

**MISSION SUPPORT
FY 1998 ESTIMATES
BUDGET SUMMARY**

RESEARCH AND PROGRAM MANAGEMENT

SUMMARY OF RESOURCES REQUIREMENTS

Distribution of Program Amount by Installation	FY 1996	FY 1997	FY 1998
Johnson Space Center	352.3	343.6	338.1
Kennedy Space Center	236.3	230.1	221.6
Marshall Space Flight Center	276.6	290.4	292.7
Stennis Space Center	31.4	43.0	43.1
Goddard Space Flight Center	317.7	336.7	332.5
Ames Research Center	156.5	163.2	166.1
Dryden Flight Research Center	39.5	48.4	55.1
Langley Research Center	200.0	206.7	212.8
Lewis Research Center	195.7	196.6	190.2
Headquarters	241.9	233.8	218.1
Total	2,047.9	2,092.5	2,070.3

PROGRAM GOALS

To acquire and maintain a civil service workforce and infrastructure which reflects the cultural diversity of the Nation, which is properly sized and which possesses the right set of human resource skills in the right locations to accomplish NASA's research, development, and operational missions with innovation, excellence, and efficiency.

STRATEGY FOR ACHIEVING GOALS

A key dimension of the reinvention of NASA has been the restructuring of the civil service workforce to deliver a space and aeronautics program that is balanced, relevant, and at the forefront of technology development. By the end of FY 2000, NASA plans to have restructured the size and composition of the workforce to fewer than 18,000 civil servants,

nearly a 30 percent reduction from the authorized FY 1992 levels of just over 25,000. This civil service workforce is the underpinning for the successful accomplishment of the Nation's civil aeronautics and space programs. These are the people who plan the programs; conduct and oversee the research; select and monitor the contractors; manage the various research, development, and test activities; and oversee all of NASA's operations

The Research and Program Management (R&PM) program provides the salaries, other personnel and related costs, travel and the necessary support for all of NASA's administrative functions and other basic services in support of research and development activities at NASA Installations. The salaries, benefits, and supporting costs of this workforce comprise approximately 78% of the requested funding. Administrative and other support is 20% of the request. The remaining 2% of the request is required to fund travel necessary to manage NASA and its programs and provide the training and other supporting costs for NASA personnel.

ACCOMPLISHMENTS AND PLANS

NASA exceeded the FTE target included in the NASA Streamlining plan for FY 1996 and continued to make progress towards specific workforce goals established by the National Performance Review. These goals were met through the implementation of the most restrictive hiring policy in recent years and the results of the buyout conducted in FY 1995. We have continued to reduce the infrastructure at Headquarters through the aggressive redeployment of Headquarters personnel to the field centers. At the field Centers, operational activities are being transferred to commercial operators or to other Federal agencies where feasible. We have begun to use temporary and term appointments, which provide additional employment flexibility. Full-time civilian employment at the end of FY 1996 was about 21,000, a reduction of about 4,000 or 16% since 1993.

The agency also successfully met the goals for FY 1996 established as part of the National Performance Review:

- The supervisory span of control has gone from 1:5 in FY 1993 to 1:9 in FY 1996.
- Targeted administrative staffs have declined more than 18% from FY 1993 levels.
- Headquarters employment has been reduced by more than 700 or 34% from FY 1993.

The NASA workforce target for FY 2000 is fewer than 18,000 FTE. Achieving the remaining reduction of 3,000 civil servants from the FY 1996 level represents a formidable objective. Assuming natural attrition rates, NASA will likely fall short of our goal by 1,700 to 1,900 FTE. In addition, relying exclusively on retirement and a continued hiring freeze to reach the agency goals would result in a workforce skill mix that did not match the program requirements of NASA's Strategic Plan. Further, normal losses do not occur at precisely the right time or in the right proportions and locations to meet program requirements and

intermediate year budgetary objectives. NASA has stressed, and will continue to stress, the need to minimize adverse impacts on the workforce. The plan is to aggressively use all ongoing, voluntary approaches to reductions for as long as possible before employing involuntary methods.

Central to this strategy in FY 1997 is implementation of an aggressive buyout plan to (1) achieve at least double the number of losses expected under the normal attrition; (2) reach the FTE targets for FY 1999 in FY 1997 at as many Field Centers as possible; and (3) implementing the organizational structures identified by each Center in their workforce plans as quickly as possible. Each NASA Center has structured their buyout planning based on the results of comprehensive workforce assessments and their Workforce 2000 strategic plans. These plans identify the Center of Excellence and Mission for the Center, its restructuring strategy, and the number and skill mix of positions required for FY 2000. Each Center has focused its plans for the buyout at their site based on consideration of what types of positions would be in excess in the future. The agency approach, as well as a summary by Center, is included in the agency's workforce restructuring plan, which is being submitted to Congress with the FY 1998 Congressional budget request.

The FY 1998 budget estimate of \$2,070.3 million for Research and Program Management represents a continuation of the aggressive downsizing NASA has undertaken since FY 1993 and incorporates the reduction associated with the 1997 buyout. The requested funding level for FY 1998 is a decrease of \$22.2 million from the FY 1997 budget plan of \$2,092.5 million. This request funds 19,559 full-time equivalents (FTEs), a reduction of 942 FTEs from the expected FY 1997 level of 20,500 FTE. Of this total decrease, funding for Personnel and Related Costs is increased \$1.8 million; funding for Travel remains unchanged at \$45.5 million; and funding for Research and Operations Support is decreased \$24 million. Of the increase for Salaries and Expenses: \$8 million is for the full year cost of the FY 1997 pay raise; \$25 million is for the planned 2.8% payraise in FY 1998; \$9 million is due to increased costs of health care and the increased share of government payments for the Federal Employees Retirement System; \$17.8 million is due to the costs of "normal" promotions, military detailee increases, employee transfers from Center to Center, increased workers compensation costs, lump sum and security investigations. These increases are offset by savings of \$58 million associated with the reduction of 942 FTE. In addition, funding for Research Operations Support is reduced \$24 million.

In summary, the FY 1998 budget requirement of \$2,070,300,000 will provide for 19,559 FTE civil service workyears to support the activities at nine NASA Installations and Headquarters.

The following describes, in detail, the cost elements within this program.

I. Personnel and Related Costs

A. Compensation and Benefits

1. Compensation

a. Permanent Positions: This part of Personnel and Related Costs covers the salaries of the full-time permanent civil service workforce and is the largest portion of this functional category.

b. Other Than Full-Time Permanent Positions: This category includes the salaries of NASA's non-permanent workforce. Programs such as Presidential Management Interns, students participating in cooperative training, summer employment, youth opportunity, and temporary clerical support are covered in this category.

c. Reimbursable Detailees: In accordance with existing agreements, NASA reimburses the parent Federal organization for the salaries and related costs of persons detailed to NASA.

d. Overtime and Other Compensation: Overtime, holiday, post and night differential, and hazardous duty pay are included in this category. Also included are incentive awards for outstanding achievement and superior performance.

2. Benefits: In addition to compensation, NASA, as authorized and required by law, makes the employer's contribution to personnel benefits. These benefits include contributions to the Civil Service Retirement Fund, the Federal Employees Retirement System, employees' life and health insurance, payments to the Medicare fund for permanent employees, and social security contributions. Payments to the civil service retirement fund for re-employed annuitants and severance pay to former employees involuntarily separated through no fault of their own are also included.

B. Supporting Costs

1. Transfer of Personnel: Provided under this category are relocation costs required by law, such as the expenses of selling and buying a home, subsistence expenses, and the movement and storage of household goods.

2. Investigative Services: The Office of Personnel Management is reimbursed for activities such as security investigations of new hires and revalidation of sensitive position clearances, recruitment advertising, and Federal wage system surveys.

3. Personnel Training: Training is provided within the framework of the Government Employees Training Act of 1958. Part of the training costs are for courses offered by other Government agencies, and the remainder is for training through nongovernment sources.

II. Travel

A. Program Travel: The largest part of travel is for direction, coordination, and management of program activities including international programs and activities. The complexity of the

programs and the geographical distribution of NASA Installations and contractors necessitate this category of travel. As projects reach the flight stage, support is required for prelaunch activities including overseas travel to launch and tracking sites. The amount of travel required for flight projects is significant as it is directly related to the number of systems and subsystems, the number of design reviews, and the number and complexity of the launches and associated ground operations.

B. Scientific and Technical Development Travel: Travel to scientific and technical meetings and seminars permits employees engaged in research and development to participate in both Government sponsored and nongovernment sponsored activities. This participation allows personnel to benefit from exposure to technological advances which arise outside NASA, as well as allowing personnel to present both accomplishments and problems to their associates and provides for the dissemination of technical results to the United States community.

C. Management and Operations Travel: Management and operations travel provides for the direction and coordination of general management matters and travel by officials to review the status of programs. It also includes travel by functional managers in such areas as personnel, financial management, and procurement. This category also includes the cost of travel of unpaid members of research advisory committees; and initial duty station, permanent change of assignment, and related travel expenses.

III. Research Operations Support

A. Facilities Services: Facilities Services provides basic security, fire protection, and other custodial services. It also provides maintenance of roads and grounds and of all administrative buildings and facilities. Finally, it provides rental of administrative buildings and all utility costs of administrative buildings.

B. Technical Services: Technical Services provides the Administrative Automatic Data Processing capability that supports Accounting, Payroll, Budgeting, Procurement, and Personnel as well as all the other Administrative functions. It also funds the Graphics and Photographic support to these functions. Finally, it funds the Installationwide safety and public information programs.

C. Management and Operations: Management and Operations funds the telephone, mail, and logistics systems, the administrative equipment and supplies, and the transportation system including the general purpose motor pools and the program support aircraft. It also funds the basic medical and environmental health programs. Finally, it funds printing and reproduction and all other support, such as small contract and purchases for the Center Directors staff and the Administrative functions.

SUMMARY OF BUDGET PLAN BY FUNCTION (MILLIONS OF DOLLARS)	FY 1996	FY 1997	FY 1998
I. Personnel and related costs	1,553.5	1,611.0	1,612.8
II. Travel	41.6	45.5	45.5
III. Research operations support	452.8	436.0	412.0
Total	2,047.9	2,092.5	2,070.3

DETAIL OF BUDGET PLAN BY FUNCTION (MILLIONS OF DOLLARS)	FY 1996	FY 1997	FY 1998
I. Personnel and related costs	1,553.5	1,611.0	1,612.8
A. <u>Compensation and benefits</u>	1,511.0	1,581.9	1,586.0
1. Compensation	1,261.4	1,304.3	1,307.0
2. Benefits	249.6	277.6	279.0
B. Supporting costs	42.5	29.1	26.8
1. Transfer of personnel	2.5	3.0	1.4
2. Investigative services	6.7	1.2	1.2
3. Personnel training	33.3	24.9	24.2
II. Travel	41.6	45.5	45.5
A. Program travel	27.7	31.5	31.5
B. Scientific and technical development travel	4.0	4.0	4.0
C. Management and operations travel	9.9	10.0	10.0
III. Research operations support	452.8	436.0	412.0
A. Facilities services	136.1	130.5	130.7
B. Technical services	150.7	138.5	122.8
C. Management and operations	166.0	167.0	158.5
Total	2,047.9	2,092.5	2,070.3

**NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
RESEARCH AND PROGRAM MANAGEMENT - FY 1998 ESTIMATES
DISTRIBUTION OF BUDGET PLAN BY FUNCTION BY INSTALLATION
(MILLIONS OF DOLLARS)**

FUNCTION	TOTAL NASA	JSC	KSC	MSFC	SSC	GSFC	ARC	DFRC	LARC	LERC
PERSONNEL AND RELATED COSTS										
FY 1996	1,553.5	274.0	154.7	221.6	15.0	256.8	128.5	33.0	174.6	161.6
FY 1997	1,611.0	285.1	157.1	232.4	19.8	277.4	131.0	40.7	179.7	165.8
FY 1998	1,612.8	285.9	146.4	234.2	19.6	274.8	134.1	46.9	186.6	161.8
TRAVEL										
FY 1996	41.6	8.0	3.5	4.7	.5	6.6	3.8	.8	4.2	3.3
FY 1997	45.5	8.5	3.7	5.8	.6	6.8	3.4	1.4	3.6	3.4
FY 1998	45.5	8.0	3.5	5.7	.6	6.8	3.3	1.4	3.6	3.5
RESEARCH OPERATIONS SUPPORT										
FY 1996	452.8	70.3	78.1	50.3	15.9	54.3	24.2	5.7	21.2	30.8
FY 1997	436.0	50.0	69.3	52.2	22.6	52.5	28.8	6.3	23.4	27.4
FY 1998	412.0	44.2	71.7	52.8	22.9	50.9	28.7	6.8	22.6	24.9
TOTAL										
FY 1996	2,047.9	352.3	236.3	276.6	31.4	317.7	156.5	39.5	200.0	195.7
FY 1997	2,092.5	343.6	230.1	290.4	43.0	336.7	163.2	48.4	206.7	196.6
FY 1998	2,070.3	338.1	221.6	292.7	43.1	332.5	166.1	55.1	212.8	190.2

DISTRIBUTION OF FULL-TIME EQUIVALENT (FTE) WORKYEARS BY INSTALLATION	FY 1996	FY 1997	FY 1998
Johnson Space Center	3,335	3,294	3,065
Kennedy Space Center	2,145	2,036	1,824
Marshall Space Flight Center	3,080	2,964	2,779
Stennis Space Center	200	237	238
Goddard Space Flight Center	3,479	3,495	3,472
Ames Research Center	1,520	1,466	1,436
Dryden Flight Research Center	438	575	616
Langley Research Center	2,479	2,475	2,450
Lewis Research Center	2,220	2,170	2,022
Headquarters	1,390	1,224	1,143
Subtotal, full-time permanent workyears	20,286	19,936	19,045
Other controlled FTEs	652	565	514
Total, full-time equivalents	20,938	20,501	19,559

DISTRIBUTION OF FULL-TIME EQUIVALENT (FTE) WORKYEARS BY PROGRAM	FY 1996	FY 1997	FY 1998
Space station	1,934	2,188	2,425
U.S./Russian cooperative program	63	60	26
Space shuttle	2,669	2,459	2,298
Payload and utilization operations	1,298	1,252	701
Space science	2,330	2,227	2,146
Life and microgravity sciences	1,020	855	791
Mission to planet Earth	1,531	1,679	1,660
Aeronautical research and technology	3,284	3,425	3,440
Advanced space transportation technology	934	979	972
Commercial technology programs	231	205	181
Academic programs	70	65	62
Mission communication services	408	366	358
Space communications services	133	126	130
Safety, reliability and quality assurance	124	105	105
Construction of facilities	224	176	172
Subtotal, direct full-time permanent FTEs	16,253	16,167	15,467
Program management (Headquarters)	55	55	55
Center management and operations	3,978	3,714	3,523
Subtotal, full-time permanent FTEs	20,286	19,936	19,045
Other controlled FTEs	652	565	514
Total, full-time equivalents	20,938	20,501	19,559

on-orbit, habitable laboratory for science and research activities, including flight and test hardware and software, flight demonstrations for risk mitigation, ground operations capability and facility construction, shuttle hardware and integration for assembly and operation of the station, mission planning, and integration of Space Station systems.

Space Station elements will be provided by the U. S. and our international partners. The U. S. elements include two nodes, a laboratory module, truss segments, four photovoltaic arrays, a habitation module, three pressurized mating adapters, a cupola, unpressurized logistics carriers and a centrifuge accommodation module. Various systems are also being developed by the U. S. including thermal control, life support, navigation and propulsion, command and data handling, power systems, and internal audio/video. The U. S. elements also include the FGB energy tug, being provided by a Russian firm under the Boeing prime contract, and pressurized logistics modules, provided by Italy.

Canada, the European nations, Japan, and Russia are also developing hardware for the international Space Station program. Laboratory elements will be provided by the Japanese and European Space Agencies. Canada will provide the remote manipulator system, vital for assembly of the station. The Russian Space Agency is providing experiment, power, life support and service modules, Soyuz crew transfer vehicle, and universal docking modules.

The Johnson Space Center (JSC) has lead center management responsibility for the International Space Station program. In addition, specific JSC technical responsibilities include development of a set of facilities and systems to conduct the operations of the Space Station including on-orbit control of the Space Station.

The Center also provides institutional personnel as well as engineering and testbed support to the Space Station program. This includes test capabilities, the provision of Government Furnished Equipment (GFE), and engineering analysis support for the work of the prime contractor, its major subcontractors, and NASA system engineering and integration efforts.

U.S./RUSSIAN COOPERATIVE PROGRAM - JSC will continue to conduct management of the U.S./Russian Cooperative Program.

SPACE SHUTTLE - JSC has lead center management responsibility for the Space Shuttle. In addition, JSC will provide development, integration, and operations support for the Mission Control Center (MCC), the Shuttle Mission Simulator (SMS), and other ground facilities needed for Space Shuttle Operations. JSC will provide Space Shuttle operational flight program management including system integration, crew equipment modification and processing, crew training, flight mission planning and operations, and procurement of Orbiter hardware.

PAYLOAD AND UTILIZATION OPERATIONS - JSC will also conduct concept

studies and development on flight systems and options for human transportation. JSC also provides support to Spacelab, the engineering and technical base, payload operations and support equipment, and advanced programs.

SPACE SCIENCE - The Center will support the Agency's planetary science program in the area of geosciences required to support future programs, provide curatorial support for lunar materials, assist in information dissemination, and interact with outside scientists. This research focuses on the composition, structures, and evolutionary histories of the solid bodies of the universe.

LIFE AND MICROGRAVITY SCIENCES AND APPLICATIONS - The Center will evaluate human physiological changes associated with the space flight environment and develop effective countermeasures to assure crew health and optimal performance during all phases of flight. It will define and develop on-board health care systems and environmental monitoring systems; crew medical training; ground-based medical support of missions; develop a longitudinal crew health data base; and develop medical and psychological crew selection criteria. The JSC has established a center for the support of biotechnology applications in microgravity in order to study growth factors, medical chemo/immunotherapeutic, and human tissue transplantation. These activities are being consolidated into a biomedical science institute. The Center will integrate life science flight experiments for Spacelab; operate integrated payload systems; and train mission and payload specialists in the science aspect of their missions. In addition, the JSC will provide mission integration and operations functions for experiments flown on the NASA-Mir program, including Space Shuttle flights as well as those transported via Russian launch vehicle applications.

CENTER MANAGEMENT AND OPERATIONS - Provides management, administrative, and financial oversight of NASA programmatic elements under JSC cognizance. In addition, provides for the operation and maintenance of the institutional facilities, systems, and equipment.

DISTRIBUTION OF FULL-TIME EQUIVALENT (FTE) WORKYEARS BY PROGRAM

JOHNSON SPACE CENTER	FY 1996	FY 1997	FY 1998
Space station	965	1,026	1,287
U.S./Russian cooperative program	58	56	23
Space shuttle	1,081	1,064	1,060
Payload and utilization operations	584	545	175
Space science	39	40	37
Life and microgravity sciences	62	50	69
Mission to planet Earth	0	0	0
Aeronautical research and technology	0	0	0
Advanced space transportation technology	13	9	5
Commercial technology programs	23	26	20
Academic programs	8	6	6
Mission communication services	7	22	20
Space communications services	0	4	6
Safety, reliability and quality assurance	4	1	2
Construction of facilities	25	23	22
Subtotal, direct full-time permanent FTEs	2,869	2,872	2,732
Program management (Headquarters)	0	0	0
Center management and operations	466	422	333
Subtotal, full-time permanent FTEs	3,335	3,294	3,065
Other controlled FTEs	97	98	98
Total, full-time equivalents	3,432	3,392	3,163

**RESEARCH AND PROGRAM MANAGEMENT FISCAL YEAR 1998
ESTIMATES
JOHN F. KENNEDY SPACE CENTER**

including integrated testing, interface verification, servicing, launch activities, and experiment-to rack physical integration. KSC will serve as the primary agent for management and integration of ground processes for all U.S. launched International Space Station elements from manufacture and assembly through verification and launch.

SPACE SHUTTLE - KSC will provide Space Shuttle launch preparation, including orbiter processing, and Ground Support Equipment (GSE) logistics; and operation and maintenance of GSE.

PAYLOAD AND UTILIZATION OPERATIONS - KSC serves as the Lead Center for all payload requirements at NASA. KSC will provide support for Spacelab assembly and checkout, payload experiment integration, upper stages processing, Spacelab and ground support equipment (GSE) logistics and operations and maintenance of GSE.

EXPENDABLE LAUNCH VEHICLES - KSC will provide government oversight of all launch vehicle and payload processing and checkout activities for all NASA contracted expendable launch vehicle and upper stage launch services both at KSC and the Vandenberg Air Force Base.

CENTER MANAGEMENT AND OPERATIONS - KSC will provide administrative and financial services in support of Center management and provide for the operation and maintenance of the institutional facilities, systems, and equipment.

**DISTRIBUTION OF FULL-TIME EQUIVALENT (FTE) WORKYEARS BY
PROGRAM**

KENNEDY SPACE CENTER	FY 1996	FY 1997	FY 1998
Space station	198	279	304
U.S./Russian cooperative program	0	0	0
Space shuttle	923	796	709
Payload and utilization operations	392	392	259
Space science	54	53	30
Life and microgravity sciences	91	100	92
Mission to planet Earth	6	6	25
Aeronautical research and technology	0	0	0
Advanced space transportation technology	11	14	11
Commercial technology programs	15	11	11
Academic programs	1	2	2
Mission communication services	0	0	0
Space communications services	0	0	0
Safety, reliability and quality assurance	7	7	5
Construction of facilities	43	38	38
Subtotal, direct full-time permanent FTEs	1,741	1,698	1,486
Program management (Headquarters)	0	0	0
Center management and operations	404	338	338
Subtotal, full-time permanent FTEs	2,145	2,036	1,824
Other controlled FTEs	75	99	97
Total, full-time equivalents	2,220	2,135	1,921

work of the prime and major subcontractors. Included also are the logistics carriers development and maintenance activities and the design integration of cargo elements for Station mission build and logistics supply flights. It will be responsible for developing payload utilization capabilities and planning and executing payload integration and operations activities. This includes the development and operation of the EXPRESS Rack and Pallet payload carriers, the payload operations integration center, and data systems.

SPACE SHUTTLE - As the Center of Excellence for establishing, upgrading, and maintaining world class excellence in space propulsion programs, MSFC will provide for the design, development, and procurement of propulsion elements for the space shuttle transportation system.

SPACE SCIENCE - MSFC will lead the development and operations of the Advanced X-ray Astrophysics Facility (AXAF) and the Relativity Mission (Gravity Probe-B) as well as management of selected payloads. As the Center of Excellence for Space Optics, MSFC will provide design and development effort.

LIFE AND MICROGRAVITY SCIENCES AND APPLICATIONS - As NASA's Lead Center for Microgravity Research, MSFC will manage and provide the fundamental science and technology for processing materials under conditions that allow detailed examination of the constraints imposed by gravitational forces. MSFC will perform research in the areas of crystal growth, fluid physics, biophysics, solidification mechanics, and polymeric materials. The Center will define and develop hardware apparatus for microgravity research, and perform and manage research objectives, implementation, and applications to advance knowledge, improve the quality of life on Earth, and strengthen the foundations for continuing the exploration and development of space. Furthermore, emphasis will be given to developing and transitioning to the private sector the technology and applications of products developed for space.

AERONAUTICS AND SPACE TRANSPORTATION TECHNOLOGY - The Center will provide propulsion and vehicle technology to reduce cost and schedule risk in the development of next generation space transportation vehicles. It will develop technology in hybrid, liquid, other energy source propulsion systems, advanced manufacturing processes, and vehicle materials and structures. The Center will conduct technology efforts, under contract including cooperative agreements, with the U.S. launch vehicle industry, to improve the competitiveness of current systems.

MISSION TO PLANET EARTH - MSFC is studying the interrelationship of global-scale climate processes and regional-scale hydrology, which is the science of water's distribution and variability over Earth, its integrating role in linking the planet's physical, biogeochemical, and geophysical fluid subsystems, and the associated human dimensions of Earth system variability. Utilizing global observations and information systems, improved and validated

predictive models will be developed. MSFC will also lead in the establishment and operation of the Global Hydrology and Climate Center

MISSION/SPACE COMMUNICATION SERVICES - Manage and maintain the NASA Integrated Services Network (NISN) - NISN services provide communications hardware, software, and transmission medium that inter-connects NASA Headquarters, installations, universities, and major contractor locations for the transfer of data, voice, and video.

CENTER MANAGEMENT AND OPERATIONS - Provide administrative and financial services in support of Center management and provides for the operation and maintenance of the institutional facilities, systems, and equipment. Lead center for the development and implementation of the NASA Automation Consolidation Center (NACC), Agency Consolidated Payroll, Earned Value Performance Management, and Agency Logistics Business Systems Operations and Maintenance.

DISTRIBUTION OF FULL-TIME EQUIVALENT (FTE) WORKYEARS BY PROGRAM

MARSHALL SPACE FLIGHT CENTER	FY 1996	FY 1997	FY 1998
Space station	523	602	589
U.S./Russian cooperative program	0	0	0
Space shuttle	566	501	422
Payload and utilization operations	189	153	138
Space science	445	358	288
Life and microgravity sciences	256	231	228
Mission to planet Earth	61	50	48
Aeronautical research and technology	0	0	0
Advanced space transportation technology	579	591	616
Commercial technology programs	101	75	59
Academic programs	8	9	9
Mission communication services	0	1	1
Space communications services	14	16	17
Safety, reliability and quality assurance	2	1	1
Construction of facilities	24	24	23
Subtotal, direct full-time permanent FTEs	2,768	2,612	2,439
Program management (Headquarters)	0	0	0
Center management and operations	312	352	340
Subtotal, full-time permanent FTEs	3,080	2,964	2,779
Other controlled FTEs	46	45	40
Total, full-time equivalents	3,126	3,009	2,819

continued development and acceptance testing of the Space Shuttle Main Engines. SSC will also maintain and support the Center's technical core laboratory and operations. This support the Center's capability to conduct advanced propulsion test technology research and development for government and commercial propulsion programs.

MISSION TO PLANET EARTH - Through the Commercial Remote Sensing Program, SSC will enhance U.S. economic competitiveness via commercial partnership programs which apply remote sensing technologies in business applications and reduce new product development costs. As part of the Applied Research and Data Analysis program, SSC will conduct fundamental and applied research which increase our understanding of environmental systems sciences, with emphasis on coastal research of both land and oceans.

AERONAUTICS AND SPACE TRANSPORTATION TECHNOLOGY - Through the Technology Transfer and Small Business Innovative Research programs, SSC will broaden and accelerate the development of spin-off technologies derived from national investments in aerospace research. SSC will also support the development of new and innovative propulsion technologies through the Advanced Space Transportation Program which supports the agency goal of reducing the cost of access to space.

CENTER MANAGEMENT AND OPERATIONS - The Center will provide, operate, maintain, and manage the institutional base and laboratories required to accomplish and support assigned programs of NASA and other Federal and State agencies and organizations resident at the SSC.

**DISTRIBUTION OF FULL-TIME EQUIVALENT (FTE) WORKYEARS BY
PROGRAM**

STENNIS SPACE CENTER	FY 1996	FY 1997	FY 1998
Space station	0	0	0
U.S./Russian cooperative program	0	0	0
Space shuttle	39	39	56
Payload and utilization operations	25	25	8
Space science	0	0	0
Life and microgravity sciences	0	0	0
Mission to planet Earth	20	20	20
Aeronautical research and technology	0	0	0
Advanced space transportation technology	18	50	50
Commercial technology programs	3	4	4
Academic programs	4	4	4
Mission communication services	0	0	0
Space communications services	0	0	0
Safety, reliability and quality assurance	1	1	1
Construction of facilities	11	11	11
Subtotal, direct full-time permanent FTEs	121	154	154
Program management (Headquarters)	0	0	0
Center management and operations	79	83	84
Subtotal, full-time permanent FTEs	200	237	238
Other controlled FTEs	15	16	9
Total, full-time equivalents	215	253	247

Special (GAS) program.

EXPENDABLE LAUNCH VEHICLES - Technical oversight for NASA payloads of the small and medium class ELVs, such as Pegasus and Delta, used to put a wide variety of spacecraft into a broad spectrum of orbits.

SPACE SCIENCE

GSFC manages physics and astronomy activities in the following discipline areas: gamma ray astronomy, X-ray astronomy, ultraviolet and optical astronomy, infrared and radio astronomy, particle astrophysics, solar physics, interplanetary physics, planetary magnetospheres, and astrochemistry. GSFC is also responsible for conducting the mission operations for a variety of operating spacecraft. Other activities include managing NASA's sounding rocket and scientific balloon program.

GSFC also conducts planetary exploration research into the physics of interplanetary and planetary space environments. Participates in planetary mission instrument development, operations, and data analysis. GSFC develops technologies targeted at improved space born instruments, and on-board spacecraft systems and subsystems.

MISSION TO PLANET EARTH - Lead Center for MTPE, including the Earth Observing System (EOS). The primary objective of the EOS is to record global change and to observe regional-to-global processes. The EOS will document global change over a fifteen year period to provide long-term, consistent data sets for use in modeling and understanding global processes. This process and modeling research effort will provide the basis for establishing predictive global change models for policy makers and scientists.

Manages Earth Probes and New Millennium flight projects; manages, on a reimbursable basis, the acquisition of meteorological observing spacecraft for the National Oceanic and Atmospheric Administration (NOAA). Conducts science correlation measurements from balloons, sounding rockets, aircraft, and ground installations.

AERONAUTICS AND SPACE TRANSPORTATION TECHNOLOGY - The Wallops Flight Facility conducts flight studies of new approach and landing procedures using the latest in guidance equipment and techniques, pilot information displays, human factors data, and terminal area navigation. As an integral partner in the Agency's High Performance Computing and Communications (HPCC) program, GSFC leads an effort to enhance the infusion of HPCC technologies into the Earth and space science community through the provision of advanced computer architectures and communication technologies. Promotes private sector investment in space-based technologies through the transfer of technologies that derive from NASA's programs and activities.

MISSION/SPACE COMMUNICATION SERVICES - Research and technology

involves the investigation and development of advanced systems and techniques for spacecraft communications and tracking, command and control, and data acquisition and processing. The primary objectives are to apply technology and develop advanced capabilities to meet the tracking and data processing requirements of new missions and to improve the cost effectiveness and reliability of flight mission support.

Although, the Johnson Space Center is designated as the Space Operations Lead Center, GSFC manages a number of critical program elements, including operation of the Tracking and Data Relay Satellite System (TDRSS); the development of the replenishment TDRSS spacecraft; mission control, data processing, and orbit/attitude computation support; operating the Space Tracking and Data Network (STDN), the NASA Communications (NASCOM) Network, and the Aeronautics, Balloons and Sounding Rocket Program.

The NASCOM Network links the stations of the Deep Space Network (DSN), STDN, TDRSS, and other tracking and data acquisition elements with control centers and data processing and computation centers.

CENTER MANAGEMENT AND OPERATIONS - Provides administrative and financial services in support of Center management and provides for the operation and maintenance of the institutional facilities, systems, and equipment.

DISTRIBUTION OF FULL-TIME EQUIVALENT (FTE) WORKYEARS BY PROGRAM

GODDARD SPACE FLIGHT CENTER	FY 1996	FY 1997	FY 1998
Space station	0	0	0
U.S./Russian cooperative program	0	0	0
Space shuttle	6	7	7
Payload and utilization operations	35	39	39
Space science	1,255	1,278	1,314
Life and microgravity sciences	30	0	0
Mission to planet Earth	1,011	1,090	1,045
Aeronautical research and technology	27	28	26
Advanced space transportation technology	0	0	0
Commerical technology programs	15	11	12
Academic programs	2	3	3
Mission communication services	335	298	296
Space communications services	107	95	89
Safety, reliability and quality assurance	14	7	7
Construction of facilities	53	47	45
Subtotal, direct full-time permanent FTEs	2,890	2,903	2,883
Program management (Headquarters)	0	0	0
Center management and operations	589	592	589
Subtotal, full-time permanent FTEs	3,479	3,495	3,472
Other controlled FTEs	84	78	70
Total, full-time equivalent s	3,563	3,573	3,542

the Earth; the formation of stars and planetary systems: and an infrared technology program to investigate the nature and evolution of astronomical systems. Development continues of the Stratospheric Observatory for Infrared Astronomy (SOFIA) for research to be conducted by various NASA/university teams. Research and development (R&D) in advanced information technologies are directed toward significantly increasing the efficiency of SOFIA as it becomes operational. Development of the Lunar Prospector continues as does advanced studies of future Mars missions, with emphasis on telepresence and telescience technologies to enhance robotics science productivity.

LIFE AND MICROGRAVITY SCIENCES - Ames has the agency lead role in Astrobiology and Gravitational Biology, the adaptation of life forms to reduced gravity. Research continues into the effects of gravity on living systems using spaceflight experiments, ground simulation, and hypergravity facilities to understand the how gravity affects the development, structure and functions of living systems. Also studied are options for preventing problems in crew health and psychophysiology during and after extended spaceflight. Ames has a primary focus on advanced physical/chemical technologies for life support, including research into all aspects of regenerative life support. Research is conducted in the areas of ecosystems and health monitoring.

MISSION TO PLANET EARTH - Ames has the agency lead role in Astrobiology which in Earth Science focuses on the relationship between life on Earth and our changing environment. Instruments and computer models for the measurement and analysis of atmospheric constituents and properties from aircraft platform are being developed. Applied research and developments to enhance the use of remote and in-situ sensing technology for Earth resources applications continues.

AERONAUTICS AND SPACE TRANSPORTATION TECHNOLOGY - Conduct aeronautics research in ground-based and airborne automation technologies, human factors and operational methodologies for efficient, safe and effective airspace operations. Develop an integrated set of experimental and computational technologies built around an embedded information systems backbone, to provide rapid, accurate vehicle synthesis and testing capabilities. Conduct research spanning computation through flight, for Rotorcraft and Powered Lift configurations and for high performance aircraft to improve efficiency, affordability, and performance. Continue an interdisciplinary research program which provides the technology base for the development of subsonic and high speed transport aircraft. Emphasize joint research and technology projects with other NASA installations, government agencies, industry and academia.

Strengthen basic research and technology development for aerospace systems that transport humans and instrumentation to and from space and within the atmospheres of other bodies within the solar system. Research is conducted on thermal protection systems and arcjet testing is performed to meet national needs for access to space and planetary exploration.

SAFETY, RELIABILITY AND QUALITY ASSURANCE - Provide institutional safety and health programs and develop and integrate Safety, Reliability and Quality Assurance guidelines into program and project development.

CENTER MANAGEMENT AND OPERATIONS - Provide administrative and financial services in support of Center management and provides for the operation and maintenance of the institutional facilities, systems and equipment.

**DISTRIBUTION OF FULL-TIME EQUIVALENT (FTE) WORKYEARS BY
PROGRAM**

AMES RESEARCH CENTER	FY 1996	FY 1997	FY 1998
Space station	38	43	52
U.S./Russian cooperative program	0	0	0
Space shuttle	0	0	0
Payload and utilization operations	0	0	0
Space science	115	115	113
Life and microgravity sciences	115	106	79
Mission to planet Earth	132	101	124
Aeronautical research and technology	662	663	662
Advanced space transportation technology	71	73	69
Commerical technology programs	11	12	14
Academic programs	0	0	0
Mission communication services	11	0	0
Space communications services	0	0	0
Safety, reliability and quality assurance	15	15	16
Construction of facilities	8	8	8
Subtotal, direct full-time permanent FTEs	1,178	1,136	1,137
Program management (Headquarters)	0	0	0
Center management and operations	342	330	299
Subtotal, full-time permanent FTEs	1,520	1,466	1,436
Other controlled FTEs	75	77	54
Total, full-time equivalent	1,595	1,543	1,490

Conceive, formulate, and conduct piloted and unpiloted research programs in disciplinary technology, integrated aeronautical systems, and advanced concepts to meet current and future missions throughout subsonic, supersonic, and hypersonic flight regimes.

Conduct flight research programs in cooperation with other NASA Installations, other government agencies, the aerospace industry, and universities. Transition results, techniques, methods, and tools to industry and government users in a timely manner.

DFRC will also provide flight test support for atmospheric tests of experimental or developmental launch systems, including reusable systems.

SHUTTLE PROGRAMS/PAYLOAD AND UTILIZATION OPERATIONS - The DFRC will provide operational and technical support for the conduct of Space Shuttle missions, including on-orbit tracking and communications, landing support of crew and science requirements.

CENTER MANAGEMENT AND OPERATIONS - Provide administrative services in support of Center management and provides for the operation and maintenance of the Institutional facilities, systems and equipment.

DISTRIBUTION OF FULL-TIME EQUIVALENT (FTE) WORKYEARS BY PROGRAM

DRYDEN FLIGHT RESEARCH CENTER	FY 1996	FY 1997	FY 1998
Space station	0	0	0
U.S./Russian cooperative program	0	0	0
Space shuttle	15	19	19
Payload and utilization operations	0	0	0
Space science	0	0	0
Life and microgravity sciences	0	0	0
Mission to planet Earth	0	42	42
Aeronautical research and technology	219	274	318
Advanced space transportation technology	55	90	80
Commerical technology programs	2	3	3
Academic programs	0	0	0
Mission communication services	19	19	19
Space communications services	0	0	0
Safety, reliability and quality assurance	12	12	12
Construction of facilities	0	0	0
Subtotal, direct full-time permanent FTEs	322	459	493
Program management (Headquarters)	0	0	0
Center management and operations	116	116	123
Subtotal, full-time permanent FTEs	438	575	616
Other controlled FTEs	21	17	15
Total, full-time equivalent s	459	592	631

and future technology requirements and to demonstrate technology applications. Conduct theoretical and experimental research in fluid and flight mechanics to determine aerodynamic flows and complex aircraft motions.

Develop innovative new airframe systems to improve safety and significantly reduce cost per seat mile of commercial transport aircraft and reduce emissions to improve environmental compatibility. Pioneer the development of new materials, structural concepts, and fabricate technologies to revolutionize the cost, performance, and safety of future aircraft structures for radically new aircraft design.

Study critical environmental compatibility issues in order to make decisions on future high speed civil transport technology and development programs. Develop technology options for realization of practical hypersonic and transatmospheric flight.

Conduct control and guidance research programs to advance technology in aircraft guidance and navigation, aircraft control systems, cockpit systems integration and interfacing techniques, and performance validation and verification methods. Conduct research in aircraft noise prediction and abatement.

Conduct aeronautics and space research and technology development for advanced aerospace transportation systems, including hypersonic aircraft, missiles, and space access vehicles using airbreathing and rocket propulsion. Specific technology discipline areas of expertise are aerodynamics, aerothermodynamics, structures, materials, hypersonic propulsion, guidance and controls, and systems analysis. Conduct long-range studies directed at defining the technology requirements for advanced transportation systems and missions.

MISSION TO PLANET EARTH - Perform an agency-designated Atmospheric Science mission role in support of the Mission to Planet Earth Enterprise in the NASA Strategic Plan. Conduct a world-class peer reviewed and selected atmospheric science program in support of national goals in preserving the environment and in fundamental science. Specific discipline areas of expertise are Earth radiation research, particularly the role of clouds in the Earth's energy budget; middle and upper atmospheric research; and tropospheric research. Perform innovative scientific research to advance the knowledge of atmospheric radiative, chemical, and dynamic processes for understanding global change; develop innovative passive and active sensor systems concepts for atmospheric science measurements; explore advanced laser and LIDAR technologies for Earth science missions; develop advanced ultra-lightweight and adaptive materials, structural systems technologies and analytical tools for significantly reducing the end-to-end cost and increasing the performance of earth observation space instruments and systems. Serve as a Primary Data Analysis and Archival Center (DAAC) for Earth Radiation and Atmospheric Chemistry for the Earth Observing System.

SPACE SCIENCES -Support the solicitation and selection process of the Discovery,

Explorer and Solar Terrestrial Probes Programs; conduct reviews of candidate and selected missions and independent assessments of on-going space science missions to help ensure that criteria for high quality science return within cost and schedule constraints are met; develop advanced ultra-lightweight and adaptive materials, structural systems technologies and analytical tools for significantly reducing the end-to-end cost and increasing the performance of space science instruments and systems. Langley is developing the Phase B definition of the SABER instrument which is on the TIMED mission to explore the mesosphere and lower thermosphere globally and achieve a major improvement in the understanding of the fundamental processes governing energetics, chemistry, dynamics and transport. Langley is also analyzing SAMPEX data to assess the relative importance of solar terrestrial coupling due to varying electron precipitation compared to that due to 11-year solar flux variations.

LIFE AND MICROGRAVITY SCIENCES - Conduct space radiation exposure studies to support of current and future human space efforts for a more accurate assessment of astronaut radiation exposures and body shielding factors; performs system engineering studies and analysis in support of the microgravity flight experiments program; and provides education and public outreach materials for microgravity sciences and applications.

SYSTEMS ANALYSIS/INDEPENDENT PROGRAM EVALUATION AND ASSESSMENT - Serve as the Agency lead center for systems analysis and the conduct of independent evaluation and assessment of Agency programs. Maintain, as a Center core competency, appropriate expertise and analysis tools to support the Agency's Strategic Enterprises in the definition and development of advanced systems concepts to achieve NASA's goals. Utilize core systems analysis capabilities (supplemented with expertise from other Centers as appropriate) to support the Office of the Administrator by conducting independent assessments of advanced concepts and proposed new systems to validate conceptual level designs prior to Agency commitment to major developmental funding. Support the Administrator's Program Management Council (PMC) in the organization, administration, and technical support of PMC review process.

SAFETY, RELIABILITY, AND QUALITY ASSURANCE - Provide a Safety, Reliability, and Quality Assurance program that conducts independent assessment activities which reduce program risk.

CENTER MANAGEMENT AND OPERATIONS - Provide administrative and financial services in support of Center management and provide for the operation and maintenance of the institutional facilities, systems, and equipment.

DISTRIBUTION OF FULL-TIME EQUIVALENT (FTE) WORKYEARS BY PROGRAM

LANGLEY RESEARCH CENTER	FY 1996	FY 1997	FY 1998
Space station	24	30	29
U.S./Russian cooperative program	0	0	0
Space shuttle	0	0	0
Payload and utilization operations	1	29	28
Space science	104	81	80
Life and microgravity sciences	78	29	29
Mission to planet Earth	193	266	265
Aeronautical research and technology	1,361	1,426	1,422
Advanced space transportation technology	136	122	119
Commerical technology programs	32	33	33
Academic programs	0	0	0
Mission communication services	0	0	0
Space communications services	0	0	0
Safety, reliability and quality assurance	3	2	2
Construction of facilities	39	4	4
Subtotal, direct full-time permanent FTEs	1,971	2,022	2,011
Program management (Headquarters)	0	0	0
Center management and operations	508	453	439
Subtotal, full-time permanent FTEs	2,479	2,475	2,450
Other controlled FTEs	106	50	50
Total, full-time equivalents	2,585	2,525	2,500

RESEARCH AND PROGRAM MANAGEMENT FISCAL YEAR 1998
ESTIMATES
LEWIS RESEARCH CENTER
ROLES AND MISSIONS

LIFE AND MICROGRAVITY SCIENCES - The Lewis Research Center (LeRC) provides leadership and management of the fluid physics, combustion science, acceleration measurement and telescience disciplines of NASA's Microgravity Science Program. Conducts and sponsors ground-based scientific studies that may lead to experiments in space. Lewis has

a substantial effort in the design, buildup, testing, and integration of hardware for experiment packages to be launched aboard the Space Shuttle and the utilization of the Space Station for scientific missions.

SPACE STATION - LeRC support to the space station program includes technical and management support in the areas of power and on-board propulsion components and system, engineering and analysis, technical expertise, and testing for components and systems. This includes use of facilities and testbeds and construction of flight hardware as required.

MISSION COMMUNICATIONS SERVICES - LeRC manages and operates "next generation technology" communications satellite to prove high risk communication technologies, to transfer the knowledge gained to US satellite industry developers and users, and to reaffirm the US satellite communications preeminence in this rapidly growing world-wide market. The Center also ensures timely and high quality availability of radio frequency spectrum to enable the realization of NASA goals; actively stimulating the effective use of the Advanced Communications Technology Satellite (ACTS).

AERONAUTICAL RESEARCH AND TECHNOLOGY - As the NASA Lead Center for Aeropropulsion, LeRC conducts world-class research critical to the Agency Aeronautics Enterprise goals of developing and transferring enabling technologies to U.S. industry and other government agencies. The Center's Aeropropulsion program is essential to achieving National goals to promote economic growth and national security through safe, superior, and environmentally compatible U.S. civil and military aircraft propulsion systems. The Aeropropulsion Program spans subsonic, supersonic, hypersonic, general aviation, and high performance aircraft propulsion systems through innovative application of research in materials, structures, internal fluid mechanics, instrumentation and controls, interdisciplinary technologies, and aircraft icing.

As the NASA Center of Excellence in Turbomachinery, LeRC's expertise is critical to advancing the Agency's goals in the aeronautics and space programs. This designation enables LeRC to be a cost effective resource across multiple Agency programs in the vital and strategic discipline area of turbomachinery. Areas of expertise include air breathing propulsion and power systems, primary and auxiliary propulsion and power systems, on-board propulsion systems, and rotating machinery for the pumping of fuels.

CENTER MANAGEMENT AND OPERATIONS - Provides administrative and financial services in support of Center Management and provides for the operation and maintenance of the institutional facilities, systems, and equipment.

DISTRIBUTION OF FULL-TIME EQUIVALENT (FTE) WORKYEARS BY PROGRAM

LEWIS RESEARCH CENTER	FY 1996	FY 1997	FY 1998
Space station	158	181	151
U.S./Russian cooperative program	0	0	0
Space shuttle	0	0	0
Payload and utilization operations	35	41	41
Space science	236	227	215
Life and microgravity sciences	308	273	234
Mission to planet Earth	38	40	31
Aeronautical research and technology	960	986	970
Advanced space transportation technology	51	30	22
Commercial technology programs	11	18	18
Academic programs	14	11	11
Mission communication services	3	6	8
Space communications services	8	7	14
Safety, reliability and quality assurance	12	5	5
Construction of facilities	0	0	0
Subtotal, direct full-time permanent FTEs	1,834	1,825	1,720
Program management (Headquarters)	0	0	0
Center management and operations	386	345	302
Subtotal, full-time permanent FTEs	2,220	2,170	2,022
Other controlled FTEs	57	61	67
Total, full-time equivalents	2,277	2,231	2,089

RESEARCH AND PROGRAM MANAGEMENT FISCAL YEAR 1998
ESTIMATES
NASA HEADQUARTERS
ROLES AND MISSIONS

NASA CORPORATE HEADQUARTERS MISSION - The mission of Headquarters is to plan and provide executive direction for the implementation of U. S. space exploration, space science, aeronautics, and technology programs. This includes corporate policy

development, program formulation, resource allocations, program performance assessment, long-term institutional investments, and external advocacy for all of NASA.

MAJOR CORPORATE ROLES - At NASA Headquarters, the broad framework for program formulation will be conducted through four Strategic Enterprises: Human Exploration and Development of Space, Mission to Planet Earth, Aeronautics, and Space Science. Consistent with the NASA strategic plan, the Strategic Enterprises develop program goals and objectives to meet the needs of external customers within the policy priorities of the Administration and Congress.

Corporate level enabling processes and staff functions will provide cross-cutting interfaces required to support the Strategic Enterprises in legislative affairs, public affairs, budget and financial management, equal opportunity programs, human resources, legal affairs, procurement, international affairs, management systems and facilities, information systems and technology, small business, safety and mission quality, advisory committees, and policy and plans.

The Office of Headquarters Operations provides and manages the infrastructure necessary to support the Headquarters installation.

PROGRAM MANAGEMENT - A cadre of personnel presently assigned to Headquarters provides program management for the NASA Management Office at Jet Propulsion Lab, communications stations in Spain and Australia, international representatives in France , Japan, and Moscow, and Intergovernmental Personnel Assignments/Detailees at various governmental, educational, and commercial organizations. This new function was created to reflect the operational components that logically report directly to Headquarters due to their function but who are not located on-site.

DISTRIBUTION OF FULL-TIME EQUIVALENT (FTE) WORKYEARS BY PROGRAM

NASA HEADQUARTERS	FY 1996	FY 1997	FY 1998
Space station	28	27	13
U.S./Russian cooperative program	5	4	3
Space shuttle	39	33	25
Payload and utilization operations	37	28	13
Space science	82	75	69
Life and microgravity sciences	80	66	60
Mission to planet Earth	70	64	60
Aeronautical research and technology	55	48	42
Advanced space transportation technology	0	0	0
Commerical technology programs	18	12	7
Academic programs	33	30	27
Mission communication services	33	20	14
Space communications services	4	4	4
Safety, reliability and quality assurance	54	54	54
Construction of facilities	21	21	21
Subtotal, direct full-time permanent FTEs	559	486	412
Program management (Headquarters)	55	55	55
Center management and operations	776	683	676
Subtotal, full-time permanent FTEs	1,390	1,224	1,143
Other controlled FTEs	76	24	14
Total, full-time equivalent	1,466	1,248	1,157

ES-4	239	227	220
ES-3	44	42	41
ES-2	45	43	41
ES-1	56	53	52
Subtotal	536	509	495
CA	1	1	1
SL/ST	64	85	85
GS/GM-15	2,375	2,303	2,233
GS/GM-14	3,498	3,392	3,288
GS/GM-13	6,604	6,404	6,208
GS-12	2,408	2,335	2,264
GS-11	1,395	1,353	1,311
GS-10	313	304	294
GS-09	593	575	557
GS-08	273	265	257
GS-07	726	704	682
GS-06	687	666	646
GS-05	288	279	271
GS-04	47	46	44
GS-03	4	4	4
GS-02	2	2	2
Subtotal	19,278	18,718	18,147
Special ungraded positions established by NASA Administrator	27	26	25
Ungraded positions	434	421	408
Total permanent positions	20,278	19,677	19,078
Unfilled positions, EOY	0	0	0
Total, permanent employment, EOY	20,278	19,677	19,078

<u>PERSONNEL SUMMARY</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>
Average GS/GM grade	12.1	12.1	12.1
Average ES salary	\$114,264	\$118,035	\$121,340
Average GS/GM salary	\$59,910	\$62,306	\$64,487
Average salary of special ungraded positions established by NASA Administrator	\$91,460	\$94,478	\$97,124
Average salary of ungraded positions	\$41,570	\$42,942	\$44,144

CENTER LOCATIONS AND CAPITAL INVESTMENT

JOHNSON SPACE CENTER - The Lyndon B. Johnson Space Center is located 20 miles southeast of Houston, Texas. NASA owns 1,618 acres of land at the Houston site and uses another 60,552 at the White Sands Test Facility, Las Cruces, New Mexico. The total replacement cost including land, buildings, structures and facilities, equipment, and other fixed assets was \$1,568,023,000 as of September 30, 1996.

KENNEDY SPACE CENTER - The Kennedy Space Center is located 50 miles east of Orlando, Florida. NASA owns 82,943 acres and uses launch facilities at Cape Canaveral Air Station and Vandenberg Air Force Base. The total replacement cost including land, buildings, structures and facilities, equipment, and other fixed assets was \$2,381,369,000 as of September 30, 1996.

MARSHALL SPACE FLIGHT CENTER - The Marshall Space Flight Center is located within the U.S. Army's Redstone Arsenal at Huntsville, Alabama. MSFC also manages operation at the Michoud Assembly 15 miles east of New Orleans, Louisiana and the Slidell Computer Complex in Slidell, Louisiana. The total replacement cost including land, buildings, structures and facilities, equipment, and other fixed assets was \$2,796,658,000 as of September 30, 1996.

STENNIS SPACE CENTER - The Stennis Space Center is located approximately 50 miles northeast of New Orleans, Louisiana. NASA owns 20,663 acres and has easements covering an additional 118,284 acres. The total replacement cost including land, buildings, structures and facilities, equipment, and other fixed assets was \$535,234,000 as of September 30, 1996.

GODDARD SPACE FLIGHT CENTER - The Goddard Space Flight Center is located 15 miles northeast of Washington, D.C. at Greenbelt, Maryland. NASA owns 1,121 acres at this location and an additional 6,176 acres at the Wallops Flight Facility in Wallops Island,

equipment, and other fixed assets at both locations was \$2,288,392,000 as of September 30, 1996.

AMES RESEARCH CENTER - The Ames Research Center is located south of San Francisco on Moffett Field, California. NASA owns 447.5 acres at the Moffett Field location. The total replacement cost including land, buildings, structures and facilities, equipment, and other fixed assets at both locations was \$1,231,604,000 as of September 30, 1996.

DRYDEN FLIGHT RESEARCH CENTER - The Dryden Flight Research Center is 65 air miles northeast of Los Angeles. Dryden is located at the north end of Edwards Air Force Base on 838 acres of land under a permit from the Air Force. The total replacement cost at Dryden, including fixed assets in progress and contractor-held facilities at various locations, as of September 30, 1996 was \$369,923,000.

LANGLEY RESEARCH CENTER - The Langley Research Center is adjacent to Langley Air Force Base which is located between Williamsburg and Norfolk at Hampton, Virginia. NASA owns 788 acres and has access to 3,276 acres. The total replacement cost including land, buildings, structures and facilities, equipment, and other fixed assets was \$1,154,697,000 as of September 30, 1996.

LEWIS RESEARCH CENTER - The Lewis Research Center occupies two sites; the main site is in Cleveland, Ohio, adjacent to Cleveland-Hopkins Airport; the second site is the Plum Brook Station located south of Sandusky, Ohio, and 50 miles west of Cleveland. NASA owns 6,805 acres and leases an additional 14 acres at the Cleveland location. The total replacement cost including land, buildings, structures and facilities, equipment, and other fixed assets at both locations was \$894,819,000 as September 30, 1996.

NASA HEADQUARTERS - NASA Headquarters is located at Two Independence Square, 300 E St. SW, Washington, D.C.