Charles L. Buckley
Gordon E. Artley	Garland G. Buckner
C. Dixon Ashworth	Eugene S. Burcher
John R. Atkins	Gerald L. Burdett
Henry F. Auter	Anthony J. Calio
Fred E. Bakutis	Dale W. Call
Jackson M. Balch	Sidney A. Cariski
Stephen G. Bales	Charles E. Cataldo
Edward P. Ballinger	Allen D. Catterson
Henry C. Barnett	James A. Chamberlin
Oakley W. Baron	Clifford E. Charlesworth
Paul A. Barron	Clarence A. Chauvin
William P. Bass	Donald C. Cheatham
Robert C. Baumann	Robert G. Chilton
James C. Bavely	John F. Clark
Leland F. Belew	Raymond L. Clark
Lucian B. Bell	Victor C. Clarke
James V. Bernardo	Aaron Cohen
Emil P. Bertram	John E. Condon
Joseph A. Bethay	George N. Constan
John H. Blackstone	Richard W. Cook
William M. Bland	Ozro M. Covington
Joseph M. Bobik	Newton W. Cunningham
Carroll H. Bolender	Konrad K. Dannenberg
Philip H. Bolger	Leroy E. Day
Aleck C. Bond	John H. Disher
Julian H. Bowman	Charles J. Donlan
James E. Bradford	Paul C. Donnelly
James B. Bramlet	Daniel H. Driscoll
John R. Brinkmann	Friedrich Duerr
Eugene H. Brock	Brian M. Duff
H. R. Brockett	Lynwood C. Dunseith

William B. Easter	Robert W. Hoffman
Marion D. Edwards	John K. Holcomb
Otto K. Eisenhardt	S. Neil Hosenball
James C. Elms	Hans Hueter
Maxime A. Faget	Benjamin W. Hursey
Lionel E. Fannin	Carl R. Huss
Hans J. Fichtner	Vincent G. Huston
Joyce N. Foster	Chauncey W. Huth
Davis E. Foxworthy	Thomas P. Isbell
Cline W. Frasier	Lee B. James
Robert F. Freitag	John Janokaitis
James M. Funkhouser	Otha C. Jean
Robert F. Garbarini	Thomas E. Jenkins
Robert A. Gardiner	Bernard L. Johnson
Roger B. Gaskins	Caldwell C. Johnson
Austin L. Gaver	Marshall S. Johnson
Clarence C. Gay	Robert E. Johnson
Ernst D. Geissler	Richard S. Johnston
Howard I. Gibbons	David M. Jones
Roy E. Godfrey	Joseph M. Jones
Erich E. Goerner	Walter J. Kapryan
Thomas F. Goldcamp	John J. Kelleher
Robert E. Gorman	Samuel W. Keller
Dieter Grau	Walter W. Kemmerer
Wilbur H. Gray	Charles H. King
Bert Greenglass	John W. King
Hans F. Gruene	Robert E. King
Crompton A. Guthrie	James E. Kingsbury
Walter Haeussermann	Jack A. Kinzler
George H. Hage	Kenneth S. Kleinknecht
Carlos C. Hagood	Joseph N. Kotanchik
Richard L. Haley	Eugene F. Kranz
Jerome B. Hammack	Hermann W. Kroeger
Fred C. Hammers	Gustav A. Kroll
Theodore U. Hardeman	Donald A. Krueger
Gordon L. Harris	Jerald R. Kubat
Willard R. Hawkins	Howard C. Kyle
Donald P. Hearsh	William F. Lahatte
Karl L. Heimburg	Dave W. Lang
Robert F. Heiser	Roy E. Lealman
Richard R. Heldenfels	Jerome F. Lederer
Ralph L. Hicks	Chester M. Lee
Paul R. Hill	Richard L. Leshner
Oliver M. Hirsch	William E. Lilly
Andrew Hobokan	James P. Lindberg
John D. Hodge	Oakley B. Lloyd
Helmut Hoelzer	William M. Lohse

C-5.

Robert G. Long
Bernard Lubarsky
William R. Lucas
George H. Ludwig
Glynn S. Lunney
H. Robert Lynn
Jerry Mack
Joseph F. Malaga
Carl H. Mandel
Charles B. Mars
William R. Marshall
Edward R. Mathews
Hans H. Maus
John P. Mayer
Owen E. Maynard
Jack T. McClanahan
John G. McClintock
Alexander A. McCool
James C. McCulloch
Charles W. McGuire
James C. McLane
Thomas H. McMullen
Roderick O. Middleton
Frederic H. Miller
William E. Miller
Peter A. Minderman
Edward D. Mohlere
Fletcher B. Moore
Saverio F. Morea
Homer G. Morgan
Bernard Moritz
Owen G. Morris
Robert E. Moser
William A. Mrazek
James T. Murphy
Walter P. Murphy
Erich W. Neubert
John C. New
David H. Newby
Charles T. Newman
Steward H. Nichols
George W. Noel
Warren J. North
Edmund F. O'Connor
Alfred D. O'Hara
Royce G. Olson
Donald R. Oswald
Robert L. Owen
George F. Page
Clarence C. Parker
Edward F. Parry
John F. Parsons
Henry C. Paul
John E. Pickering
Andrew J. Pickett
Edward A. Pierce
Joseph V. Piland
John S. Potate
James T. Powell
Norman Pozinsky
Harry Press
G. Merritt Preston
Paul A. Price
Duncan W. Rabey
Norman Rafel
Martin L. Raines
A. Gerald Rainey
Wallis C. Rainwater
Robert A. Rapp
Harold E. Ream
Nicholas A. Renzetti
Raul E. Reyes
Stanley R. Reinartz
Ludie G. Richard
Isom A. Rigell
Tecwyn Roberts
Lorne M. Robinson
Rodney G. Rose
Miles Ross
Jack Sargent
George T. Sasseen
James H. Sasser
Melvyn Savage
Ralph S. Sawyer
John R. Schaibley
Julian W. Scheer
William H. Schick
Donald L. Schmittling
Harris M. Schurmeier
Karl Sandler
Ralph Shapiro
John Shea
Alan B. Shepard
James T. Sheperd

Milton A. Silveira	Philip H. Whitbeck
William K. Simmons	George C. White
Scott H. Simpkinson	M. Keith Wible
Sigurd A. Sjoberg	Herman K. Widick
James B. Skaggs	Reuben L. Wilkinson
Bart J. Slattery	Francis L. Williams
Donald K. Slayton	Grady F. Williams
John W. Small	John J. Williams
Richard G. Smith	H. William Wood
Spencer E. Smith	Roy E. Wood
Robert E. Smylie	1970 John W. Aaron
Bill H. Sneed	William H. Bayley
Victor C. Sorensen	Floyd V. Bennett
Fridtjof A. H. Speer	Frank G. Bryan
Charles W. St. Clair	John P. Campbell
Laverne R. Stelter	William L. Green
James B. Sterett	Gerald D. Griffin
John D. Stevenson	Charles G. Haynes
Bailey E. Stimson	Walter W. Jacobi
William E. Stoney	Eugene S. Love
Ernst Stuhlinger	Eugene J. Manganiello
Paul L. Styles	Merland L. Moseson
Charles N. Swearingen	Hans G. Paul
Eldon D. Taylor	Donald E. Phillips
William Teir	Franklyn W. Phillips
Bernard R. Tessman	Glen A. Reiff
Joseph G. Thibodaux	Homer J. Steward
Henry F. Thompson	Ermine van der Wyk
Robert F. Thompson	1971 Arnold D. Aldrich
Jarry Thomson	James M. Allman
Howard W. Tindall	Donald D. Arabian
Robert T. Tolleson	Donald D. Baals
George S. Trimble	Donald A. Beattie
Jack Trott	Ronald L. Berry
Mathew W. Urlaub	Josef Boehm
George A. van Staden	Peter H. Broussard
William P. Varson	Joseph R. Burke
William W. Vaughan	Paul Butler
Paul H. Vavra	Norman M. Carlson
George J. Vecchietti	Donald M. Corcoran
James I. Vette	Graydon F. Corn
Frederick E. Vreuls	Werner K. Dahm
Thomas S. Walton	Edward M. Davin
Chester T. Wasileski	Richard A. Davis
Eugene W. Wasielewski	Melvin S. Day
Hermann K. Weidner	Harry J. De Voto
Stanley Weiland	Alfred J. Eggers

George L. English
George F. Esenwein
Albert G. Ferris
M. P. Frank
George C. Franklin
Clarence R. Gates
Charles D. Gay
Jesse F. Goree
John D. Gossett
John M. Gould
Olin L. Graham
John R. Graman
Gerald D. Griffin
Julian S. Hamilton
Richard S. Hamner
James E. Hannigan
Onice M. Hardage
James F. Harrington
Theodore P. Hershey
Richard R. Howell
Caldwell C. Johnson
Enoch M. Jones
Sidney C. Jones
Harold K. Katz
Milton Klein
Ronald W. Kubicki
H. Fletcher Kurtz
Elwood W. Land
Charles C. Lutz
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Eugene F. Kranz
Robert O. Piland
Stanley R. Reinartz
Philip C. Shaffer | |
| 1974 John R. Casani
M. P. Frank
Robert A. Parker | |
| 1975 Arnold D. Aldrich
Robert O. Aller
John P. Donnelly
Don M. Hartung
Seymour C. Himmel
Walter J. Kapryan
Robert N. Lindley
Bernard Lubarsky
Leslie H. Meredith
John J. Neilon
William H. Rock
Robert J. Shafer
Charles H. Terhune | |
| 1976 Robert C. Baumann
Paul C. Donnelly
Albert G. Ferris
James J. Kramer
Charles T. Newman
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L. F. Graffis	Gerald T. Smiley
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William P. Gwinn	Lee D. Solid
Sheldon Haas	Lyman Spitzer

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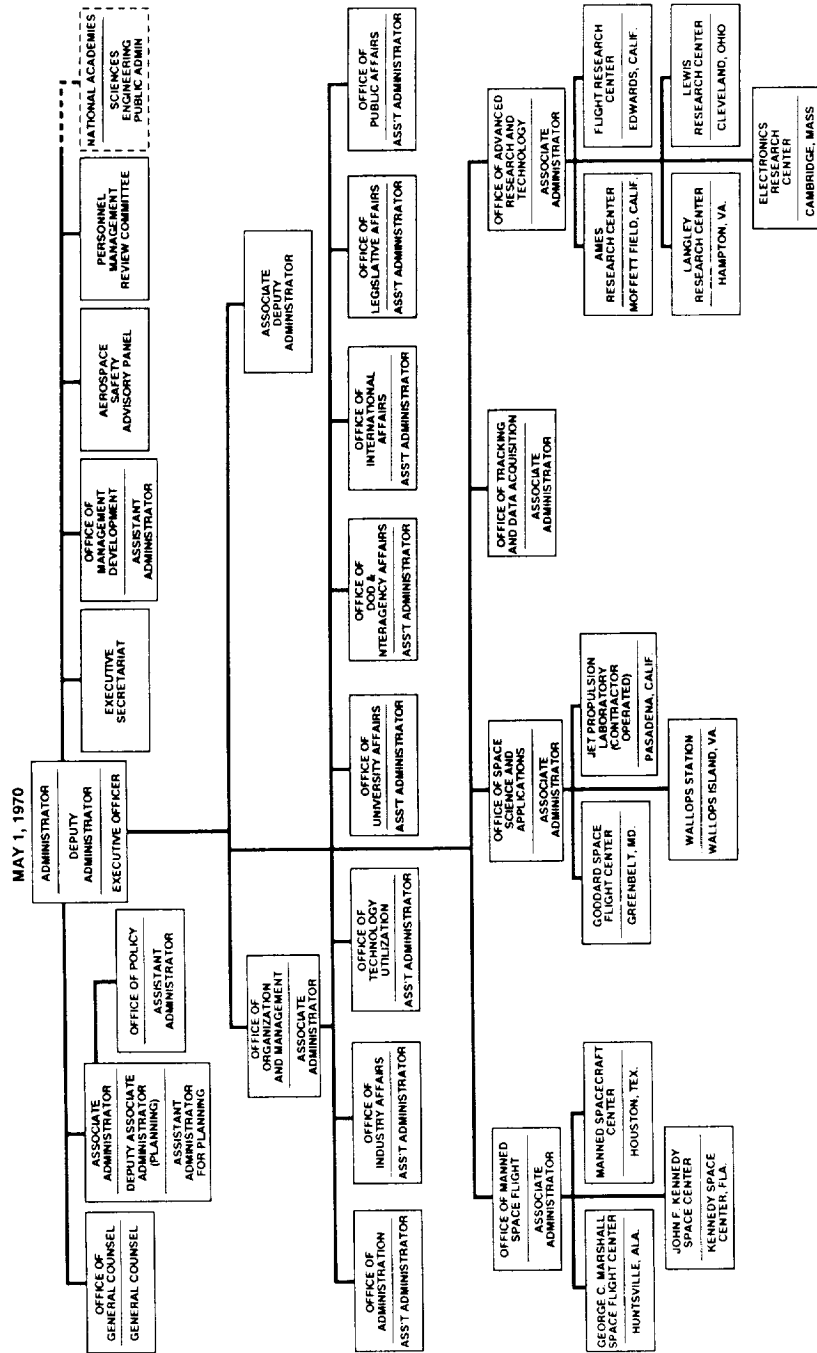
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	M. Dale Steffey	Robert N. Ingoldby
	Donald W. Tutwiler	Jaryl K. Kerekes
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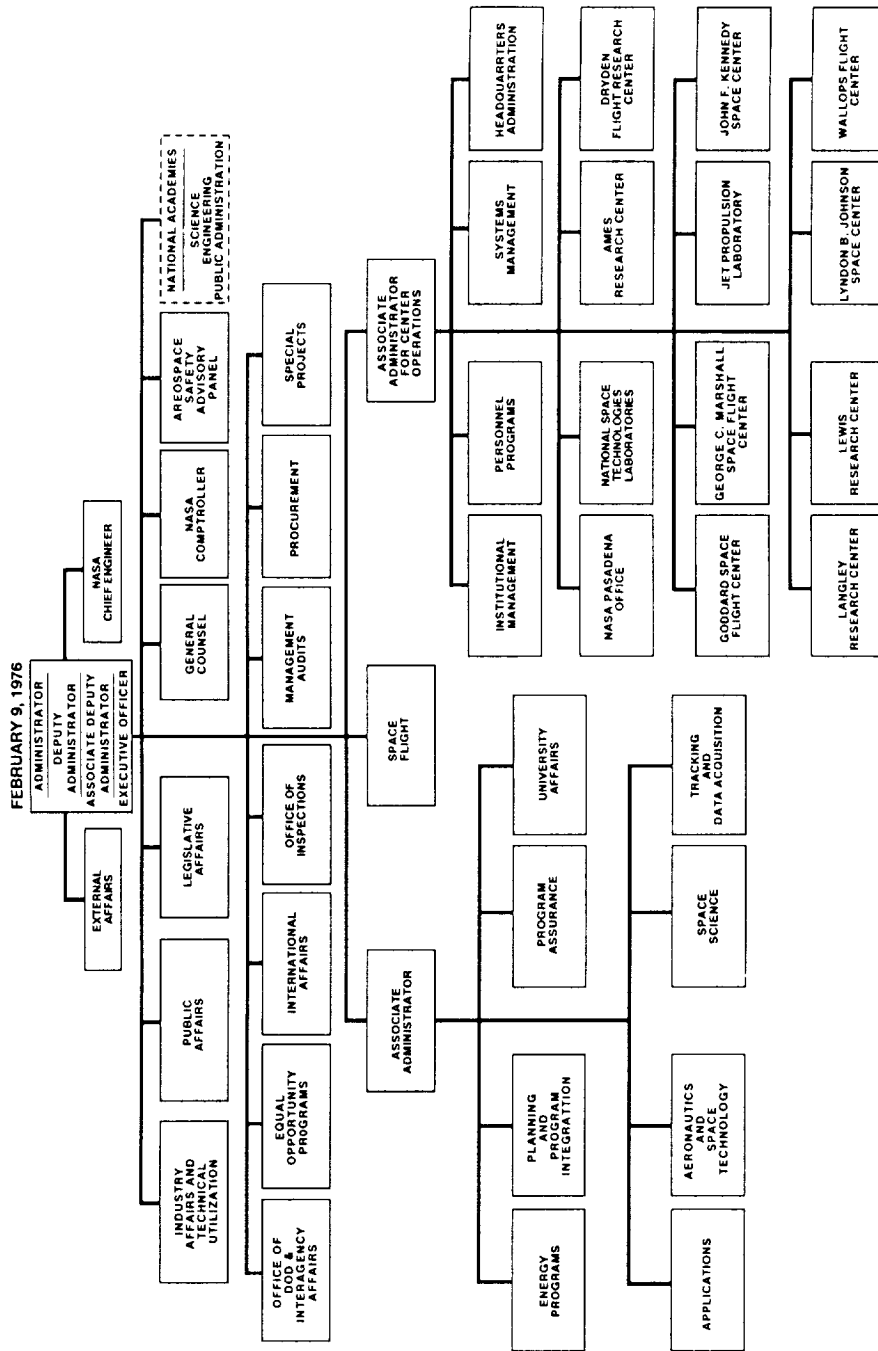
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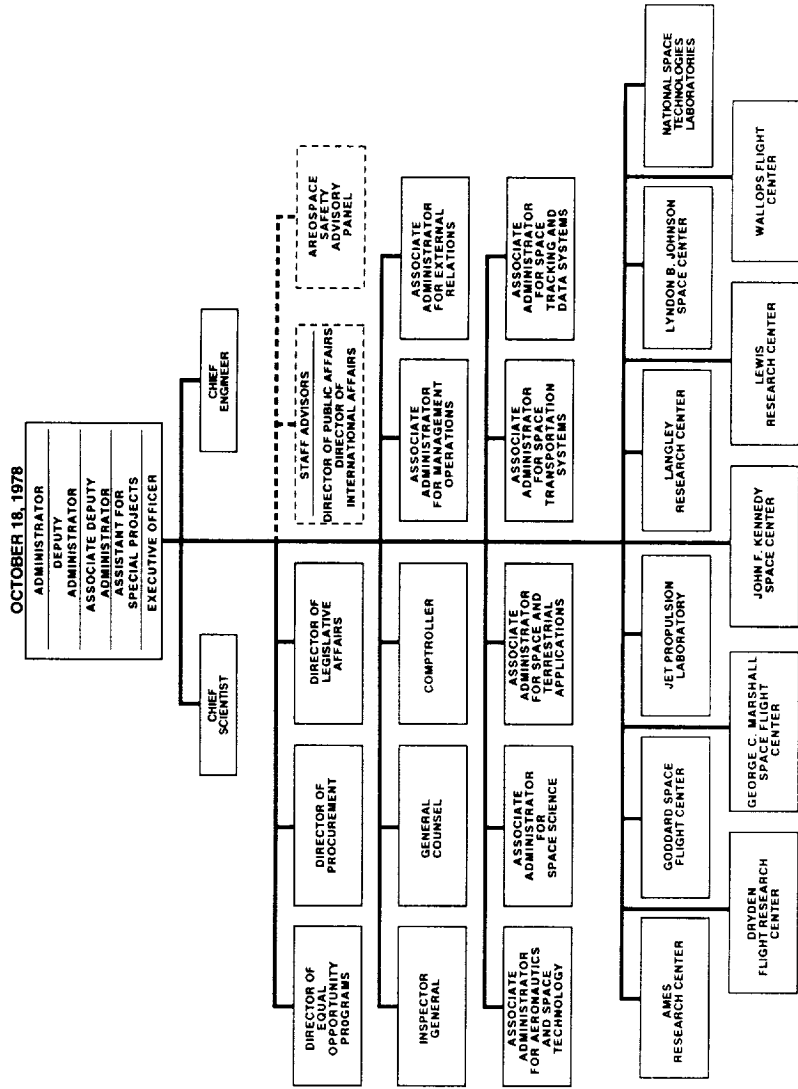
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1978 Arthur W. Linden
Michael B. McElroy
Richard D. C. Whilden

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