National Aeronautics and Space Administration

BUDGET ESTIMATES

FISCAL YEAR 1975

Volume III

RESEARCH AND PROGRAM MANAGEMENT

SPECIAL ANALYSES

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

FISCAL YEAR 1975 ESTIMATES

RESEARCH AND PROGRAM MANAGEMENT

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RESEARCH AND PROGRAM MANAGEMENT

FISCAL YEAR 1975 ESTIMATES

GENERAL STATEMENT

The Research and Program Management appropriation includes funding for research in Government laboratories, management of programs, and other activities of the agency. Principally, it is intended to provide for:

The civil service staff needed to perform in-house research, and to plan, manage, and support the Research and Development programs.

The other elements of operational capability of the laboratories and facilities such as logistics support (travel and transportation, maintenance, and operation of facilities), and technical and administrative support.

The in-house personnel funded by the Research and Program Management appropriation are engaged in research and technology and direct and indirect support of project work. Over three-fourths of this appropriation is used to pay salaries and related benefits of these employees. The balance, embracing travel, facilities services, technical services, and administrative support at all NASA installations, provides the test and operational facilities and related activities which make possible the efficient accomplishment of NASA's approved missions.

SUMMARY BY INSTALLATION

Installations are under the management direction of the Associate Administrator having primary responsibility for the research and development programs conducted at the installation. The Associate Administrator for Manned Space Flight is responsible for the Kennedy Space Center, Johnson Space Center, and Marshall Space Flight Center; the Associate Administrator for Space Science is responsible for the Goddard Space Flight Center and Wallops Station; and the Associate Administrator for Aeronautics and Space Technology is responsible for the Ames Research Center, Flight Research Center, Langley Research Center, and the Lewis Research Center. The Associate Administrator for Organization and Management acts as the institutional director for NASA Headquarters.

SUMMARY OF OBLIGATIONS BY INSTALLATION

	1973	1974	1975
MANNED SPACE FLIGHT.....	$338,902,000	$351,580,000	$346,133,000
Johnson Space Center.....	110,600,000	116,860,000	118,179,000
John F. Kennedy Space Center, NASA.....	91,117,000	94,471,000	96,739,000
Marshall Space Flight Center.	137,185,000	140,249,000	131,215,000
SPACE SCIENCE.....	$106,440,000	$109,844,000	$112,283,000
Goddard Space Flight Center..	95,736,000	98,422,000	100,579,000
Wallops Station.....	10,704,000	11,422,000	11,704,000
AERONAUTICS AND SPACE TECHNOLOGY.....	$214,874,000	$219,814,000	$223,875,000
Ames Research Center.....	42,365,000	45,950,000	47,956,000
Flight Research Center.....	11,593,000	12,094,000	12,492,000
Langley Research Center.....	78,597,000	82,389,000	84,989,000
Lewis Research Center.....	82,319,000	79,381,000	78,438,000
SUPPORTING OPERATIONS			
NASA Headquarters.....	$61,567,000	$63,548,000	$67,333,000
TOTAL.....	$721,783,000	$744,786,000	$749,624,000

SUMMARY BY FUNCTION

The table below indicates requirements by functional category.

Functions	1973	1974	1975	Change in 1975
Personnel and related costs.....	$566,393,000	$582,596,000*	$579,065,000	$-3,531,000
Travel.....	16,468,000	17,272,000	16,444,000	-828,000
Facilities services..	64,661,000	69,946,000	79,349,000	+9,403,000
Technical services...	32,957,000	34,426,000	34,261,000	-165,000
Administrative support.....	41,304,000	40,546,000	40,505,000	-41,000
Total.....	$721,783,000	$744,786,000*	$749,624,000	$+4,838,000

*Includes proposed supplemental appropriation of $37,786,000 to cover the January and October 1973 pay raises.

The Research and Program Management appropriation request may be categorized into five functional areas as follows:

1. Personnel and Related Costs includes salaries and benefits for civil service personnel, and for personnel of other government agencies detailed to NASA. This category also includes supporting personnel costs, such as the costs of moving expenses (excluding travel of personnel), recruiting and personnel investigation services provided by the Civil Service Commission, and personnel training. The major factor contributing to the $3.5 million decrease is the FY 1975 savings resulting from the reduction of 1,880 permanent civil service positions in FY 1974, partially offset by the full year effect of the October 1973 pay raise.

2. Travel includes the cost of transportation, per diem, and other associated expenses required for direction, coordination, and management of research and development and construction of facilities program activities; for contract management and flight mission support; for overseas travel to launch and tracking sites; for travel to meetings and technical seminars; and for all other local and family travel expenses. The funding requirements are estimated to be $.8 million lower in 1975 resulting from the continuing effort to reduce travel costs.

3. Facilities Services includes rental of real property, the cost of maintenance and related services, custodial services, minor modifications, utilities and facility operations. The $9.4 million increase is due primarily to Public Law 92-313 which requires that effective July 1, 1974, agencies will reimburse the General Service Administration for all space and related services provided by GSA, and to significant utility rate increases.

4. Technical Services includes the cost of general purpose automatic data processing, institutional engineering services, the dissemination of scientific and technical information derived from the various research and development programs, and educational/informational program activities. The decrease of $165,000 is primarily attributable to the decreased support requirements following the Skylab launches.

5. Administrative Support includes the cost of communications, administrative printing, administrative supplies, general purpose materials and equipment, transportation support (excluding movement of personnel), and other support activities. The requirement for FY 1975 shows only a slight decrease of $41,000 for administrative support, because of increased prices for supplies and materials and communications rate increases.

The content of these functions is explained in more detail for the appropriation as a whole in the following pages. The detailed requirements for each installation are covered in their respective sections of this presentation.

PERSONNEL AND RELATED COSTS

	1973	1974	1975
A. COMPENSATION AND BENEFITS			
1. Compensation			
a. Permanent positions...	$505,611,000	$514,825,000	$512,850,000
b. Nonpermanent positions	5,616,000	7,075,000	7,166,000
c. Reimbursable details..	1,940,000	2,118,000	2,198,000
d. Overtime and other compensation.....	5,111,000	5,653,000	4,988,000
Subtotal, Compensation	$518,278,000	$529,671,000	$527,202,000
2. Benefits.....	$45,151,000	$48,986,000	$48,113,000
Subtotal, Compensation and Benefits.....	$563,429,000	$578,657,000	$575,315,000
B. SUPPORTING COSTS			
1. Transfer of personnel.....	$720,000	$1,015,000	$890,000
2. Civil Services Commission services.....	35,000	58,000	56,000
3. Personnel training.....	2,209,000	2,866,000	2,804,000
Subtotal, Supporting Services.....	$2,964,000	$3,939,000	$3,750,000
Total, Personnel and Related Costs.....	$566,393,000	$582,596,000	$579,065,000

A. COMPENSATION AND BENEFITS

1. Compensation

a. Permanent Positions: This category of personnel costs covers the salaries of permanent civil service employees, and is the largest part of personnel and related costs. The funds shown will support a civil service complement of 24,970 at the end of FY 1974 and 24,616 at the end of FY 1975. The estimate for permanent compensation is based upon the position structure at the start of the year, as modified by the addition of new positions and abolishment of existing positions, within grade advances, career development, etc.

b. Nonpermanent Positions: The nonpermanent position category covers the salaries of nonpermanent employees participating in the College Cooperative Training, Summer Employment, Youth Opportunity and Temporary Clerical programs.

The College Cooperative Training program provides alternating work and study periods providing the student with practical experience and academic training. This program permits many students to attend college who could otherwise not afford to by providing them an income during their work period. This program has been a principal source of recruitment for young and experienced professional personnel.

The Summer Employment program employs high school and college students and faculty members, and in consonance with the Federal Government policies and objectives provides them an insight into government operations. The agency benefits from the employment of these highly skilled and motivated individuals.

The Youth Opportunity Campaign program is conducted within the National Policy which enables disadvantaged youths to work at unskilled jobs both during the summer and throughout the regular school year.

The Temporary Clerical program is necessary to provide short-term support in positions occupied by permanent employees who are absent from work because of illness, vacation, maternity, or training.

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

d. Overtime and Other Compensation: Overtime, holiday pay, post and night work differential, and hazardous duty pay are paid from this category.

2. Benefits

In addition to compensation, NASA makes an employer's contribution to personnel benefits as authorized and required by law. These benefits include contributions to the Civil Service Retirement Fund, employee life and health insurance, and social security contributions for nonpermanent employees. The incentive awards provide cash awards for outstanding achievements by NASA employees, superior performance awards and for improvements of a center's operations. Payments for severance pay are made to former employees involuntarily separated through no fault of their own.

B. SUPPORTING COSTS

1. Transfer of Personnel

Relocation costs, such as the expenses of selling and buying a home, and the movement of household goods are provided under this category.

2. Civil Service Commission Services

The Civil Service Commission is reimbursed for security investigations on new hires for the entire agency, for recruitment advertising, career-maturity surveys, and any requested investigation of formal discrimination complaints.

3. Personnel Training

Training is provided within the framework of the Government Employees Training Act of 1958. Part of training consists of courses offered by other Government agencies, usually for a fee, and the remainder is provided through nongovernment sources.

SUMMARY OF TRAVEL BY MAJOR CATEGORY

	1973	1974	1975
Program travel.....	$10,885,000	$11,337,000	$10,803,000
Administrative travel.....	3,618,000	3,766,000	3,476,000
Meetings and technical seminars...	1,965,000	2,169,000	2,165,000
Total, Travel.....	$16,468,000	$17,272,000	$16,444,000

A. Program Travel

The largest individual part of program travel is for direction, coordination, and management of program activities. Because of the complexity of the programs and the geographical distribution of NASA centers and contractor and subcontractor effort throughout the entire United States, coordination and management of activities require frequent review by personnel with program responsibility. As projects reach the flight stage, support is required for prelaunch and postlaunch activities, including overseas travel to launch and tracking sites. The amount of travel required for this purpose is directly related to both the number and complexity of the launches.

B. Administrative Travel

Administrative travel includes travel for the direction and coordination of general management matters and travel by senior officials to review requirements and operations. It includes travel by functional managers in such areas as personnel, financial management, and procurement. This category also includes the cost of travel in and around the centers, including bus and taxi services and rental of motor vehicles; travel of unpaid members of research advisory committees; initial duty station, permanent change of assignment, and other family travel expenses; local transportation; rental of passenger carrying motor vehicles; and travel of non-NASA employees.

C. Meetings and Technical Seminars

Travel to meetings and technical seminars permits employees engaged in program activities to participate at both government-sponsored and non-government-sponsored meetings and seminars with other representatives of the aerospace community. This participation allows personnel to benefit from exposure to advances in the field which arise outside NASA, as well as allowing personnel to present both accomplishments and problems to their associates. Many of the government-sponsored meetings are made up of working panels convened to solve certain problems for the benefit of the government.

SUMMARY OF FACILITIES SERVICES

	1973	1974	1975
Rental of Real Property.....	$163,000	$167,000	$5,404,000
Maintenance and Related Services			
Maintenance, repair, and alteration of buildings and grounds	$18,039,000	$18,647,000	$19,885,000
Custodial services.....	17,336,000	18,427,000	20,029,000
Maintenance and repair of equipment.....	2,129,000	2,342,000	2,246,000
Subtotal.....	$37,504,000	$39,416,000	$42,160,000
Operation of Facilities			
Utilities.....	$19,875,000	$22,430,000	$23,679,000
Supplies and equipment.....	7,119,000	7,933,000	8,106,000
Subtotal.....	$26,994,000	$30,363,000	$31,785,000
Total, Facilities Services.....	$64,661,000	$69,946,000	$79,349,000

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A. Rental of Real Property

This category covers costs for rental of land and property to house personnel and provide storage and warehouse space for equipment, supplies, and materials where space is not available in government-owned facilities; and as a new requirement effective July 1, 1974, reimbursement to GSA for government-owned or leased space including office buildings in Washington, D.C., under the control of and provided by GSA.

B. Maintenance and Related Services

1. Maintenance, Repair and Alteration of Buildings and Grounds

This category includes general building maintenance, painting of structures, general ground maintenance, and maintenance of utility systems. This activity also provides for minor alterations of facilities.

2. Custodial Services

This category includes janitorial, laundry, guard and security, fire protection, and refuse handling services.

3. Maintenance of Equipment

Maintenance of equipment consists of work necessary to keep mechanical, electrical, general purpose, and shop equipment operational.

C. Operation of Facilities

1. Utilities

This category reflects the cost of electricity, water, gas, and other utilities for all areas, both institutional and operational.

2. Supplies and Equipment

This category includes the supplies, materials, and equipment required for the maintenance and operation of facilities at each installation.

SUMMARY OF TECHNICAL SERVICES

	1973	1974	1975
Automatic Data Processing			
Equipment	$6,334,000	$5,600,000	$5,152,000
Programming and operation services	10,092,000	12,049,000	12,444,000
Subtotal	$16,426,000	$17,649,000	$17,596,000
Scientific and Technical Information and Educational Programs			
Operation of NASA technical libraries	$1,278,000	$1,440,000	$1,539,000
Educational/informational programs	3,953,000	4,448,000	4,345,000
Scientific and technical information	10,736,000	10,413,000	10,259,000
Subtotal	$15,967,000	$16,301,000	$16,143,000
Engineering Services	$564,000	$476,000	$522,000
Total, Technical Services	$32,957,000	$34,426,000	$34,261,000

A. Automatic Data Processing

1. Equipment

This category provides for the lease, purchase, and maintenance of general purpose data processing equipment which supports institutional operations at each installation. Excluded is equipment dedicated to specific research or operational systems which is funded from the Research and Development appropriation.

2. Programming and Operation Services

Programming and operation services include system analysis, programming, computer operation and related services. Business type applications include payroll, personnel data, logistics, and procurement records and reports.

B. Scientific and Technical Information and Educational Programs

These programs include the costs of the technical libraries, educational/informational programs, and the scientific and technical information services.

1. Operation of Technical Libraries

The technical library was established to service employees with their information needs for books, periodicals, technical reports, and other documentation. The costs for these services are budgeted in this subfunction.

2. Educational/Informational Programs

The educational/informational programs provide for the documentation and dissemination of information about the agency's programs to the general public, the educational community at the elementary and secondary levels, and the mass communications media. Assistance to the mass communications media includes the assembly and exposition of newsworthy material in support of requests, and takes such form as press kits, news releases, television and radio information tapes and clips, and feature material.

3. Scientific and Technical Information

Scientific and technical information activities include documentation, publication, photographic and translation services.

C. Engineering Services

The engineering services provide for reliability and quality assurance studies, engineering design services for the design of minor construction, repair and alteration projects; special tooling, equipment and machine parts; and other related engineering services.

ADMINISTRATIVE SUPPORT

	1973	1974	1975
Communications			
Leased lines and long distance tolls	$4,523,000	$4,879,000	$4,758,000
Local telephone service	5,642,000	5,854,000	5,584,000
Other communications	2,396,000	2,815,000	2,818,000
Subtotal	$12,561,000	$13,548,000	$13,160,000

	1973	1974	1975
Administrative Printing.....	$2,348,000	$2,273,000	$2,116,000
Supplies, Materials, and Equipment	$6,712,000	$6,295,000	$6,295,000
Transportation			
Center operations.....	$4,485,000	$3,452,000	$3,028,000
Common carrier.....	1,849,000	1,937,000	2,029,000
Subtotal.....	$6,334,000	$5,389,000	$5,057,000
Adminstrative Support Services			
Installation support services...	$10,220,000	$9,911,000	$11,003,000
Occupational medicine and environmental health.....	3,129,000	3,130,000	2,874,000
Subtotal.....	$13,349,000	$13,041,000	$13,877,000
Total, Administrative Support...	$41,304,000	$40,546,000	$40,505,000

A. Communications

Included in this category are costs of leased lines, long distance tolls, teletype services, local telephone service, and other communications.

B. Administrative Printing

Included in this category are costs for duplicating, blueprinting, microfilming, and other photographic reproductions. Also included in this category is contractual printing and the related composition and binding operations, whether performed by other agencies (chiefly the Government Printing Office), or by commercial printing firms.

C. Supplies, Materials, and Equipment

This category includes administrative supplies, materials, and equipment.

D. Transportation

Transportation services include rental of vehicles utilized for transportation of cargo. The cost of aircraft operations and services, as well as the movement of all supplies, materials, equipment, and related items by common carrier is also included.

E. Administrative Support Services

Administrative support services include those activities which support each installation such as: mail and distribution services; maintenance and repair of office equipment and vehicles; occupational medicine and environmental health; patent services; operation of photocopy equipment; claims of property damage; chart and related art work. Other various improvement and feasbility studies and related services are also included in this category.

SUMMARY OF FY 1974 AND FY 1975 OPERATIONS

The operating budget for FY 1974 is $744,786,000. This plan is $37,786,000 more than the appropriation and a supplemental appropriation is proposed for this additional amount, all of which is for increased salary costs. Revised salary rates implemented in January 1973 by Executive Orders 11691 and 11692, and rates implemented in October 1973 by Executive Orders 11739 and 11740, have increased personnel costs in FY 1974 by $43,786,000. Of this increase, it is planned to absorb $6,000,000 through attrition and by filling vacant positions at a lower grade and salary. The operating budget also includes absorption of $4,210,000 of other unbudgeted requirements such as increases in utility rates, extended operation of the Plum Brook Station and increases in support contracts.

The request for FY 1975 is $749,624,000, an increase of $4,838,000 over the plan for FY 1974. As indicated earlier in the distribution of the total requirements by functional category, and the summarization of the changes for FY 1975, there is a new requirement for reimbursement of about $5 million to the General Services Administration for rental of space, both government-owned and leased. This new requirement is in accordance with the provisions of Section 4 of the "Public Buildings Amendments of 1972" act (P.L. 92-313). This change in budget responsibility is effective July 1, 1974. The FY 1975 estimate also provides for increased utility rates which are rising faster than conservation measures can offset. Significant reductions in personnel and travel costs are planned in FY 1975 to partially offset the increases noted above.

SUMMARY OF OPERATING PLANS AND EFFECT OF INCREASED PAY COSTS

	(Thousands of Dollars) FY 1974	FY 1975
Appropriation	707,000	
Effect of January 1973 salary rates	26,000	
Amount to be asorbed	-6,000	
Plan, based on January 1973 salary rates	727,000	725,271
Effect of October 1973 salary rates	17,786	24,353
Plan, based on October 1973 salary rates	744,786	749,624
Proposed supplemental appropriation to cover FY 1974 deficiency	37,786	

Permanent Civil Service Positions

The 1975 Budget provides for staffing at the 1974 levels for all centers except Marshall Space Flight Center where there will be a reduction of 354 civil service positions. This will lower employment to a new level of 24,616. The distribution by installation is shown in the following table:

Permanent Civil Service Positions

INSTITUTIONAL DIRECTOR AND INSTALLATION	FY 1973	FY 1974	FY 1975
MANNED SPACE FLIGHT	11,350	10,525	10,171
Johnson Space Center	3,727	3,652	3,652
John F. Kennedy Space Center, NASA	2,409	2,309	2,309
Marshall Space Flight Center	5,214	4,564	4,210
SPACE SCIENCE	4,403	4,228	4,228
Goddard Space Flight Center	3,966	3,808	3,808
Wallops Station	437	420	420
AERONAUTICS AND SPACE TECHNOLOGY	8,974	8,626	8,626
Ames Research Center	1,730	1,700	1,700
Flight Research Center	483	483	483
Langley Research Center	3,411	3,371	3,371
Lewis Research Center	3,350	3,072	3,072
NASA HEADQUARTERS	1,741	1,591	1,591
Planned unfilled positions	382	---	---
Subtotal	26,850	24,970	24,616
Other than permanent positions	2,349	2,439	2,345
Total, Positions	29,199	27,409	26,961

Recapitulation of Reductions:

	Fiscal Year in which accomplished:			
	1973	1974	1975	Total
Planned Reduction in FY 1974 Budget.....	382	1,498	---	1,880
Planned Reduction in FY 1975 Budget.....	---	---	354	354

At the FY 1975 level of 24,616 NASA will have undergone a cumulative reduction of 10,525, about one-third of peak employment, with a major reduction-in-force in every year, except one since 1968. The constant employment levels at all centers, except the Marshall Space Flight Center, will allow for a period of stability and for a critically needed infusion of young technical professionals.

The additional reduction of 354 positions at the Marshall Space Flight Center is primarily a result of the completion of Skylab and Apollo hardware activities which is more than offset by the buildup related to the space shuttle program.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

FISCAL YEAR 1975 ESTIMATES

RESEARCH AND PROGRAM MANAGEMENT

DISTRIBUTION OF PERMANENT POSITIONS BY PROGRAM

INSTITUTIONAL DIRECTOR AND PROGRAM	FY 1973	FY 1974	FY 1975
MANNED SPACE FLIGHT	8,107	7,435	7,275
Space shuttle	2,300	3,682	3,974
Space flight operations	5,550	3,692	3,234
Advanced missions	85	47	56
Apollo	172	14	11
SPACE SCIENCE	3,149	3,090	3,196
Physics and astronomy	1,721	1,735	1,823
Lunar and planetary	718	698	709
Launch vehicle procurement	710	657	664
SPACE APPLICATIONS	1,551	1,744	1,673
AERONAUTICS AND SPACE TECHNOLOGY	5,403	5,602	5,602
Aeronautical research and technology	3,659	3,870	3,899
Space and nuclear research and technology	1,744	1,732	1,703
TRACKING AND DATA ACQUISITION	873	843	821
TECHNOLOGY UTILIZATION	79	77	78
Subtotal, Direct Positions	19,162	18,791	18,645
Indirect Positions	7,306	6,179	5,971
Unfilled Positions	382	---	---
TOTAL, PERMANENT POSITIONS	26,850	24,970	24,616

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

FISCAL YEAR 1975 ESTIMATES

RESEARCH AND PROGRAM MANAGEMENT

DISTRIBUTION OF OBLIGATIONS BY FUNCTION
BY INSTALLATION
(Thousands of dollars)

FUNCTION	Total NASA	Subtotal OMSF	Johnson Space Center	John F. Kennedy Space Center, NASA	Marshall Space Flight Center	Subtotal OSS	Goddard Space Flight Center	Wallops Station	Subtotal OAST	Ames Research Center	Flight Research Center	Langley Research Center	Lewis Research Center	Headquarters
Personnel														
1973	566,393	248,834	84,353	51,383	113,098	89,338	81,907	7,431	185,922	35,890	9,695	67,234	73,103	42,299
1974	582,596	257,334	88,468	53,838	115,028	91,470	83,622	7,848	188,912	38,149	10,202	70,298	70,263	44,880
1975	579,065	250,786	88,992	54,291	107,503	92,215	84,178	8,037	192,150	39,497	10,454	72,601	69,598	43,914
Travel														
1973	16,468	7,877	3,320	1,847	2,710	2,426	2,211	215	3,874	761	203	1,832	1,078	2,291
1974	17,272	8,129	3,594	1,747	2,788	2,505	2,245	260	4,073	896	235	1,900	1,042	2,565
1975	16,444	7,210	3,498	1,456	2,256	2,510	2,245	265	4,109	899	235	1,910	1,065	2,615
Facilities Services														
1973	64,661	40,693	9,038	22,866	8,789	6,742	4,600	2,142	16,756	3,654	1,264	5,715	6,123	470
1974	69,946	43,240	10,083	23,907	9,250	8,097	5,706	2,391	18,282	4,706	1,240	5,704	6,632	327
1975	79,349	46,369	11,423	25,972	8,974	9,834	7,421	2,413	18,906	5,247	1,364	5,895	6,400	4,240
Technical Services														
1973	32,957	17,129	4,952	5,774	6,403	2,977	2,813	164	2,900	604	90	1,148	1,058	9,951
1974	34,426	19,520	6,467	6,109	6,944	2,482	2,281	201	2,436	642	84	1,301	409	9,988
1975	34,261	19,099	6,048	6,167	6,884	2,109	1,882	227	2,406	675	91	1,208	432	10,647
Administrative Support														
1973	41,304	24,369	8,937	9,247	6,185	4,957	4,205	752	5,422	1,456	341	2,668	957	6,556
1974	40,546	23,357	8,248	8,870	6,239	5,290	4,568	722	6,111	1,557	333	3,186	1,035	5,788
1975	40,505	22,669	8,218	8,853	5,598	5,615	4,853	762	6,304	1,638	348	3,375	943	5,917
Total														
1973	721,783	338,902	110,600	91,117	137,185	106,440	95,736	10,704	214,874	42,365	11,593	78,597	82,319	61,567
1974	744,786	351,580	116,860	94,471	140,249	109,844	98,422	11,422	219,814	45,950	12,094	82,389	79,381	63,548
1975	749,624	346,133	118,179	96,739	131,215	112,283	100,579	11,704	223,875	47,956	12,492	84,989	78,438	67,333

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

FISCAL YEAR 1975 ESTIMATES

RESEARCH AND PROGRAM MANAGEMENT

DISTRIBUTION OF OBLIGATIONS BY OBJECT CLASSIFICATION
BY FUNCTION

(Thousands of Dollars)

Object Classification	Total NASA	Personnel	Travel	Facilities Services	Technical Services	Administrative Support
Fiscal Year 1973						
Personnel compensation	518,278	518,278	---	---	---	---
Personnel benefits	44,232	44,232	---	---	---	---
Benefits for former personnel	1,281	1,281	---	---	---	---
Travel & transportation of persons	16,468	---	16,468	---	---	---
Transportation of things	3,474	346	---	---	32	3,096
Rent, communications and utilities	37,476	---	---	20,067	3,636	13,773
Printing and reproduction	5,018	---	---	---	2,669	2,349
Other services	80,414	2,252	---	37,157	24,717	16,288
Supplies and materials	11,242	4	---	6,175	600	4,463
Equipment	3,505	---	---	913	1,303	1,289
Lands and structures	349	---	---	349	---	---
Grants, subsidies and contributions	35	---	---	---	---	35
Insurance claims and indemnities	11	---	---	---	---	11
Totals	721,783	566,393	16,468	64,661	32,957	41,304
Fiscal Year 1974						
Personnel compensation	529,671	529,671	---	---	---	---
Personnel benefits	46,120	46,120	---	---	---	---
Benefits for former personnel	3,486	3,486	---	---	---	---
Travel & transportation of persons	17,272	---	17,272	---	---	---
Transportation of things	3,538	446	---	---	32	3,060
Rent, communications, and utilities	41,150	---	---	22,626	3,769	14,755
Printing and reproduction	4,828	---	---	---	2,555	2,273
Other services	83,638	2,873	---	38,880	26,859	15,026
Supplies and materials	11,862	---	---	6,969	631	4,262
Equipment	2,594	---	---	929	580	1,085
Lands and structures	542	---	---	542	---	---
Grants, subsidies and contributions	52	---	---	---	---	52
Insurance claims and indemnities	33	---	---	---	---	33
Totals	744,786	582,596	17,272	69,946	34,426	40,546
Fiscal Year 1975						
Personnel compensation	527,202	527,202	---	---	---	---
Personnel benefits	45,894	45,894	---	---	---	---
Benefits for former personnel	2,651	2,651	---	---	---	---
Travel & transportation of persons	16,444	---	16,444	---	---	---
Transportation of things	3,408	438	---	---	32	2,938
Rent, communications, and utilities	46,702	---	---	29,112	3,313	14,277
Printing and reproduction	4,675	---	---	---	2,559	2,116
Other services	87,263	2,880	---	41,424	27,311	15,648
Supplies and materials	11,966	---	---	7,062	641	4,263
Equipment	2,605	---	---	1,012	405	1,188
Lands and structures	739	---	---	739	---	---
Grants, subsidies and contributions	52	---	---	---	---	52
Insurance claims and indemnities	23	---	---	---	---	23
Totals	749,624	579,065	16,444	79,349	34,261	40,505

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

FISCAL YEAR 1975 ESTIMATES

RESEARCH AND PROGRAM MANAGEMENT

DISTRIBUTION OF OBLIGATIONS BY OBJECT CLASSIFICATION BY INSTALLATION

(Thousands of dollars)

Object Classification	Total NASA	Subtotal OMSF	Johnson Space Center	J. F. Kennedy Space Center, NASA	Marshall Space Flight Center	Subtotal OSS	Goddard Space Flight Center	Wallops Station	Subtotal OAST
FISCAL YEAR 1973									
Personnel compensation	518,278	228,336	77,421	47,182	103,733	81,936	75,149	6,787	170,203
Personnel benefits	44,232	18,889	6,367	3,890	8,632	6,367	6,275	592	14,418
Benefits for former personnel	1,281	681	197	98	386	116	100	16	472
Travel and transportation of persons	16,468	7,877	3,320	1,847	2,710	2,426	2,211	215	3,874
Transportation of things	3,474	1,555	313	1,157	85	1,297	1,274	23	504
Rent, communications, and utilities	37,476	16,753	5,564	6,459	4,730	5,803	5,304	499	10,946
Printing and reproduction	5,018	3,720	824	2,432	464	184	130	54	201
Other services	80,414	53,706	15,033	24,203	14,470	4,898	3,485	1,413	10,414
Supplies and materials	11,242	6,357	1,346	3,157	1,854	2,033	1,219	814	2,355
Equipment	3,505	879	208	555	116	692	431	261	1,466
Lands and structures	349	146	6	137	3	185	155	30	18
Grants, subsidies, and contributions	35	---	---	---	---	---	---	---	---
Insurance claims and indemnities	11	3	1	---	2	3	3	---	3
TOTALS	721,783	338,902	110,600	91,117	137,185	106,440	95,736	10,704	214,874
FISCAL YEAR 1974									
Personnel compensation	529,671	234,754	81,107	49,187	104,460	83,275	76,132	7,143	171,939
Personnel benefits	46,120	19,588	6,716	4,078	8,794	7,029	6,395	634	14,895
Benefits for former personnel	3,486	1,774	258	188	1,328	449	449	---	1,211
Travel and transportation of persons	17,272	8,129	3,594	1,747	2,788	2,505	2,245	260	4,073
Transportation of things	3,538	1,391	368	927	96	1,466	1,437	29	556
Rent, communications, and utilities	41,150	18,620	6,781	6,341	5,498	5,630	5,105	525	12,440
Printing and reproduction	4,828	3,403	870	2,064	469	199	143	56	210
Other services	83,638	55,527	14,641	25,979	14,907	6,428	4,720	1,708	11,334
Supplies and materials	11,862	7,197	2,331	3,163	1,703	2,070	1,264	806	2,361
Equipment	2,594	953	180	581	192	471	266	205	794
Lands and structures	542	223	11	200	12	319	263	56	---
Grants, subsidies, and contributions	52	2	2	---	---	---	---	---	---
Insurance claims and indemnities	33	19	1	16	2	3	3	---	1
TOTALS	744,786	351,580	116,860	94,471	140,249	109,844	98,422	11,422	219,814
FISCAL YEAR 1975									
Personnel compensation	527,202	228,706	81,739	49,788	97,179	84,247	76,945	7,302	175,363
Personnel benefits	45,894	19,129	6,742	4,087	8,300	7,234	6,580	654	15,058
Benefits for former personnel	2,651	1,882	131	52	1,699	---	---	---	769
Travel and transportation of persons	16,444	7,210	3,498	1,456	2,256	2,510	2,245	265	4,109
Transportation of things	3,408	1,145	369	685	91	1,534	1,505	29	574
Rent, communications, and utilities	46,702	18,601	7,199	6,136	5,266	6,780	6,231	549	12,846
Printing and reproduction	4,675	3,114	820	1,854	440	193	143	50	211
Other services	87,263	57,935	14,795	29,163	13,977	6,686	4,947	1,739	11,639
Supplies and materials	11,966	7,210	2,675	2,960	1,575	2,204	1,357	847	2,315
Equipment	2,605	778	196	402	180	565	336	229	990
Lands and structures	739	412	12	150	250	327	287	40	---
Grants, subsidies, and contributions	52	2	2	---	---	---	---	---	---
Insurance claims and indemnities	23	9	1	6	2	3	3	---	1
TOTALS	749,624	346,133	118,179	96,739	131,215	112,233	100,579	11,704	223,875

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

FISCAL YEAR 1975 ESTIMATES

RESEARCH AND PROGRAM MANAGEMENT

DISTRIBUTION OF OBLIGATIONS BY OBJECT CLASSIFICATION BY INSTALLATION

(Thousands of dollars)

btotal OMSF	Johnson Space Center	J. F. Kennedy Space Center, NASA	Marshall Space Flight Center	Subtotal OSS	Goddard Space Flight Center	Wallops Station	Subtotal OAST	Ames Research Center	Flight Research Center	Langley Research Center	Lewis Research Center	HDQTRS.
28,336	77,421	47,182	103,733	81,936	75,149	6,787	170,203	32,962	8,899	61,415	66,927	37,803
8,889	6,367	3,890	8,632	6,867	6,275	592	14,418	2,756	752	5,236	5,674	4,058
681	197	98	386	116	100	16	472	13	5	152	302	12
7,877	3,320	1,847	2,710	2,426	2,211	215	3,874	761	203	1,832	1,078	2,291
1,555	313	1,157	85	1,297	1,274	23	504	87	28	252	137	118
6,753	5,564	6,459	4,730	5,803	5,304	499	10,946	3,440	263	3,110	4,133	3,974
3,720	824	2,432	464	184	130	54	201	63	19	40	79	913
3,706	15,033	24,203	14,470	4,898	3,485	1,413	10,414	1,977	1,244	4,699	2,494	11,396
5,357	1,346	3,157	1,854	2,033	1,219	814	2,355	233	126	1,441	555	497
879	208	555	116	692	431	261	1,466	72	39	419	936	468
146	6	137	3	185	155	30	18	---	15	---	3	---
---	---	---	---	---	---	---	---	---	---	---	---	35
3	1	---	2	3	3	---	3	1	---	1	1	2
,902	110,600	91,117	137,185	106,440	95,736	10,704	214,874	42,365	11,593	78,597	82,319	61,567
,754	81,107	49,187	104,450	83,275	76,132	7,143	171,939	34,985	9,353	64,098	63,503	39,703
,588	6,716	4,078	8,794	7,029	6,395	634	14,895	2,969	789	5,639	5,498	4,608
,774	258	188	1,328	449	449	---	1,211	---	10	71	1,130	52
,129	3,594	1,747	2,788	2,505	2,245	260	4,073	896	235	1,900	1,042	2,565
391	368	927	96	1,466	1,437	29	556	110	30	282	134	125
620	6,781	6,341	5,498	5,630	5,105	525	12,440	4,153	315	3,520	4,452	4,460
403	870	2,064	469	199	143	56	210	70	20	40	80	1,016
527	14,641	25,979	14,907	6,428	4,720	1,708	11,334	2,398	1,192	4,962	2,782	10,349
197	2,331	3,163	1,703	2,070	1,264	806	2,361	254	120	1,458	529	234
953	180	581	192	471	266	205	794	115	30	419	230	376
223	11	200	12	319	263	56	---	---	---	---	---	---
2	2	---	---	---	---	---	---	---	---	---	---	50
19	1	16	2	3	3	---	1	---	---	---	1	10
580	116,860	94,471	140,249	109,844	98,422	11,422	219,814	45,950	12,094	82,389	79,381	63,548
706	81,739	49,788	97,179	84,247	76,945	7,302	175,363	36,218	9,597	66,292	63,256	38,886
29	6,742	4,087	8,300	7,234	6,580	654	15,058	3,084	807	5,794	5,373	4,473
82	131	52	1,699	---	---	---	769	---	---	---	769	---
10	3,498	1,456	2,256	2,510	2,245	265	4,109	899	235	1,910	1,065	2,615
45	369	685	91	1,534	1,505	29	574	115	30	294	135	155
01	7,199	6,136	5,265	6,780	6,231	549	12,846	4,637	370	3,722	4,117	8,475
14	820	1,854	440	193	143	50	211	70	20	41	80	1,157
35	14,795	29,163	13,977	6,686	4,947	1,739	11,639	2,541	1,272	5,056	2,770	11,003
10	2,575	2,960	1,575	2,204	1,357	847	2,315	277	130	1,500	408	237
78	196	402	180	565	336	229	990	115	31	380	464	272
.2	12	150	250	327	287	40	---	---	---	---	---	---
2	2	---	---	---	---	---	---	---	---	---	---	50
9	1	6	2	3	3	---	1	---	---	---	1	10
3	118,179	96,739	131,215	112,283	100,579	11,704	223,875	47,956	12,492	84,989	78,438	67,333

Lands and structures	349	146	6	137	3	185	155	30	18	---	15	---	3	---
Grants, subsidies, and contributions	35	---	---	---	---	---	---	---	---	---	---	---	---	35
Insurance claims and indemnities	11	3	1	---	2	3	3	---	3	1	---	1	1	2
TOTALS	721,783	338,902	110,600	91,117	137,185	106,440	95,736	10,704	214,874	42,365	11,593	78,597	82,319	61,567
FISCAL YEAR 1974														
Personnel compensation	529,671	234,754	81,107	49,187	104,460	83,275	76,132	7,143	171,939	34,985	9,353	64,098	63,503	39,703
Personnel benefits	46,120	19,588	6,716	4,078	8,794	7,029	6,395	634	14,895	2,969	789	5,639	5,498	4,608
Benefits for former personnel	3,486	1,774	258	188	1,328	449	449	---	1,211	---	10	71	1,130	52
Travel and transportation of persons	17,272	8,129	3,594	1,747	2,788	2,505	2,245	260	4,073	896	235	1,900	1,042	2,565
Transportation of things	3,538	1,391	368	927	96	1,466	1,437	29	556	110	30	282	134	125
Rent, communications, and utilities	41,150	18,620	6,781	6,341	5,498	5,630	5,105	525	12,440	4,153	315	3,520	4,452	4,460
Printing and reproduction	4,828	3,403	870	2,064	469	199	143	56	210	70	20	40	80	1,016
Other services	83,638	55,527	14,641	25,979	14,907	6,428	4,720	1,708	11,334	2,398	1,192	4,962	2,782	10,349
Supplies and materials	11,862	7,197	2,331	3,163	1,703	2,070	1,264	806	2,361	254	120	1,458	529	234
Equipment	2,594	953	180	581	192	471	266	205	794	115	30	419	230	376
Lands and structures	542	223	11	200	12	319	263	56	---	---	---	---	---	---
Grants, subsidies, and contributions	52	2	2	---	---	---	---	---	---	---	---	---	---	50
Insurance claims and indemnities	33	19	1	16	2	3	3	---	1	---	---	---	1	10
TOTALS	744,786	351,580	116,860	94,471	140,249	109,844	98,422	11,422	219,814	45,950	12,094	82,389	79,381	63,548
FISCAL YEAR 1975														
Personnel compensation	527,202	228,706	81,739	49,788	97,179	84,247	76,945	7,302	175,363	36,218	9,597	66,292	63,256	38,886
Personnel benefits	45,894	19,129	6,742	4,087	8,300	7,234	6,580	654	15,058	3,084	807	5,794	5,373	4,473
Benefits for former personnel	2,651	1,882	131	52	1,699	---	---	---	769	---	---	---	769	---
Travel and transportation of persons	16,444	7,210	3,498	1,456	2,256	2,510	2,245	265	4,109	899	235	1,910	1,065	2,615
Transportation of things	3,408	1,145	369	685	91	1,534	1,505	29	574	115	30	294	135	155
Rent, communications, and utilities	46,702	18,601	7,199	6,136	5,266	6,780	6,231	549	12,846	4,637	370	3,722	4,117	8,475
Printing and reproduction	4,675	3,114	820	1,854	440	193	143	50	211	70	20	41	80	1,157
Other services	87,263	57,935	14,795	29,163	13,977	6,686	4,947	1,739	11,639	2,541	1,272	5,056	2,770	11,003
Supplies and materials	11,966	7,210	2,675	2,960	1,575	2,204	1,357	847	2,315	277	130	1,500	408	237
Equipment	2,605	778	196	402	180	565	336	229	990	115	31	380	464	272
Lands and structures	739	412	12	150	250	327	287	40	---	---	---	---	---	---
Grants, subsidies, and contributions	52	2	2	---	---	---	---	---	---	---	---	---	---	50
Insurance claims and indemnities	23	9	1	6	2	3	3	---	1	---	---	---	1	10
TOTALS	749,624	346,133	118,179	96,739	131,215	112,283	100,579	11,704	223,875	47,956	12,492	84,989	78,438	67,333

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

PROPOSED APPROPRIATION LANGUAGE

RESEARCH AND PROGRAM MANAGEMENT

For necessary expenses of research in Government laboratories, management of programs and other activities of the National Aeronautics and Space Administration, not otherwise provided for, including uniforms or allowances therefor, as authorized by law (5 U.S.C. 5901-5902); awards; hire, maintenance and operation of administrative aircraft; purchase (not to exceed [twenty-six] sixteen for replacement only) and hire of passenger motor vehicles; and maintenance and repair of real and personal property, and not in excess of $10,000 per project for construction of new facilities and additions to existing facilities, and not in excess of $25,000 per project for rehabilitation and modification of facilities; [$707,000,000] $749,624,000: Provided, That contracts may be entered into under this appropriation for maintenance and operation of facilities, and for other services, to be provided during the next fiscal year: Provided further, That not to exceed $35,000 of the foregoing amount shall be available for scientific consultations or extraordinary expense, to be expended upon the approval or authority of the Administrator and his determination shall be final and conclusive. (42 U.S.C. 2451, et seq.; Department of Housing and Urban Development; Space, Science, Veterans, and Certain Other Independent Agencies Appropriation Act, 1974; additional authorizing legislation to be proposed.)

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Research and Program Management

Program and Financing (in thousands of dollars)

Identification code 27-00-0103-0-1-250	Budget plan			Costs and obligations		
	1973 actual	1974 estimate	1975 estimate	1973 actual	1974 estimate	1975 estimate
Program by activities:						
Direct program:						
1. Manned space flight	325,851	325,686	319,224	329,243	325,686	319,224
2. Scientific investigations in space	116,043	119,400	128,200	117,275	119,400	128,200
3. Space applications	57,492	69,300	67,500	58,273	69,300	67,500
4. Space and nuclear research and technology	60,188	59,100	58,000	60,458	59,100	58,000
5. Aeronautical research and technology	123,678	130,200	135,100	124,559	130,200	135,100
6. Supporting activities	38,531	41,100	41,600	38,606	41,100	41,600
Total direct program costs, funded	721,783	744,786	749,624	728,414	744,786	749,624
Reimbursable program:						
1. Manned space flight	1,215	1,298	1,355	1,197	1,298	1,355
2. Scientific investigations in space	254	307	307	244	307	307
3. Space applications	2,059	3,565	3,838	2,044	3,565	3,838
4. Space and nuclear research and technology	628	700	730	598	700	730
6. Supporting activities	107	230	170	45	230	170
Total reimbursable program costs	4,263	6,100	6,400	4,128	6,100	6,400
Total program costs, funded	726,046	750,886	756,024	732,542	750,886	756,024
Change in selected resources (undelivered orders)	----------	----------	----------	−6,496	----------	----------
10 Total	726,046	750,886	756,024	726,046	750,886	756,024
Financing:						
Receipts and reimbursements from:						
11 Federal funds				−3,573	−4,664	−4,670
14 Non-Federal sources				−690	−1,436	−1,730
25 Unobligated balance lapsing				7,652	----------	----------
Budget authority				**729,435**	**744,786**	**749,624**
Budget authority:						
40 Appropriation				729,450	707,000	749,624
41 Transferred to other accounts				−15	----------	----------
43 **Appropriation (adjusted)**				**729,435**	**707,000**	**749,624**
44.20 **Proposed supplemental for civilian pay raises**				----------	**37,786**	----------
Relation of obligations to outlays:						
71 Obligations incurred, net				721,783	744,786	749,624
72 Obligated balance, start of year				70,823	62,696	63,182
74 Obligated balance, end of year				−62,696	−63,182	−62,806
77 Adjustments in expired accounts				−850	----------	----------
90 Outlays				729,060	709,183	747,331
91.20 Outlays from civilian pay raise supplemental				----------	35,117	2,669

RESEARCH AND PROGRAM MANAGEMENT

FISCAL YEAR 1975 ESTIMATES

LYNDON B. JOHNSON SPACE CENTER

MISSION

The Lyndon B. Johnson Space Center (JSC) was established in November 1961 (initially as the Manned Spacecraft Center) with the responsibility for manned spacecraft development, program management, flight crew selection and training, space flight operations and related medical research, life sciences, and space science and applications. The Center has major management responsibilities for the Skylab Program, the Apollo Soyuz Test Project, the Space Shuttle Program, and the Earth Resources Program.

The lunar landing missions were completed in December 1972; however, JSC continued its responsibilities and functions in modifying the Apollo spacecraft to support the requirements of both the Skylab Program and the Apollo Soyuz Test Project (ASTP).

The U.S.A. and the U.S.S.R. are jointly participating in the ASTP, with launch scheduled early in FY 1976. The Soyuz spacecraft will be launched from the U.S.S.R. prior to launch of the Apollo spacecraft. A docking module (DM) equipped with a new universal docking system (DS) will accompany the Apollo spacecraft into orbit, and permit the docking of the two spacecraft and transfer of crew members between the two different vehicles. JSC has prime responsibility for the Apollo spacecraft, DM and DS hardware, and development and coordination of arrangements and interfaces for this mission.

JSC, under NASA Headquarters program direction, is Lead Center for the overall planning, direction and integration of all aspects of the Space Shuttle Program. In this role, the Center manages the design, development, test, and production of the Orbiter system, as well as supporting the Space Shuttle Program Manager in the integration of all elements of the program. The Shuttle is a low cost, space transportation system that includes an Orbiter vehicle that can fly repeatedly from earth to orbit and back, thus replacing many expendable launch systems currently in use. The Shuttle Program includes, in addition to Orbiters, external tanks, solid rocket boosters, main engines, ground and flight planning and operations, and launch and landing facilities planning and implementation.

As Lead Center for the Agency's Earth Resources Program (ERP), which is a significant part of the experimental Federal Earth Resources Program, JSC coordinates the work of other NASA Centers in this enterprise. JSC also has a Project Center role in the ERP, under which it provides the focus for all Center activity related to the development and application of remote sensing devices and techniques for earth resources surveys. One of these ERP activites includes an aircraft program for the development of remote sensors and data management techniques.

JSC engineering and development efforts focus on systems definition, development, evaluation and test for spacecraft development programs, as well as on applied research and technology development and advanced studies for future spacecraft systems, payloads and programs. Space science and applications efforts are devoted to the development of flight experiments, evaluation of results from scientific exploration, continuing research on returned lunar materials, and space environment studies. Life Sciences capabilities include in-flight experiments, flight crew monitoring, and development of physiological requirements for manned spacecraft systems. In the area of flight operations, JSC has extensive experience and capability for mission planning, and for the overall direction of flight control activities. Flight control is executed from the Mission Control Center, utilizing the Manned Space Flight Network.

The application of NASA-developed space technology to the public domain includes cooperative efforts with other Federal agencies and with several state and local governments. The Urban Systems Project Office manages, in close association with HUD, the engineering and development of an integrated utilities system that utilizes aerospace techniques toward the achievement of more efficient public housing.

JSC's White Sands Test Facility conducts the development and testing of spacecraft engines, and performs other functions that support the overall JSC mission but are best carried out in an isolated area.

DESCRIPTION

The Lyndon B. Johnson Space Center is located approximately 20 miles southeast of downtown Houston, Texas. Total NASA-owned land at the Houston site consists of 1,620 acres. The Center also occupies an additional 54,080 acres at the White Sands Test Facility, Las Cruces, New Mexico. The Center's mission also requires occupancy of the Earth Resources Laboratory located at the Mississippi Test Facility, Bay St. Louis, Mississippi. The total capital investment of the Lyndon B. Johnson Space Center, including fixed assets in progress and contractor-held facilities at various locations and the White Sands Test Facility, as of June 30, 1973, was $860,890,000.

SUMMARY OF RESOURCES REQUIREMENTS

FUNDS

Functions	1973	1974	1975	Change in 1975
Personnel.....	$84,353,000	$88,468,000	$88,992,000	$+524,000
Travel.....	3,320,000	3,594,000	3,498,000	-96,000
Facilities Services.	9,038,000	10,083,000	11,423,000	+1,340,000
Technical Services..	4,952,000	6,467,000	6,048,000	-419,000
Administrative Support.....	8,937,000	8,248,000	8,218,000	-30,000
Total, fund requirements..	$110,600,000	$116,860,000	$118,179,000	$+1,319,000

Personnel - The increase is due primarily to the full year's effect of revised salary rates implemented in October 1973, which was partially offset by a decrease in overtime and supplementary personnel costs.

Travel - The decrease in FY 1975 is based on reductions in motor pool passenger-carrying vehicle requirements.

Facilities Services - The increase is attributed to Shuttle program buildup at the White Sands Test Facility; utility rate increases; and wage and price escalation for support contractors.

Technical Services - The decrease is related to reduced photographic service requirements which result from the phaseout of the Skylab program.

Administrative Support - The decrease in FY 1975 is based on reduced medical service and printing requirements resulting from the Skylab program phaseout, which was partially offset by wage and price escalation for support contractors and replacement of obsolete office equipment.

PERSONNEL

	1973	1974	1975	Change in 1975
I. PERSONNEL.....	$84,353,000	$88,468,000	$88,992,000	$+524,000

Basis of Fund Requirements

	1973	1974	1975
A. Compensation and Benefits:			
1. Compensation:			
a. Permanent positions.....	$74,080,000	$77,418,000	$78,229,000
b. Nonpermanent positions..	799,000	1,175,000	1,259,000
c. Reimbursable details....	1,252,000	1,131,000	1,173,000
d. Overtime and other compensation.....	1,290,000	1,383,000	1,078,000
Subtotal, Compensation..	$77,421,000	$81,107,000	$81,739,000
2. Benefits.....	6,490,000	6,849,000	6,823,000
Subtotal, Compensation and Benefits.....	$83,911,000	$87,956,000	$88,562,000
B. Supporting Costs:			
1. Transfer of personnel.....	$122,000	$185,000	$100,000
2. Personnel training.....	320,000	327,000	330,000
Subtotal, Supporting Costs.....	$442,000	$512,000	$430,000
Total, Personnel and Related Costs.....	$84,353,000	$88,468,000	$88,992,000
1. Compensation.....	$77,421,000	$81,107,000	$81,739,000
a. Permanent positions.....	$74,080,000	$77,418,000	$78,229,000

The funds shown above will support 3,652 permanent positions in 1975. The reductions in permanent positions since the beginning of 1972 have been 495 or approximately 12 percent.

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Distribution of Permanent Positions by Program

	1973	1974	1975
Direct Positions			
Manned Space Flight			
Space shuttle	868	1,583	1,693
Space flight operations	1,494	1,020	909
Advanced missions	19	11	17
Apollo	138	9	6
Space Sciences			
Physics and astronomy	14	14	14
Lunar and planetary exploration	66	72	70
Applications			
Space applications	372	361	365
Aeronautics and Space Technology			
Aeronautical research and technology	4	4	4
Space and nuclear research and technology	---	4	4
Technology Utilization	5	8	8
Subtotal, direct positions	2,980	3,086	3,090
Indirect Positions			
Director and staff	110	114	114
Administrative support	390	401	396
Research and technology support	247	51	52
Subtotal, indirect positions	747	566	562
Total, permanent positions	3,727	3,652	3,652
Other than permanent positions	378	340	301
Total positions	4,105	3,992	3,953

The above table illustrates the use of civil service positions. Excluded are the reimbursable detailees, each filling a critical, necessary position and contributing to the available work force.

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Direct Positions			
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Aeronautical research and technology	4	4	4
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Subtotal, direct positions	2,980	3,086	3,090
Indirect Positions			
Director and staff	110	114	114
Administrative support	390	401	396
Research and technology support	247	51	52
Subtotal, indirect positions	747	566	562
Total, permanent positions	3,727	3,652	3,652
Other than permanent positions	284	335	335
Total positions	4,011	3,987	3,987

The above table illustrates the use of civil service positions. Excluded are the reimbursable detailees, each filling a critical, necessary position and contributing to the available work force.

Basis of Cost for Permanent Positions

In 1975 the cost of permanent positions will be $78,229,000. This is an increase of $811,000 from 1974. This increase results from the following.

Cost of permanent positions in 1974		$77,418,000
Cost of increases in 1975		2,628,000
Full year effect of October 1973 pay raise	$937,000	
Within grade advances and career development		
Full year effect of 1974 actions	688,000	
Partial year effect of 1975 actions	716,000	
Extra day	287,000	
Cost decreases in 1975		- 1,817,000
Abolished positions		
Full year effect of 1974 actions	$-1,035,000	
Turnover savings		
Full year effect of 1974 actions	-484,000	
Partial year effect of 1975 actions	-298,000	
Cost of permanent positions in 1975		$78,229,000

Other Compensation Costs

	1973	1974	1975
b. Nonpermanent Positions	$799,000	$1,175,000	$1,259,000

The 1975 plan includes 301 positions which is 39 less than 1974. These positions will be used to support the following programs at approximately the levels indicated:

Program	Positions
College cooperative training	65
Summer employment	72
Youth opportunity	145
Temporary clerical	19
Public service career	(30)
	301

c. Reimbursable Details	$1,252,000	$1,131,000	$1,173,000

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Turnover savings		
Full year effect of 1974 actions	-484,000	
Partial year effect of 1975 actions	-298,000	
Cost of permanent positions in 1975		$78,229,000

Other Compensation Costs

	1973	1974	1975
b. Nonpermanent Positions	$799,000	$1,175,000	$1,259,000

The 1975 plan includes 335 positions which is the same level as 1974. These positions will be used to support the following programs at approximately the levels indicated:

Program	Positions
College cooperative training	65
Summer employment	72
Youth opportunity	170
Temporary clerical	19
Public service career	(30)
	326

c. Reimbursable Details	$1,252,000	$1,131,000	$1,173,000

The military personnel detailed to the Johnson Space Center on a reimbursable basis are personnel experienced in manned flight or related fields. Each individual performs an essential and critical function to the current and future programs.

From the inception of the Johnson Space Center it was recognized that the experience and knowledge of individuals with a "flight" background would be essential to the manned space flight programs. The individuals most readily available within the Government ranks were in the military. The requirement for keeping the military current on the manned space flight technology is also essential, even though the participation would be limited to a relative few. This is the basis for utilizing reimbursable detailees in addition to the astronauts.

Some civilian employees are also detailed, on a reimbursable basis, to the Johnson Space Center. These are individuals whose experience in a specific field is essential.

The reimbursable detailees in 1975 are planned at the same level as 1974. The increase in costs is to provide for normal progressions in rank and the full year effect of the October 1973 pay raise.

	1973	1974	1975
d. Overtime and Other Compensation.....	$1,290,000	$1,383,000	$1,078,000

The major portion (approximately 80%) of overtime and holiday pay is used for indirect support of manned missions, long duration chamber tests and preparation and operation of astronaut training simulators. The earth resources program in such areas as ecological studies and weather observations requires some continuous effort beyond the normal work period. The remaining portion (approximately 20%) of overtime and holiday pay is used in peak work load periods. The decrease in FY 1975 is due to the completion of the flight portion of the Skylab program.

2. Benefits.....	$6,490,000	$6,849,000	$6,823,000

The cost of benefits is $26,000 less in 1975 than in 1974 because of the decreased requirement for severance pay.

The following are the amounts of contribution by category:

Category of Cost	1973	1974	1975
Civil Service Retirement Fund...	$5,189,000	$5,405,000	$5,485,000
Employees life insurance.....	258,000	290,000	290,000
Employees health insurance.....	758,000	780,000	780,000

	1973	1974	1975
FICA	30,000	36,000	46,000
Incentive awards	57,000	79,000	90,000
Other personnel benefits	1,000	1,000	1,000
Severance pay	197,000	258,000	131,000
Total	$6,490,000	$6,849,000	$6,823,000
B. Supporting Costs	$442,000	$512,000	$430,000
1. Transfer of personnel	$122,000	$185,000	$100,000

The decrease in FY 1975 is due to fewer relocations.

2. Personnel training	$320,000	$327,000	$330,000

The personnel training costs for 1975 are based on continuation of current training programs and the need to reorient skills of employees into areas compatible with the direction of the space program in the 1970's and JSC's role in the program. A prime objective is career development to permit employees to advance to more responsible positions and to provide the Center with highly motivated and experienced personnel not readily available in the labor market.

TRAVEL

	1973	1974	1975	Change in 1975
II. TRAVEL	$3,320,000	$3,594,000	$3,498,000	$-96,000

Basis of Fund Requirements

Summary of Travel by Major Category

	1973	1974	1975
A. Program Travel	$2,247,000	$2,403,000	$2,426,000
B. Administrative Travel	804,000	851,000	735,000
C. Meetings and Technical Seminars	269,000	340,000	337,000
Total, Travel	$3,320,000	$3,594,000	$3,498,000

	1973	1974	1975
A. Program Travel.....	$2,247,000	$2,403,000	$2,426,000

Program travel is the largest part of the travel function and accounts for approximately 69 percent of the Center's total travel requirements for FY 1975.

The Apollo Soyuz Test Project travel requirements will peak during the FY 1974-FY 1975 time frame. In this same time frame the Shuttle program will be reaching the heights of its complexity, requiring hardware and other requirement reviews, close configuration monitoring between the three Manned Space Flight Centers, and many trips for the purposes of contract monitoring and cost controls. These requirements are partially offset by decreases in the Skylab program, with a $23,000 increase resulting.

B. Administrative Travel.....	$804,000	$851,000	$735,000

The decrease in FY 1975 is due to the continuing efforts by the agency to reduce travel costs.

C. Meetings and Technical Seminars...	$269,000	$340,000	$337,000

Activities centered around the lunar samples, the earth observations programs, and Apollo Soyuz Test Project constitute the majority of this cost area. Many of these meetings are made up of science working panels convened to solve certain problems for the benefit of the people of the world as well as the United States government.

FACILITIES SERVICES

	1973	1974	1975	Change in 1975
III. FACILITIES SERVICES.....	$9,038,000	$10,083,000	$11,423,000	+$1,340,000

Basis of Fund Requirements

Summary of Facilities Services

	1973	1974	1975
A. Maintenance and Related Services			
1. Maintenance, repair and alteration of bldgs and grounds...	$3,737,000	$3,337,000	$3,648,000
2. Custodial services.....	2,618,000	2,673,000	2,983,000

	1973	1974	1975
3. Maintenance of equipment.....	$202,000	$243,000	$282,000
Subtotal.....	$6,557,000	$6,253,000	$6,913,000
B. Operation of Facilities			
1. Utilities.....	$1,983,000	$2,391,000	$2,771,000
2. Supplies and equipment.....	498,000	1,439,000	1,739,000
Subtotal.....	$2,481,000	$3,830,000	$4,510,000
Total, Facilities Services.....	$9,038,000	$10,083,000	$11,423,000
A. Maintenance and Related Services..	$6,557,000	$6,253,000	$6,913,000
1. Maintenance, repair and alterations of buildings and grounds.....	$3,737,000	$3,337,000	$3,648,000

This activity provides for maintenance, repair, and alteration of buildings, grounds and utility systems at the Johnson Space Center and the White Sands Test Facility. This service provides only cyclic maintenance and minor breakdown repair. Approximately 265 manyears of effort are required to maintain: 201 buildings, that have an average age of 10 years, containing 3,206,000 square feet of space; 868 acres of improved ground and 216 acres of surfaced areas; 154,000 linear feet of water line; 148,000 linear feet of sewage and drainage lines; 203,000 linear feet of electrical distribution lines and 18,673 linear feet of utility tunnels. The increase in FY 1975 is associated with the need to fund the support services contractor for a full twelve months, increased Shuttle support at White Sands Test Facility, and increased support contractor wage rates.

2. Custodial services.....	$2,618,000	$2,673,000	$2,983,000

The security service includes badging of personnel and visitors, and policing of traffic involving approximately 13,000 vehicles daily. This support service contractor also provides 24-hour fire fighting and ambulance service to JSC. The custodial services contract to maintain approximately 2,983,000 square feet of surface area was funded in FY 1973 for the contract period which extended into FY 1974 approximately 4 months. In FY 1974 the contract was funded for the remaining portion of the fiscal year, approximately 8 months. The increase in FY 1975 is the requirement to fund the custodial contract for a full fiscal year.

3. Maintenance of equipment.....	$202,000	$243,000	$282,000

The increase of $39,000 in FY 1975 is attributed to the continuous aging of the equipment which results in increased maintenance costs.

	1973	1974	1975
B. Operation of Facilities.....	$2,481,000	$3,830,000	$4,510,000
1. Utilities.....	$1,983,000	$2,391,000	$2,771,000

The FY 1973 consumption of electricity was 181,214,000 KWH and natural gas was 1,705,000 M. cu. feet. JSC has implemented an energy utilization reduction program to achieve a 7 percent reduction in FY 1974 and FY 1975. However, vendor cost of natural gas per MCF has increased from 30 cents in January 1973 to 79 cents in January 1974, for a cost escalation of 163 percent.

2. Supplies and equipment.....	$498,000	$1,439,000	$1,739,000

The increase in supply costs is attributable to a new (FY 1973) JSC policy which restricts support contractor from warehousing supplies and is offset by decreases within the support contract. The majority of R&PM support contractors now use NASA furnished materials and supplies.

TECHNICAL SERVICES

	1973	1974	1975	Change in 1975
IV. TECHNICAL SERVICES.....	$4,952,000	$6,467,000	$6,048,000	$-419,000

Basis of Fund Requirements

Summary of Technical Services

	1973	1974	1975
A. Automatic Data Processing			
1. Equipment.....	$2,015,000	$2,566,000	$2,613,000
2. Programming and operations....	1,057,000	1,800,000	1,756,000
Subtotal.....	$3,072,000	$4,366,000	$4,369,000
B. Engineering Services.....	$144,000	$183,000	$189,000

	1973	1974	1975
C. Scientific and Technical Information and Educational Programs			
1. Technical library.....	$79,000	$80,000	$80,000
2. Educational/informational programs.....	367,000	396,000	399,000
3. Scientific and technical information.....	1,290,000	1,442,000	1,011,000
Subtotal.....	$1,736,000	$1,918,000	$1,490,000
Total, Technical Services.....	$4,952,000	$6,467,000	$6,048,000
A. Automatic Data Processing.....	$3,072,000	$4,366,000	$4,369,000

The increase in FY 1975 results from higher lease and maintenance costs which is offset by a slightly lower requirement for programming and operations.

B. Engineering Services.....	$144,000	$183,000	$189,000

The FY 1975 increase is due to increased wage rates. The level of effort remains the same.

C. Scientific and Technical Information and Educational Programs...	$1,736,000	$1,918,000	$1,490,000

The costs are summarized below:

1. Operation of technical library.....	$79,000	$80,000	$80,000

The technical library acquires approximately 14,000 units a year and the funding requirements are the same as 1974.

2. Educational/informational programs.....	$367,000	$396,000	$399,000

Included in this area are the unescorted tours of the Johnson Space Center by the general public. In calendar year 1973, over 700,000 visitors toured JSC. Also included in this activity are the maintenance of exhibits, press conferences, news coverage of flights, distribution of exhibits, film and press releases. These activities accounted for approximately 82,046 inquiries from news media; 900 press interviews; 153 news releases; 69,000 information requests; 1,276,664 publications furnished; 2,189 tours; 300 exhibits in the adjacent eight state area; 286 speeches; 1,252 spacemobile presentations and 181 Lunar Samples provided. There is virtually no change anticipated in this level of activity.

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	1973	1974	1975
3. Scientific and technical information.....	$1,290,000	$1,442,000	$1,011,000

There is a decrease in FY 1975 because of the completion of the flight portion of the Skylab program.

ADMINISTRATIVE SUPPORT

	1973	1974	1975	Change in 1975
V. ADMINISTRATIVE SUPPORT....	$8,937,000	$8,248,000	$8,218,000	$-30,000

Basis of Fund Requirements

Summary of Administrative Support

	1973	1974	1975
A. Communications			
1. Leased lines and tolls.....	$963,000	$906,000	$896,000
2. Local telephone services.....	924,000	1,005,000	1,008,000
3. Other communications.....	117,000	119,000	129,000
Subtotal.....	$2,004,000	$2,030,000	$2,033,000
B. Administrative Printing.....	$824,000	$870,000	$820,000
C. Supplies, Materials and Equipment	$1,381,000	$1,571,000	$1,654,000
D. Transportation			
1. Center operations.....	$591,000	$547,000	$530,000
E. Administrative Support Services			
1. Installation support.....	$2,874,000	$2,110,000	$2,213,000
2. Occupational medicine and environmental health.....	1,263,000	1,120,000	968,000
Total, Administrative Support.....	$8,937,000	$8,248,000	$8,218,000

	1973	1974	1975
A. Communications.....	$2,004,000	$2,030,000	$2,033,000

The increase in FY 1974 and FY 1975 is for a 50 percent rate increase for installing or moving phones effective January 1, 1974. This is a local area rate change and is partially offset by reductions in numbers of instruments.

B. Administrative Printing.....	$824,000	$870,000	$820,000

There were 60,700,000 units of off-site printing in FY 1973. Decrease is due to reduction in Skylab requirements.

C. Supplies, Materials, and Equipment.....	$1,381,000	$1,571,000	$1,654,000

Approximately 99,000 items are issued a year from stock. The increase in supply costs is attributable to a new (FY 1973) JSC policy which restricts support contractors from warehousing supplies and is offset by decreases within the support contracts. Increase is due to vendor price escalation and replacement of several non-repairable items of office equipment.

D. Transportation.....	$591,000	$547,000	$530,000

Transportation services are provided at JSC; WSTF, Bethpage, N.Y.; Downey, California; and MTF. The decrease is due to better utilization of cargo-carrying vehicles.

E. Administrative Support Services...	$4,137,000	$3,230,000	$3,181,000

The major services in this category provide services which support the installation generally. This includes equipment rental such as the lease of 31 Xerox copiers that produce an average of 26,000,000 units annually; storage and issue functions handling approximately 130,000 units a year; forms and publications that necessitate the processing of approximately 600,000 items annually; moving and hauling; and DoD support for the center's activities at Ellington Air Force Base.

In addition, a contractor provides occupational medicine, industrial hygiene and environmental health services; operation of the dispensary for emergency medical treatment and employee physicals, handling approximately 22,000 patients a year; and recognition, measurement and control of hazardous working and environmental conditions.

The slight decrease in funding planned for these services in FY 1975 is primarily related to the reduction in the Skylab program.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
LYNDON B. JOHNSON SPACE CENTER
HOUSTON, TEXAS

JANUARY 10, 1974

STAFFING SUMMARY

	74	75
EXCEPTED	35	35
GS-16	17	17
GS-15	305	322
GS-14	504	506
ALL OTHER GS	2765	2746
WAGE GRADE	26	26
TOTAL PERMANENT	3652	3652

DIRECTOR / DEPUTY DIRECTOR

	74	75
EXCEPTED	2	2
GS-16	0	0
GS-15	0	0
GS-14	0	0
ALL OTHER GS	4	4
TOTAL PERMANENT	6	6

SPECIAL ASSISTANTS

	74	75
EXCEPTED	2	2
GS-16	0	0
GS-15	3	3
GS-14	3	3
ALL OTHER GS	7	7
TOTAL PERMANENT	15	15

STAFF OFFICES
NASA AUDIT
NASA INSPECTOR

PROGRAM OPERATIONS OFFICE

	74	75
EXCEPTED	1	1
GS-16	0	0
GS-15	15	16
GS-14	35	35
ALL OTHER GS	74	73
TOTAL PERMANENT	125	125

PERSONNEL OFFICE

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	1	1
GS-14	4	4
ALL OTHER GS	45	45
TOTAL PERMANENT	50	50

PATENT COUNSEL

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	2	3
GS-14	1	0
ALL OTHER GS	5	5
TOTAL PERMANENT	8	8

LEGAL OFFICE

	74	75
EXCEPTED	1	1
GS-16	0	0
GS-15	2	2
GS-14	3	3
ALL OTHER GS	5	5
TOTAL PERMANENT	11	11

PUBLIC AFFAIRS OFFICE

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	1	1
GS-14	4	4
ALL OTHER GS	25	25
TOTAL PERMANENT	30	30

SAFETY, RELIABILITY AND QUALITY ASSURANCE OFFICE

	74	75
EXCEPTED	2	2
GS-16	0	0
GS-15	16	16
GS-14	24	24
ALL OTHER GS	145	145
TOTAL PERMANENT	187	187

SPACE SHUTTLE PROGRAM OFFICE

	74	75
EXCEPTED	1	1
GS-16	3	3
GS-15	25	26
GS-14	20	20
ALL OTHER GS	16	15
TOTAL PERMANENT	66	65

DIRECTOR OF ADMINISTRATION AND PROGRAM SUPPORT

	74	75
EXCEPTED	2	2
GS-16	0	0
GS-15	25	26
GS-14	43	44
ALL OTHER GS	330	328
TOTAL PERMANENT	400	400

DIRECTOR OF CENTER OPERATIONS

	74	75
EXCEPTED	2	2
GS-16	0	0
GS-15	11	12
GS-14	15	15
ALL OTHER GS	401	400
WAGE GRADE	26	26
TOTAL PERMANENT	455	455

EARTH RESOURCES PROGRAM OFFICE

	74	75
EXCEPTED	1	1
GS-16	0	0
GS-15	6	7
GS-14	7	7
ALL OTHER GS	24	23
TOTAL PERMANENT	38	38

APOLLO SPACECRAFT PROGRAM OFFICE

	74	75
EXCEPTED	1	1
GS-16	0	0
GS-15	5	5
GS-14	8	9
ALL OTHER GS	8	7
TOTAL PERMANENT	22	22

SPACE SHUTTLE ORBITER PROJECT OFFICE

	74	75
EXCEPTED	2	2
GS-16	1	1
GS-15	12	12
GS-14	11	12
ALL OTHER GS	19	18
TOTAL PERMANENT	45	45

DIRECTOR OF ENGINEERING AND DEVELOPMENT

	74	75
EXCEPTED	2	2
GS-16	1	1
GS-15	7	7
GS-14	10	10
ALL OTHER GS	15	15
TOTAL PERMANENT	35	35

ASSISTANT DIRECTOR FOR CHEMICAL AND MECH SYSTEMS

	74	75
EXCEPTED	1	1
GS-16	0	0
GS-15	2	2
GS-14	0	0
ALL OTHER GS	2	2
TOTAL PERMANENT	5	5

CREW SYSTEMS DIVISION

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	7	7
GS-14	16	17
ALL OTHER GS	82	81
TOTAL PERMANENT	105	105

PROPULSION AND POWER DIVISION

	74	75
EXCEPTED	1	1
GS-16	0	0
GS-15	3	4
GS-14	16	15
ALL OTHER GS	80	80
TOTAL PERMANENT	100	100

STRUCTURES AND MECHANICS DIVISION

	74	75
EXCEPTED	0	0
GS-16	1	1
GS-15	10	10
GS-14	22	22
ALL OTHER GS	87	87
TOTAL PERMANENT	120	120

SPACE ENVIRONMENT TEST DIVISION

	74	75
EXCEPTED	0	0

ASSISTANT DIRECTOR FOR ADVANCED PLANNING AND DESIGN

	74	75
EXCEPTED	1	1
GS-16	0	0
GS-15	0	0
GS-14	0	0
ALL OTHER GS	1	1
TOTAL PERMANENT	2	2

SPACECRAFT DESIGN DIVISION

	74	75
EXCEPTED	0	0
GS-16	1	1
GS-15	9	9
GS-14	13	14
ALL OTHER GS	57	56
TOTAL PERMANENT	80	80

ENGINEERING ANALYSIS DIVISION

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	2	2
GS-14	7	8
ALL OTHER GS	31	30
TOTAL PERMANENT	40	40

FUTURE PROGRAMS DIVISION

	74	75
EXCEPTED	0	0
GS-16	1	1
GS-15	6	6
GS-14	2	2
ALL OTHER GS	5	5
TOTAL PERMANENT	14	14

ASSISTANT DIRECTOR FOR ELECTRONIC SYSTEMS

	74	75
EXCEPTED	1	1
GS-16	0	0
GS-15	7	7
GS-14	0	0
ALL OTHER GS	2	2
TOTAL PERMANENT	5	5

AVIONICS SYSTEMS ENGINEERING DIVISION

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	9	9
GS-14	16	16
ALL OTHER GS	48	48
TOTAL PERMANENT	73	73

TRACKING AND COMMUNICATIONS DEVELOPMENT DIVISION

	74	75
EXCEPTED	0	0
GS-16	2	2
GS-15	5	6
GS-14	20	20
ALL OTHER GS	69	68
TOTAL PERMANENT	96	96

CONTROL SYSTEMS DEVELOPMENT DIVISION

	74	75
EXCEPTED	0	0
GS-16	1	1
GS-15	7	7
GS-14	28	28
ALL OTHER GS	89	89
TOTAL PERMANENT	125	125

EXPERIMENT

DIRECTOR OF SCIENCE AND APPLICATIONS

	74	75
EXCEPTED	2	2
GS-16	1	1
GS-15	1	1
GS-14	1	1
ALL OTHER GS	7	7
TOTAL PERMANENT	12	12

EARTH OBSERVATIONS DIVISION

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	8	9
GS-14	16	16
ALL OTHER GS	69	69
TOTAL PERMANENT	93	93

PLANETARY AND EARTH SCIENCES DIVISION

	74	75
EXCEPTED	1	1
GS-16	0	0
GS-15	4	5
GS-14	5	5
ALL OTHER GS	41	40
TOTAL PERMANENT	51	51

OFFICE OF THE CURATOR

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	1	1
GS-14	1	1
ALL OTHER GS	10	10
TOTAL PERMANENT	12	12

SCIENCE AND APPLICATIONS ASTRONAUT OFFICE

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	4	4
GS-14	3	3
ALL OTHER GS	1	1
TOTAL PERMANENT	8	8

DIRECTOR OF LIFE SCIENCES

	74	75
EXCEPTED	2	2
GS-16	0	0
GS-15	4	4
GS-14	0	0
ALL OTHER GS	4	4
TOTAL PERMANENT	10	10

BIOENGINEERING SYSTEMS DIVISION

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	3	4
GS-14	6	5
ALL OTHER GS	16	16
TOTAL PERMANENT	25	25

BIOMEDICAL RESEARCH DIVISION

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	5	6
GS-14	8	7
ALL OTHER GS	15	15
TOTAL PERMANENT	28	28

HEALTH SERVICES DIVISION

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	5	5
GS-14	5	5
ALL OTHER GS	16	16
TOTAL PERMANENT	26	26

LIFE SCIENCES ASTRONAUT OFFICE

	74	75
EXCEPTED		
GS-16	0	0
GS-15	0	0
GS-14	2	2
ALL OTHER GS	1	1
TOTAL PERMANENT	3	3

DIRECTOR OF FLIGHT OPERATIONS

	74	75
EXCEPTED	2	2
GS-16	1	1
GS-15	6	6
GS-14	1	1
ALL OTHER GS	13	13
TOTAL PERMANENT	23	23

ASTRONAUT OFFICE

	74	75
EXCEPTED	1	1
GS-16	0	0
GS-15	2	2
GS-14	0	0
ALL OTHER GS	19	19
TOTAL PERMANENT	22	22

AIRCRAFT OPERATIONS DIVISION

	74	75
EXCEPTED	0	0
GS-16	1	1
GS-15	1	1
GS-14	5	6
ALL OTHER GS	60	59
TOTAL PERMANENT	67	67

FLIGHT CONTROL DIVISION

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	10	11
GS-14	10	10
ALL OTHER GS	107	106
TOTAL PERMANENT	127	127

CREW TRAINING AND PROCEDURES DIVISION

	74	75
EXCEPTED	0	0
GS-16	1	1
GS-15	3	4
GS-14	10	9
ALL OTHER GS	71	71
TOTAL PERMANENT	85	85

AIRCRAFT ENGINEERING DIVISION

DIRECTOR OF DATA SYSTEMS AND ANALYSIS

	74	75
EXCEPTED	2	2
GS-16	0	0
GS-15	6	6
GS-14	1	1
ALL OTHER GS	6	6
TOTAL PERMANENT	15	15

GROUND DATA SYSTEMS DIVISION

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	6	7
GS-14	16	16
ALL OTHER GS	130	129
TOTAL PERMANENT	152	152

INSTITUTIONAL DATA SYSTEMS DIVISION

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	6	6
GS-14	12	13
ALL OTHER GS	86	85
TOTAL PERMANENT	104	104

OPERATIONS ANALYSIS DIVISION

	74	75
EXCEPTED	0	0
GS-16	1	1
GS-15	10	11
GS-14	18	17
ALL OTHER	128	128
TOTAL PERMANENT	157	157

SPACECRAFT SOFTWARE DIVISION

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	3	4
GS-14	4	4
ALL OTHER GS	17	16
TOTAL PERMANENT	24	24

FLIGHT SIMULATION DIVISION

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HOUSTON, TEXAS

JANUARY 10, 1974

STAFFING SUMMARY

	74	75
EXCEPTED	35	35
GS-16	17	17
GS-15	305	322
GS-14	504	506
ALL OTHER GS	2765	2765
*WAGE GRADE	26	26
TOTAL PERMANENT	3652	3662

STAFF OFFICES
- NASA AUDIT
- NASA INSPECTOR

DIRECTOR DEPUTY DIRECTOR

	74	75
EXCEPTED	2	2
GS-16	0	0
GS-15	0	0
GS-14	0	0
ALL OTHER GS	4	4
TOTAL PERMANENT	6	6

SPECIAL ASSISTANTS

	74	75
EXCEPTED	2	2
GS-16	0	0
GS-15	3	3
GS-14	3	3
ALL OTHER GS	7	7
TOTAL PERMANENT	15	15

PROGRAM OPERATIONS OFFICE

	74	75
EXCEPTED	1	1
GS-16	0	0
GS-15	15	16
GS-14	35	35
ALL OTHER GS	74	73
TOTAL PERMANENT	125	125

PERSONNEL OFFICE

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	1	1
GS-14	4	4
ALL OTHER GS	45	45
TOTAL PERMANENT	50	50

PATENT COUNSEL

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	2	3
GS-14	3	0
ALL OTHER GS	3	5
TOTAL PERMANENT	8	8

LEGAL OFFICE

	74	75
EXCEPTED	1	1
GS-16	0	0
GS-15	2	2
GS-14	3	3
ALL OTHER GS	5	5
TOTAL PERMANENT	11	11

PUBLIC AFFAIRS OFFICE

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	1	1
GS-14	4	4
ALL OTHER GS	25	25
TOTAL PERMANENT	30	30

SAFETY, RELIABILITY AND QUALITY ASSURANCE OFFICE

	74	75
EXCEPTED	2	2
GS-16	0	0
GS-15	16	16
GS-14	24	24
ALL OTHER GS	145	145
TOTAL PERMANENT	187	187

SPACE SHUTTLE PROGRAM OFFICE

	74	75
EXCEPTED	1	1
GS-16	3	3
GS-15	25	26
GS-14	20	20
ALL OTHER GS	16	15
TOTAL PERMANENT	65	65

DIRECTOR OF ADMINISTRATION AND PROGRAM SUPPORT

	74	75
EXCEPTED	2	2
GS-16	0	0
GS-15	25	26
GS-14	43	44
ALL OTHER GS	330	328
TOTAL PERMANENT	400	400

DIRECTOR OF CENTER OPERATIONS

	74	75
EXCEPTED	2	2
GS-16	0	0
GS-15	11	12
GS-14	15	15
ALL OTHER GS	401	400
*WAGE GRADE	26	26
TOTAL PERMANENT	455	455

EARTH RESOURCES PROGRAM OFFICE

	74	75
EXCEPTED	1	1
GS-16	0	0
GS-15	6	7
GS-14	7	7
ALL OTHER GS	24	23
TOTAL PERMANENT	38	38

APOLLO SPACECRAFT PROGRAM OFFICE

	74	75
EXCEPTED	1	1
GS-16	0	0
GS-15	5	5
GS-14	8	9
ALL OTHER GS	8	7
TOTAL PERMANENT	22	22

SPACE SHUTTLE ORBITER PROJECT OFFICE

	74	75
EXCEPTED	2	2
GS-16	1	1
GS-15	12	12
GS-14	11	12
ALL OTHER GS	19	18
TOTAL PERMANENT	45	45

DIRECTOR OF ENGINEERING AND DEVELOPMENT

	74	75
EXCEPTED	2	2
GS-16	1	1
GS-15	7	7
GS-14	10	10
ALL OTHER GS	15	15
TOTAL PERMANENT	35	35

ASSISTANT DIRECTOR FOR CHEMICAL AND MECH SYSTEMS

	74	75
EXCEPTED	1	1
GS-16	0	0
GS-15	2	2
GS-14	0	0
ALL OTHER GS	2	2
TOTAL PERMANENT	5	5

CREW SYSTEMS DIVISION

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	7	7
GS-14	16	17
ALL OTHER GS	82	81
TOTAL PERMANENT	105	105

PROPULSION AND POWER DIVISION

	74	75
EXCEPTED	1	1
GS-16	0	0
GS-15	3	4
GS-14	16	15
ALL OTHER GS	80	80
TOTAL PERMANENT	100	100

STRUCTURES AND MECHANICS DIVISION

	74	75
EXCEPTED	0	0
GS-16	1	1
GS-15	10	10
GS-14	22	22
ALL OTHER GS	87	87
TOTAL PERMANENT	120	120

SPACE ENVIRONMENT TEST DIVISION

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	4	4
GS-14	6	6
ALL OTHER GS	28	28
TOTAL PERMANENT	38	38

URBAN SYSTEMS PROJECT OFFICE

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	2	2
GS-14	3	3
ALL OTHER GS	24	24
TOTAL PERMANENT	29	29

ASSISTANT DIRECTOR FOR ADVANCED PLANNING AND DESIGN

	74	75
EXCEPTED	1	1
GS-16	0	0
GS-15	0	0
GS-14	0	0
ALL OTHER GS	1	1
TOTAL PERMANENT	2	2

SPACECRAFT DESIGN DIVISION

	74	75
EXCEPTED	0	0
GS-16	1	1
GS-15	9	9
GS-14	13	14
ALL OTHER GS	57	56
TOTAL PERMANENT	80	80

ENGINEERING ANALYSIS DIVISION

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	2	2
GS-14	7	8
ALL OTHER GS	31	30
TOTAL PERMANENT	40	40

FUTURE PROGRAMS DIVISION

	74	75
EXCEPTED	0	0
GS-16	1	1
GS-15	6	6
GS-14	2	2
ALL OTHER GS	5	5
TOTAL PERMANENT	14	14

ASSISTANT DIRECTOR FOR ELECTRONIC SYSTEMS

	74	75
EXCEPTED	1	1
GS-16	0	0
GS-15	2	2
GS-14	0	0
ALL OTHER GS	2	2
TOTAL PERMANENT	5	5

AVIONICS SYSTEMS ENGINEERING DIVISION

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	9	9
GS-14	16	16
ALL OTHER GS	48	48
TOTAL PERMANENT	73	73

TRACKING AND COMMUNICATIONS DEVELOPMENT DIVISION

	74	75
EXCEPTED	0	0
GS-16	2	2
GS-15	5	6
GS-14	20	20
ALL OTHER GS	69	68
TOTAL PERMANENT	96	96

CONTROL SYSTEMS DEVELOPMENT DIVISION

	74	75
EXCEPTED	0	0
GS-16	1	1
GS-15	7	7
GS-14	28	28
ALL OTHER GS	89	89
TOTAL PERMANENT	125	125

EXPERIMENT SYSTEMS DIVISION

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	5	5
GS-14	19	19
ALL OTHER GS	59	59
TOTAL PERMANENT	83	83

DIRECTOR OF SCIENCE AND APPLICATIONS

	74	75
EXCEPTED	2	2
GS-16	1	1
GS-15	1	1
GS-14	1	1
ALL OTHER GS	7	7
TOTAL PERMANENT	12	12

EARTH OBSERVATIONS DIVISION

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	8	8
GS-14	16	16
ALL OTHER GS	69	69
TOTAL PERMANENT	93	93

PLANETARY AND EARTH SCIENCES DIVISION

	74	75
EXCEPTED	1	1
GS-16	0	0
GS-15	4	5
GS-14	5	5
ALL OTHER GS	41	40
TOTAL PERMANENT	51	51

OFFICE OF THE CURATOR

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	1	1
GS-14	1	1
ALL OTHER GS	10	10
TOTAL PERMANENT	12	12

SCIENCE AND APPLICATIONS ASTRONAUT OFFICE

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	5	4
GS-14	3	3
ALL OTHER GS	1	1
TOTAL PERMANENT	8	8

DIRECTOR OF LIFE SCIENCES

	74	75
EXCEPTED	2	2
GS-16	0	0
GS-15	4	4
GS-14	0	0
ALL OTHER GS	4	4
TOTAL PERMANENT	10	10

BIOENGINEERING SYSTEMS DIVISION

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	3	4
GS-14	6	5
ALL OTHER GS	16	16
TOTAL PERMANENT	25	25

BIOMEDICAL RESEARCH DIVISION

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	5	6
GS-14	8	7
ALL OTHER GS	15	15
TOTAL PERMANENT	28	28

HEALTH SERVICES DIVISION

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	5	5
GS-14	5	5
ALL OTHER GS	16	16
TOTAL PERMANENT	26	26

LIFE SCIENCES ASTRONAUT OFFICE

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	2	2
GS-14	1	1
ALL OTHER GS	3	3
TOTAL PERMANENT	6	6

DIRECTOR OF FLIGHT OPERATIONS

	74	75
EXCEPTED	2	2
GS-16	1	1
GS-15	6	6
GS-14	1	1
ALL OTHER GS	13	13
TOTAL PERMANENT	23	23

ASTRONAUT OFFICE

	74	75
EXCEPTED	1	1
GS-16	0	0
GS-15	2	2
GS-14	0	0
ALL OTHER GS	19	19
TOTAL PERMANENT	22	22

AIRCRAFT OPERATIONS DIVISION

	74	75
EXCEPTED	0	0
GS-16	1	1
GS-15	1	1
GS-14	5	6
ALL OTHER GS	60	59
TOTAL PERMANENT	67	67

FLIGHT CONTROL DIVISION

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	10	11
GS-14	10	10
ALL OTHER GS	107	106
TOTAL PERMANENT	127	127

CREW TRAINING AND PROCEDURES DIVISION

	74	75
EXCEPTED	0	0
GS-16	1	1
GS-15	3	4
GS-14	10	9
ALL OTHER GS	71	71
TOTAL PERMANENT	85	85

AIRCRAFT ENGINEERING DIVISION

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	3	4
GS-14	5	5
ALL OTHER GS	48	47
TOTAL PERMANENT	56	56

DIRECTOR OF DATA SYSTEMS AND ANALYSIS

	74	75
EXCEPTED	2	2
GS-16	0	0
GS-15	6	6
GS-14	1	1
ALL OTHER GS	6	6
TOTAL PERMANENT	15	15

GROUND DATA SYSTEMS DIVISION

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	6	7
GS-14	16	16
ALL OTHER GS	130	129
TOTAL PERMANENT	152	152

INSTITUTIONAL DATA SYSTEMS DIVISION

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	6	6
GS-14	12	13
ALL OTHER GS	86	85
TOTAL PERMANENT	104	104

OPERATIONS ANALYSIS DIVISION

	74	75
EXCEPTED	0	0
GS-16	1	1
GS-15	10	11
GS-14	18	17
ALL OTHER	128	128
TOTAL PERMANENT	157	157

SPACECRAFT SOFTWARE DIVISION

	74	75
EXCEPTED	0	0
GS-16	0	0
GS-15	3	4
GS-14	4	4
ALL OTHER GS	17	16
TOTAL PERMANENT	24	24

FLIGHT SIMULATION DIVISION

	74	75
EXCEPTED	0	0
GS-16	1	1
GS-15	4	4
GS-14	11	11
ALL OTHER GS	52	52
TOTAL PERMANENT	68	68

WHITE SANDS TEST FACILITY

	74	75
EXCEPTED	1	1
GS-16	0	0
GS-15	3	3
GS-14	7	7
ALL OTHER GS	41	41
TOTAL PERMANENT	52	52

EARTH RESOURCES LABORATORY (ATMTF)

	74	75
EXCEPTED	1	1
GS-16	0	0
GS-15	3	3
GS-14	1	1
ALL OTHER GS	20	20
TOTAL PERMANENT	25	25

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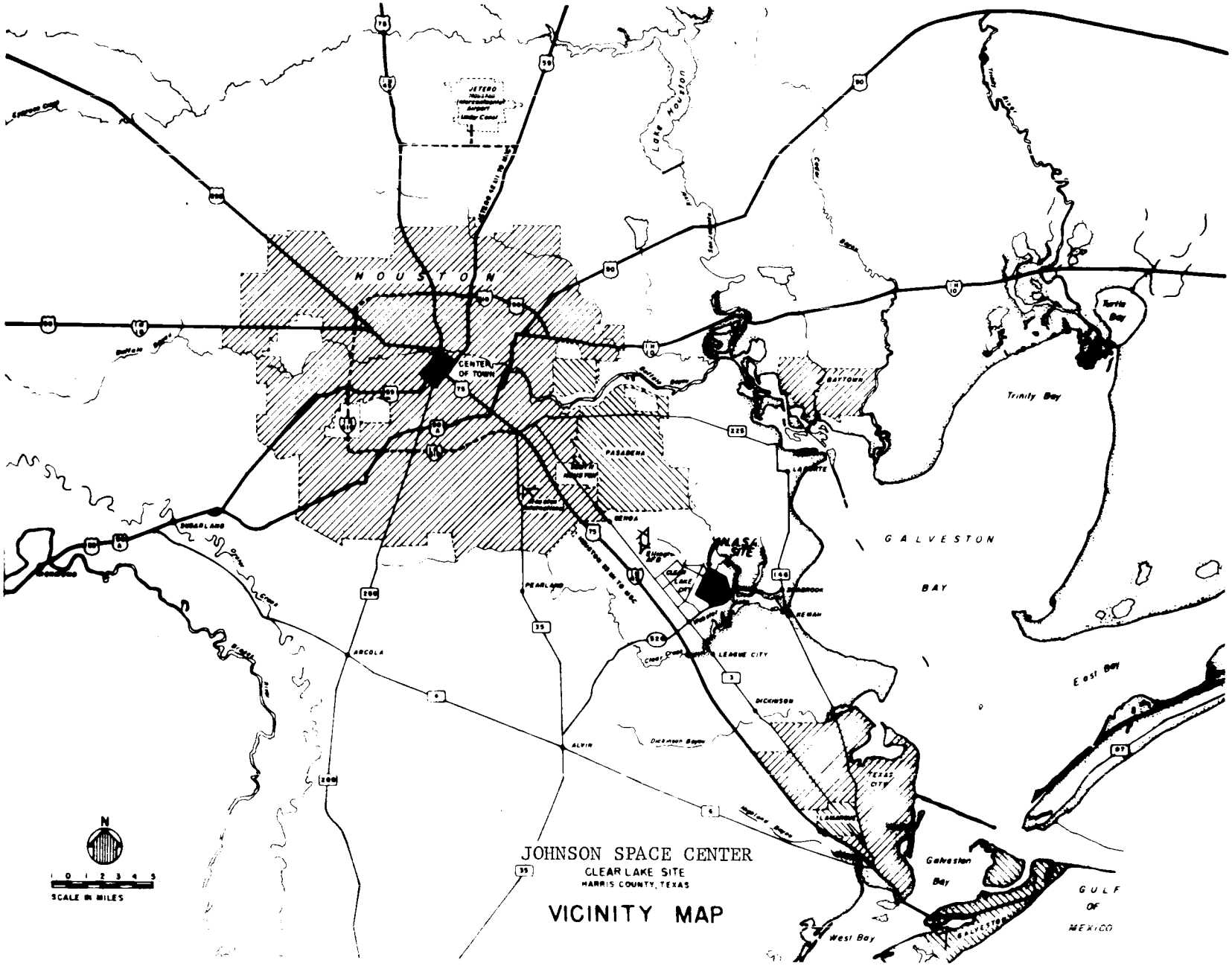
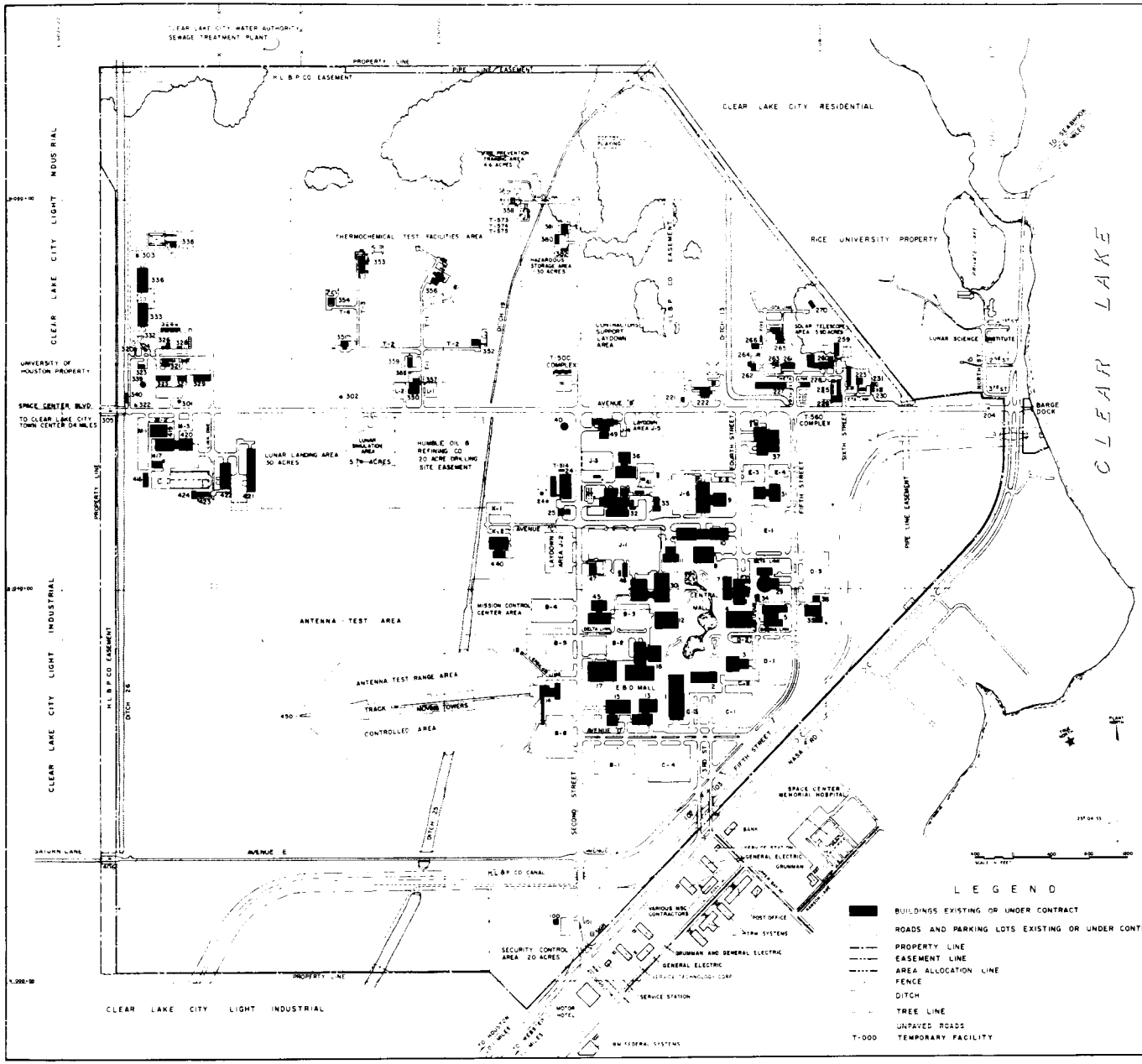

HOUSTON
CENTER OF TOWN
JETERO
Lake Houston
PASADENA
BAYTOWN
LA PORTE
GENOA
PEARLAND
ALVIN
ARCOLA
SUGAR LAND
LEAGUE CITY
DICKINSON
TEXAS CITY
GALVESTON
Trinity Bay
GALVESTON BAY
East Bay
Galveston Bay
West Bay
GULF OF MEXICO
N
SCALE IN MILES
JOHNSON SPACE CENTER
CLEAR LAKE SITE
HARRIS COUNTY, TEXAS
VICINITY MAP



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LYNDON B JOHNSON SPACE CENTER

CLEAR LAKE TEXAS

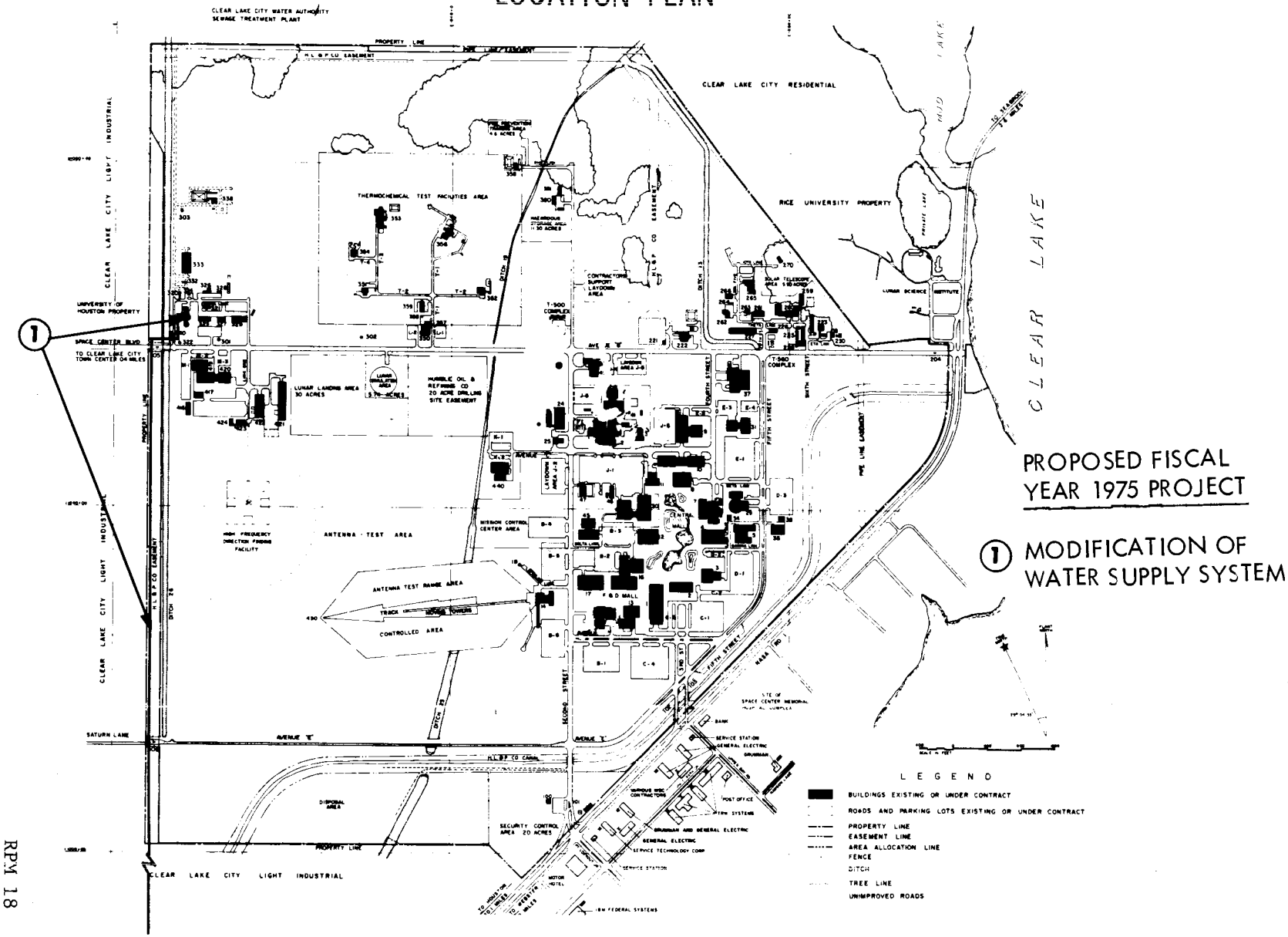
MASTER SITE PLAN

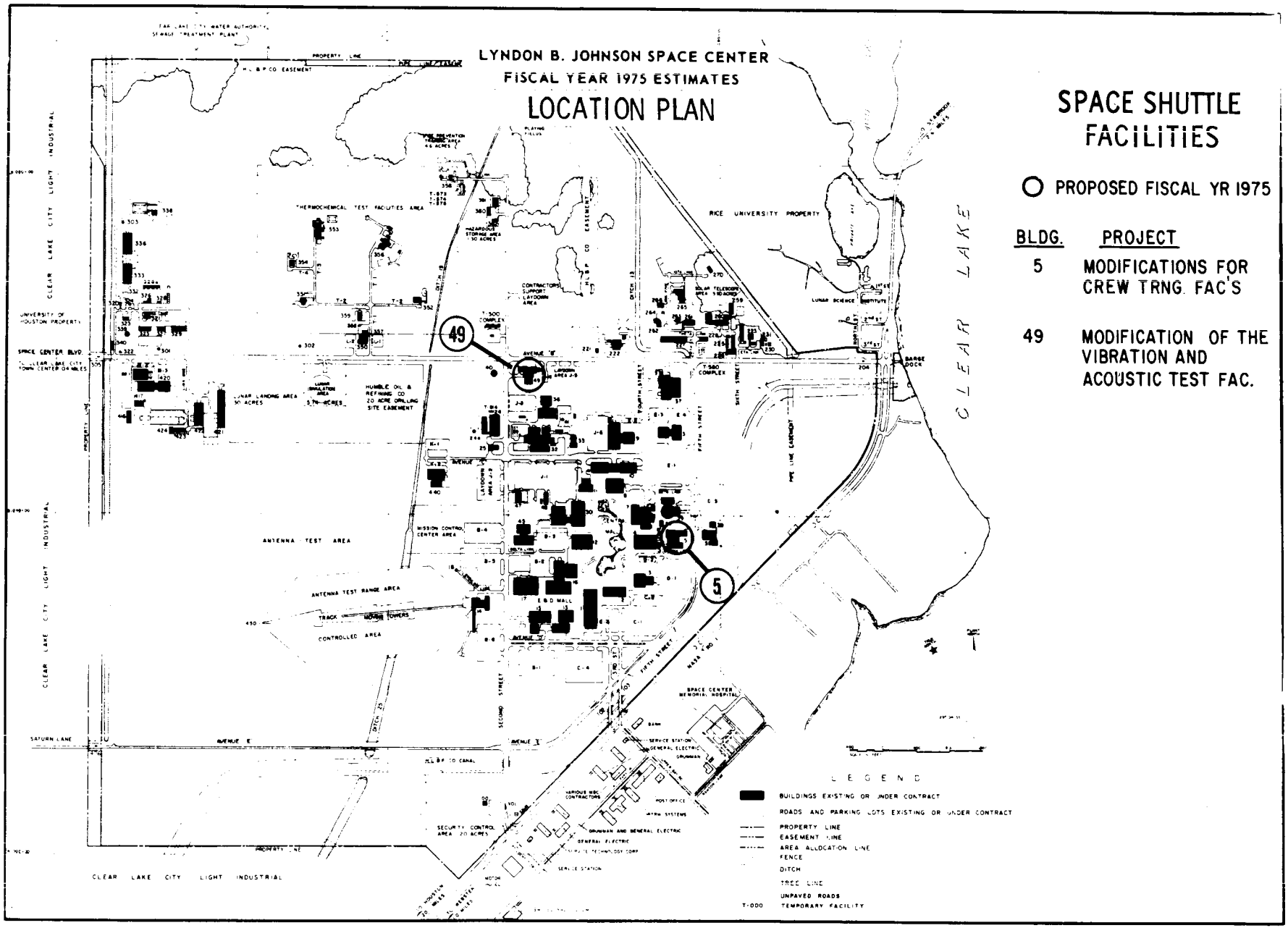
(FOR EXTERNAL USE)

ENGINEERING DIVISION — 21 MARCH 1973

LYNDON B. JOHNSON SPACE CENTER
FISCAL YEAR 1975 ESTIMATES

LOCATION PLAN




LYNDON B. JOHNSON SPACE CENTER
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SPACE CENTER MEMORIAL HOSPITAL
SATURN LANE
AVENUE E
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CLEAR LAKE CITY LIGHT INDUSTRIAL
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LUNAR LANDING AREA 30 ACRES
HUMBLE OIL & REFINING CO 20 ACRE DRILLING SITE EASEMENT
SECURITY CONTROL AREA 20 ACRES
PROPERTY LINE
BARGE DOCK
LEGEND
BUILDINGS EXISTING OR UNDER CONTRACT
ROADS AND PARKING LOTS EXISTING OR UNDER CONTRACT
PROPERTY LINE
EASEMENT LINE
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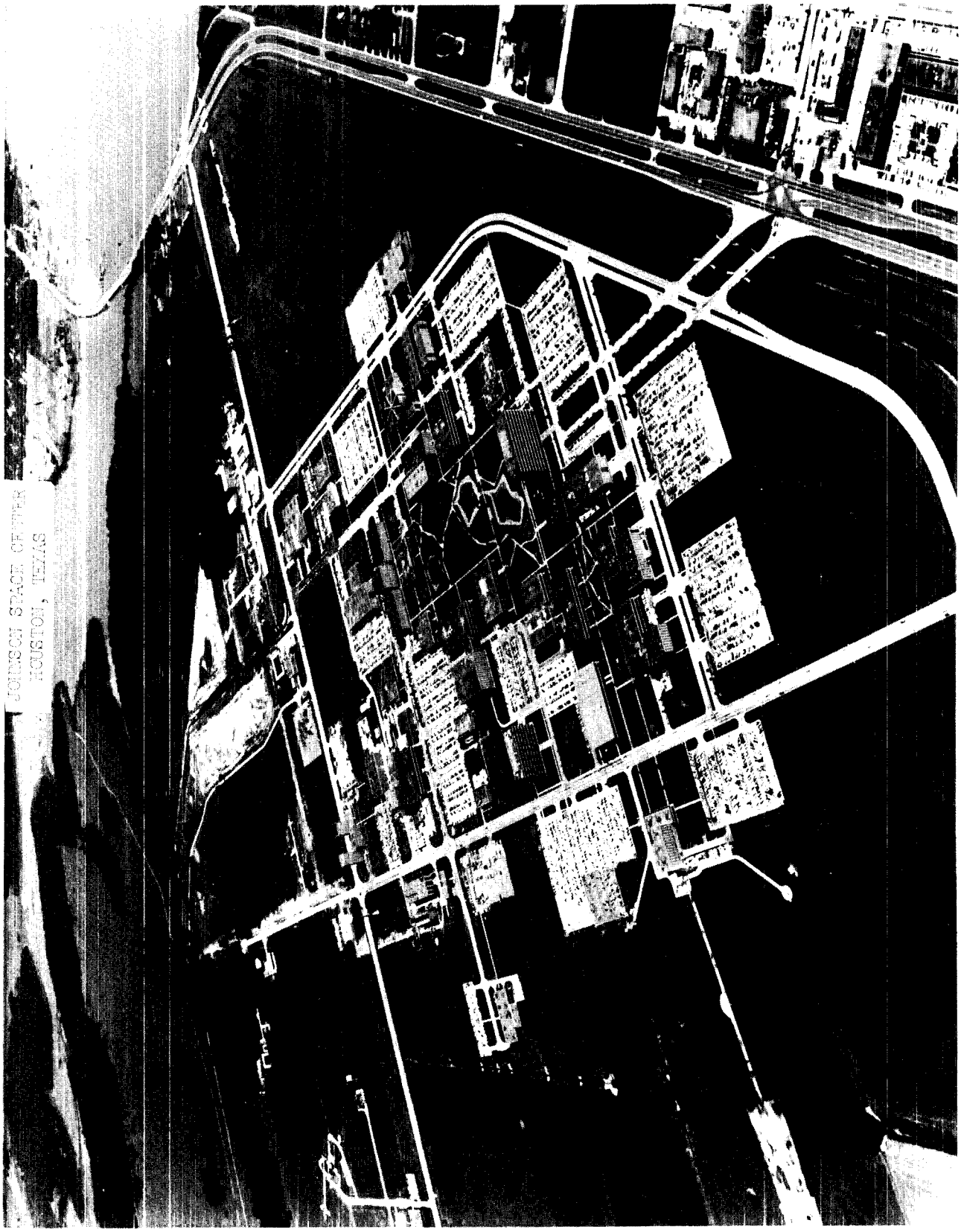
FENCE
DITCH
TREE LINE
UNPAVED ROADS
T-000 TEMPORARY FACILITY



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RESEARCH AND PROGRAM MANAGEMENT

FISCAL YEAR 1975 ESTIMATES

JOHN F. KENNEDY SPACE CENTER

MISSION

The Kennedy Space Center was established at Cape Canaveral, Florida, as a separate Center within NASA in July 1962. It serves as the primary Center within NASA for the test, checkout, and launch of space vehicles. This presently includes launch of manned and unmanned vehicles at the Kennedy Space Center, the Air Force Eastern Test Range, and the Air Force Western Test Range. The Center is now engaged in bringing the Skylab mission to a successful conclusion. In FY 1975 we will be heavily involved in preparation for the Apollo Soyuz Test Project launch while carrying forward the activities related to the design and development of space shuttle launch and landing facilities and launch site peculiar ground support equipment, as well as research and operational unmanned launches. The Kennedy Space Center is specifically responsible for:

1. Launch vehicle preparation and checkout.

2. Spacecraft and payload preparation and checkout.

3. Launch facility design, construction, maintenance, and operations, including advanced planning and studies leading to development of new launch operation concepts and techniques.

4. Final integration and integrated checkout of vehicle, spacecraft and launch facilities, and the conduct of actual launch operations.

5. Operation and coordination of supporting facilities, ground support equipment, and tracking and data acquisition and logistics support required for operation of all NASA activities at the Eastern and Western Test Ranges.

6. Technical and administrative support services for all NASA elements located in the area.

DESCRIPTION

Operations of the John F. Kennedy Space Center are conducted at two primary locations:

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1. The Kennedy Space Center is situated approximately 50 miles east of Orlando, Florida, in northeast Brevard County. The total land and water area occupied by the installation is 140,393 acres. Breakdown of this acreage is as follows:

NASA Owned	84,031
Easement, Banana River Causeway	271
Easement, Indian River Causeway	296
Deed of Dedication, Florida-Owned, Submerged Lands	55,795
Total	140,393

In addition, the Kennedy Space Center is responsible for the operation and maintenance of certain facilities within the national Eastern Test Range launch area.

2. The Western Test Range is located at Vandenberg Air Force Base, in Santa Barbara County, and is six miles west of Lompoc, California, and 160 miles north of Los Angeles, California. Unmanned launch operations are accomplished through a host-tenant agreement with the Air Force which owns the real property occupied by NASA.

The total capital investment at the Kennedy Space Center and the Western Test Range including fixed assets in progress and contractor-held facilities at various locations as of June 30, 1973, was $1,252,140,000.

SUMMARY OF RESOURCES REQUIREMENTS

FUNDS

Functions	1973	1974	1975	Change in 1975
Personnel.....	$51,383,000	$53,838,000	$54,291,000	$+453,000
Travel.....	1,847,000	1,747,000	1,456,000	-291,000
Facilities Services.....	22,866,000	23,907,000	25,972,000	+2,065,000
Technical Services.....	5,774,000	6,109,000	6,167,000	+58,000
Administrative Support...	9,247,000	8,870,000	8,853,000	-17,000
Total, fund requirements.....	$91,117,000	$94,471,000	$96,739,000	$+2,268,000

Personnel - The increase of $453,000 is due primarily to the full year's effect of revised salary rates implemented in October 1973, which was partially offset by a decrease in overtime and severance pay.

Travel - The reduction of $291,000 planned for 1975 is based on reductions in motor pool passenger-carrying vehicle requirements.

Facilities Services - The increase of $2,065,000 is attributable to cost increases for support contractor services and utilities.

Technical Services - The slight increase of $58,000 in 1975 is the result of support contractor wage rates.

Administrative Support - The decrease of $17,000 in 1975 is due to reductions in communications services and motor pool vehicle requirements associated with post-Skylab adjustments.

PERSONNEL

	1973	1974	1975	Change in 1975
I. PERSONNEL.....	$51,383,000	$53,838,000	$54,291,000	$+453,000

Basis of Fund Requirements

	1973	1974	1975
A. Compensation and Benefits:			
1. Compensation:			
a. Permanent positions.....	$45,894,000	$47,890,000	$48,692,000
b. Nonpermanent positions....	657,000	671,000	670,000
c. Overtime and other compensation.....	631,000	626,000	426,000
Subtotal, Compensation....	$47,182,000	$49,187,000	$49,788,000
2. Benefits.....	$3,964,000	$4,247,000	$4,118,000
Subtotal, Compensation and Benefits.....	$51,146,000	$53,434,000	$53,906,000
B. Supporting Costs:			
1. Transfer of personnel.....	$44,000	$54,000	$60,000
2. Personnel training.....	193,000	350,000	325,000
Subtotal, Supporting Costs....	$237,000	$404,000	$385,000
Total, Personnel and Related Costs.....	$51,383,000	$53,838,000	$54,291,000
1. Compensation.....	$47,182,000	$49,187,000	$49,788,000
a. Permanent Positions.....	$45,894,000	$47,890,000	$48,692,000

Distribution of Permanent Positions by Program

	1973	1974	1975
Direct Positions			
Manned Space Flight			
Space shuttle	334	403	423
Space flight operations	1,282	1,041	1,025
Advanced missions	8	2	2
Space Science			
Launch vehicle procurement	185	253	257
Applications	8	27	27
Subtotal, direct positions	1,817	1,726	1,734
Indirect Positions			
Director and staff	92	92	92
Administrative support	445	436	428
Research and development support	55	55	55
Subtotal, indirect positions	592	583	575
Total, permanent positions	2,409	2,309	2,309
Other than permanent positions	196	178	169
Total positions	2,605	2,487	2,478

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Research and development support	55	55	55
Subtotal, indirect positions	592	583	575
Total, permanent positions	2,409	2,309	2,309
Other than permanent positions	193	177	152
Total positions	2,602	2,486	2,461

The preceding table illustrates the allocation of positions as well as the proposed distribution. The KSC work force will step up shuttle program planning and design of launch site facilities and launch site peculiar ground support equipment. The Center, at the same time, will maintain the capability to support the Apollo Soyuz Test Project.

Basis of Cost for Permanent Positions

In 1975 the cost of permanent positions will be $48,692,000, an increase of $802,000 from 1974. This increase results as follows:

Cost of permanent positions in 1974		$47,890,000
Cost of increases in 1975		+2,063,000
Within grade advances and career development:		
Full year effect of 1974 actions	$632,000	
Partial year effect of 1975 actions	552,000	
Additional paid day in 1975	187,000	
Full year effect of October 1973 pay raise	692,000	
Cost decreases in 1975		-1,261,000
Abolished positions:		
Partial year effect of 1974 actions	-994,000	
Turnover savings	-267,000	
Cost of permanent positions in 1975		$48,692,000

Other Compensation Costs

	1973	1974	1975
b. Nonpermanent Positions	$657,000	$671,000	$670,000

The FY 1975 plan includes 169 positions. These positions will be used to support the following programs at approximately the levels indicated:

	Positions
Co-ops	47
Summer Program (Excluding Disadvantaged Youth)	50
Disadvantaged Youth Program	61
Other	11
Total	169

The preceding table illustrates the allocation of positions as well as the proposed distribution. The KSC work force will step up shuttle program planning and design of launch site facilities and launch site peculiar ground support equipment. The Center, at the same time, will maintain the capability to support the Apollo Soyuz Test Project.

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Abolished positions:		
Partial year effect of 1974 actions	-994,000	
Turnover savings	-267,000	
Cost of permanent positions in 1975		$48,692,000

Other Compensation Costs

	1973	1974	1975
b. Nonpermanent Positions	$657,000	$671,000	$670,000

Distribution of Nonpermanent Positions by Program

Co-ops	47	47	47
Summer Program (Excluding Disadvantaged Youth)	50	50	50
Disadvantaged Youth Program	61	61	61
Other	20	20	11
Total	178	178	169

	1973	1974	1975
c. Overtime and Other Compensation.....	$631,000	$626,000	$426,000
2. Benefits.....	$3,964,000	$4,247,000	$4,118,000

The net decrease in benefits costs of $129,000 in 1975 is related to the reductions in civil service personnel in 1974. The following table indicates the costs of personnel benefits by the major categories:

Category of Cost			
Contribution to the Civil Service Retirement Fund.....	$3,201,000	$3,386,000	$3,450,000
Contribution for employee life insurance.....	169,000	170,000	155,000
Contribution to employee health insurance.....	463,000	468,000	430,000
FICA.....	17,000	18,000	16,000
Incentive awards.....	16,000	17,000	15,000
Severance pay.....	98,000	188,000	52,000
Total.....	$3,964,000	$4,247,000	$4,118,000
3. Supporting Costs.....	$237,000	$404,000	$385,000
1. Transfer of personnel.....	$44,000	$54,000	$60,000

A slight increase is forecast for FY 1975 based on the transfers expected from other government agencies.

2. Personnel training.....	$193,000	$350,000	$325,000

The reduction of $25,000 estimated for FY 1975 results from reductions planned in areas other than shuttle, based on training accomplishments in FY 1974.

TRAVEL

	1973	1974	1975	Change in 1975
II. TRAVEL.....	$1,847,000	$1,747,000	$1,456,000	$-291,000

Basis of Fund Requirements

Summary of Travel by Major Category

	1973	1974	1975
A. Program Travel.....	$553,000	$604,000	$609,000
B. Administrative Travel.....	1,265,000	1,097,000	804,000
C. Meetings and Technical Seminars....	29,000	46,000	43,000
Total, Travel.....	$1,847,000	$1,747,000	$1,456,000
A. Program Travel.....	$553,000	$604,000	$609,000

Program travel is the travel directly related to the KSC mission and represents approximately 42% of the total requirement for 1975. The direction and coordination of the Center's off-site activities is expected to remain at the 1974 level, based on buildup of the Apollo Soyuz Test Project, unmanned programs such as Viking, and increasing involvement in shuttle facility development.

B. Administrative Travel.....	$1,265,000	$1,097,000	$804,000

Administrative travel includes the GSA-operated passenger-carrying vehicle motor pool which approximates 83 percent of administrative travel costs estimated for FY 1975. The decrease in 1975 is due to continued reductions in motor pool operations.

C. Meetings and Technical Seminars....	$29,000	$46,000	$43,000

The decrease in 1975 reflects a change in program maturity in areas such as shuttle, where travel requirements shift from meetings of a general nature to more specific areas of program support.

FACILITIES SERVICES

	1973	1974	1975	Change in 1975
III. FACILITIES SERVICES	$22,866,000	$23,907,000	$25,972,000	$+2,065,000

Basis of Fund Requirements

Summary of Facilities Services

	1973	1974	1975
A. Rental of Real Property.....	$24,000	$28,000	$10,000
B. Maintenance and Related Services			
1. Maintenance, repair and alterations of buildings and grounds.....	$8,992,000	$10,133,000	$10,810,000
2. Custodial services.....	6,998,000	6,856,000	8,332,000
3. Maintenance of equipment.....	447,000	484,000	376,000
Subtotal.....	$16,437,000	$17,473,000	$19,518,000
C. Operation of Facilities			
1. Utilities.....	$3,985,000	$4,036,000	$4,247,000
2. Supplies and equipment.....	2,420,000	2,370,000	2,197,000
Subtotal.....	$6,405,000	$6,406,000	$6,444,000
Total, Facilities Services.....	$22,866,000	$23,907,000	$25,972,000

This category covers the cost of operating and maintaining the institutional facilities on Kennedy Space Center and NASA facilities on the Air Force Eastern Test Range, Cape Kennedy Air Force Station, Florida, and the Air Force Western Test Range, Vandenberg AFB, California. The dry land area exceeds 130 square miles. The size and the wide geographical distribution of facilities within KSC generate extremely heavy demand for facility services. Structural facilities contain 4.7 million square feet and require 25,000 tons of air conditioning; 12 heating plants; 212 linear miles of electrical lines and 150 substations; 23,000 linear feet of sewer lines, 15 sewage treatment plants, and 24 sewage lift stations; 18 elevators; 4 water storage tanks with a total capacity of 2.5 million gallons; and 231,000 linear feet of water lines. The roadway system includes 225 miles of highways and roads. Also included are 87 square miles of submerged lands, 3 bridges (2 over the Intracoastal Waterway) and 18 miles of navigable canals and channels.

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As a cost reduction measure, KSC provides common base support to contractor employees as well as civil service employees. Costs are significantly impacted by the on-site contractor population which is larger than the civil service population.

Funding requirements are oriented to nonlaunch facilities; however, there are certain services influenced by launch activity. The most significant is security which is impacted by special requirements associated with space vehicle processing.

The majority of institutional services are accomplished by support contractors and funding is continually impacted by wage escalation. We are able to minimize this impact by continually reviewing operations to assure we are providing only those services needed to support the Center.

	1973	1974	1975
A. Rental of Real Property.....	$24,000	$28,000	$10,000

Reduction reflects no requirement for off-site news center during FY 1975.

B. Maintenance and Related Services..	$16,437,000	$17,473,000	$19,518,000
1. Maintenance, repair and alterations of buildings and grounds.....	$8,992,000	$10,133,000	$10,810,000

Increase in FY 1975 is due to increased wage rates for support contractor services.

2. Custodial services.....	$6,998,000	$6,856,000	$8,332,000

Services included in this category are security at KSC and Cape Kennedy Air Force Station, fire protection at KSC, janitorial services for KSC and NASA facilities at Cape Kennedy Air Force Station and Western Test Range, and minor contracts for refuse handling and laundry services. Also provided are janitorial services, fire protection and security, staffing required to meet safety and security standards for all areas, both institutional and operational. Requirements are based on 4.7 million square feet serviced. The increase in FY 1975 is due to support contractor cost escalation and the build-up in the fire and security areas for ASTP launch processing.

3. Maintenance of equipment.....	$447,000	$484,000	$376,000

Funding requirements cover maintenance and repair of a wide variety of facility related heavy equipment; e.g., tractors, cranes, forklifts, trailers and pumps, beyond the capacity of the support contractor responsible for the equipment. Maintenance and repair of office type equipment (approximately 2,800 individual machines) utilized by civil service and contractor personnel is also included. Decrease in FY 1975 reflects reduction in the Center's population level.

	1973	1974	1975
C. Operation of Facilities.....	$6,405,000	$6,406,000	$6,444,000
1. Utilities.....	$3,985,000	$4,036,000	$4,247,000

The 1975 estimate reflects increases in utility rates which cannot be fully offset by conservation measures.

2. Supplies and equipment.....	$2,420,000	$2,370,000	$2,197,000

The 1975 decrease is based on post-Skylab adjustments.

TECHNICAL SERVICES

	1973	1974	1975	Change in 1975
IV. TECHNICAL SERVICES.....	$5,774,000	$6,109,000	$6,167,000	$+58,000

Basis of Fund Requirements

Summary of Technical Services

	1973	1974	1975
A. Automatic Data Processing			
1. Equipment.....	$153,000	$133,000	$133,000
2. Programming and operation services.....	2,279,000	2,014,000	2,267,000
Subtotal.....	$2,432,000	$2,147,000	$2,400,000

	1973	1974	1975
B. Scientific and Technical Information and Educational Programs			
1. Operation of NASA technical libraries.....	$181,000	$46,000	$161,000
2. Educational/informational programs.....	58,000	578,000	571,000
3. Scientific and technical information.....	3,103,000	3,338,000	3,035,000
Subtotal.....	$3,342,000	$3,962,000	$3,767,000
Total, Technical Services	$5,774,000	$6,109,000	$6,167,000
A. Automatic Data Processing.....	$2,432,000	$2,147,000	$2,400,000

Business type data processing is performed on the IBM 360-50 system which was purchased in 1971. In 1972 most of the punch card equipment was purchased, thereby reducing leased costs to minimal levels. The higher estimate in 1975 is based primarily on support contractor wage rate increases.

B. Scientific and Technical Information and Educational Programs..	$3,342,000	$3,962,000	$3,767,000
1. Operation of technical libraries.....	$181,000	$46,000	$161,000

The KSC library currently contains 31,000 volumes and 160,000 technical documents. The increase in 1975 reflects revision to the contract funding plan.

2. Educational/information programs.....	$58,000	$578,000	$571,000

The increase in FY 1974 is for design and construction of exhibits needed to support expansion of the Center's visitor program. The level of activity at KSC in 1975 is expected to remain at about the 1974 level.

3. Scientific and technical information.....	$3,103,000	$3,338,000	$3,035,000

The reduction in FY 1975 reflects a decrease in the Center's population and level of program activity.

ADMINISTRATIVE SUPPORT

	1973	1974	1975	Change in 1975
V. ADMINISTRATIVE SUPPORT....	$9,247,000	$8,870,000	$8,853,000	$-17,000

Basis of Fund Requirements

Summary of Administrative Support

	1973	1974	1975
A. Communications			
1. Leased lines and long distance tolls.....	$661,000	$817,000	$713,000
2. Local telephone service.....	1,350,000	1,055,000	880,000
3. Other communications.....	105,000	114,000	112,000
Subtotal.....	$2,116,000	$1,986,000	$1,705,000
B. Administrative Printing.....	$375,000	$214,000	$143,000
C. Supplies, Materials, and Equipment.....	$1,236,000	$1,134,000	$911,000
D. Transportation			
1. Center operations.....	$1,220,000	$926,000	$720,000
2. Common carrier.....	204,000	127,000	106,000
Subtotal.....	$1,424,000	$1,053,000	$826,000
E. Administrative Support Services			
1. Installation support services..	$3,411,000	$3,822,000	$4,730,000
2. Occupational medicine and environmental health.....	685,000	661,000	538,000
Subtotal.....	$4,096,000	$4,483,000	$5,268,000
Total, Administrative Support.....	$9,247,000	$8,870,000	$8,853,000

	1973	1974	1975
A. Communications.....	$2,116,000	$1,986,000	$1,705,000

There is a continued decrease due to lower number of personnel.

B. Administrative Printing.....	$375,000	$214,000	$143,000

A continued decrease in demand for administrative printing services is forecast for FY 1975.

C. Supplies, Materials, and Equipment.....	$1,236,000	$1,134,000	$911,000

The decrease of $223,000 estimated for 1975 is based on post-Skylab adjustments.

D. Transportation.....	$1,424,000	$1,053,000	$826,000

Based on anticipated post-Skylab adjustments and continuous emphasis on vehicle and mileage reduction, a continued decrease is forecast in the 1975 requirement.

E. Administrative Support Services....	$4,096,000	$4,483,000	$5,268,000

The increase in 1975 results from support contractor cost increases, revision to contract funding plan for several minor contracts, and the need to continue the current level of logistics services. These services facilitate buildup in activity related to ASTP and for future programs.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER
ORGANIZATION AND STAFFING

STAFFING SUMMARY

	FY 74	FY 75
EXCEPTED	27	27
GS-16	12	11
GS-15	122	122
GS-14	250	247
ALL OTHER GS	1894	1898
WB	4	4
TOTAL PERM.	2309	2309

DIRECTOR

	FY 74	FY 75
EXCEPTED	3	3
GS-16	--	--
GS-15	--	--
GS-14	1	1
ALL OTHER GS	2	2
TOTAL PERM.	6	6

CENTER RESOURCES PLANNING & CONTROL OFFICE

	FY 74	FY 75
EXCEPTED	1	1
GS-16	--	--
GS-15	--	--
GS-14	1	1
ALL OTHER GS	3	3
TOTAL PERM.	5	5

PUBLIC AFFAIRS OFFICE

	FY 74	FY 75
EXCEPTED	--	--
GS-16	--	--
GS-15	1	1
GS-14	2	2
ALL OTHER GS	18	18
TOTAL PERM.	21	21

EXECUTIVE STAFF

	FY 74	FY 75
EXCEPTED	1	1
GS-16	--	--
GS-15	1	1
GS-14	2	2
ALL OTHER GS	6	6
TOTAL PERM.	10	10

DIRECTOR QUALITY ASSURANCE

	FY 74	FY 75
EXCEPTED	--	--
GS-16	--	--
GS-15	1	1
GS-14	1	1
ALL OTHER GS	14	14
TOTAL PERM.	16	16

CHIEF COUNSEL

	FY 74	FY 75
EXCEPTED	1	1
GS-16	--	--
GS-15	1	1
GS-14	2	2
ALL OTHER GS	5	5
TOTAL PERM.	9	9

SAFETY OFFICE

	FY 74	FY 75
EXCEPTED	1	1
GS-16	--	--
GS-15	1	1
GS-14	1	1
ALL OTHER GS	22	22
TOTAL PERM.	25	25

MANAGER SHUTTLE PROJECTS OFFICE

	FY 74	FY 75
EXCEPTED	1	1
GS-16	1	1
GS-15	10	10
GS-14	16	16
ALL OTHER GS	34	34
TOTAL PERM.	62	62

MANAGER SCIENCES, APPLICATIONS SKYLAB & ASTP PROGRAMS

	FY 74	FY 75
EXCEPTED	1	1
GS-16	--	--
GS-15	3	3
GS-14	6	5
ALL OTHER GS	32	33
TOTAL PERM.	42	42

DIRECTOR OF ADMINISTRATION

	FY 74	FY 75
EXCEPTED	2	2
GS-16	--	--
GS-15	8	8
GS-14	24	24
ALL OTHER GS	268	268
TOTAL PERM.	302	302

DIRECTOR OF INSTALLATION SUPPORT

	FY 74	FY 75
EXCEPTED	1	1
GS-16	--	--
GS-15	7	7
GS-14	13	13
ALL OTHER GS	179	179
WB	4	4
TOTAL PERM.	204	204

DIRECTOR OF LAUNCH OPERATIONS

	FY 74	FY 75
EXCEPTED	1	1
GS-16	2	1
GS-15	3	3
GS-14	1	1
ALL OTHER GS	8	9
TOTAL PERM.	15	15

DIRECTOR OF DESIGN ENGINEERING

	FY 74	FY 75
EXCEPTED	3	3
GS-16	1	1
GS-15	5	5
GS-14	9	9
ALL OTHER GS	82	82
TOTAL PERM.	100	100

DIRECTOR OF TECHNICAL SUPPORT

	FY 74	FY 75
EXCEPTED	2	2
GS-16	--	--
GS-15	2	2
GS-14	4	4
ALL OTHER GS	29	29
TOTAL PERM.	37	37

DIRECTOR OF SPACECRAFT OPERATIONS

	FY 74	FY 75
EXCEPTED	3	3
GS-16	--	--
GS-15	18	18
GS-14	28	27
ALL OTHER GS	201	202
TOTAL PERM.	250	250

ASSOCIATE DIRECTOR FOR OPERATIONS

	FY 74	FY 75
EXCEPTED	1	1
GS-16	--	--
GS-15	4	4
GS-14	7	7
ALL OTHER GS	12	12
TOTAL PERM.	24	24

DIRECTOR OF LAUNCH VEHICLE OPERATIONS

	FY 74	FY 75
EXCEPTED	1	1
GS-16	--	--
GS-15	19	19
GS-14	30	29
ALL OTHER GS	190	191
TOTAL PERM.	240	240

DIRECTOR OF UNMANNED LAUNCH OPERATIONS

	FY 74	FY 75
EXCEPTED	1	1
GS-16	--	--
GS-15	6	6
GS-14	21	21
ALL OTHER GS	138	138
TOTAL PERM.	166	166

ASSOCIATE DIRECTOR FOR FACILITIES & SYS. MANAGEMENT

	FY 74	FY 75
EXCEPTED	1	1
GS-16	1	1
GS-15	5	5
GS-14	9	9
ALL OTHER GS	54	54
TOTAL PERM.	70	70

ASSOCIATE DIRECTOR FOR DESIGN

	FY 74	FY 75
EXCEPTED	1	1
GS-16	3	3
GS-15	11	11
GS-14	25	25
ALL OTHER GS	193	193
TOTAL PERM.	233	233

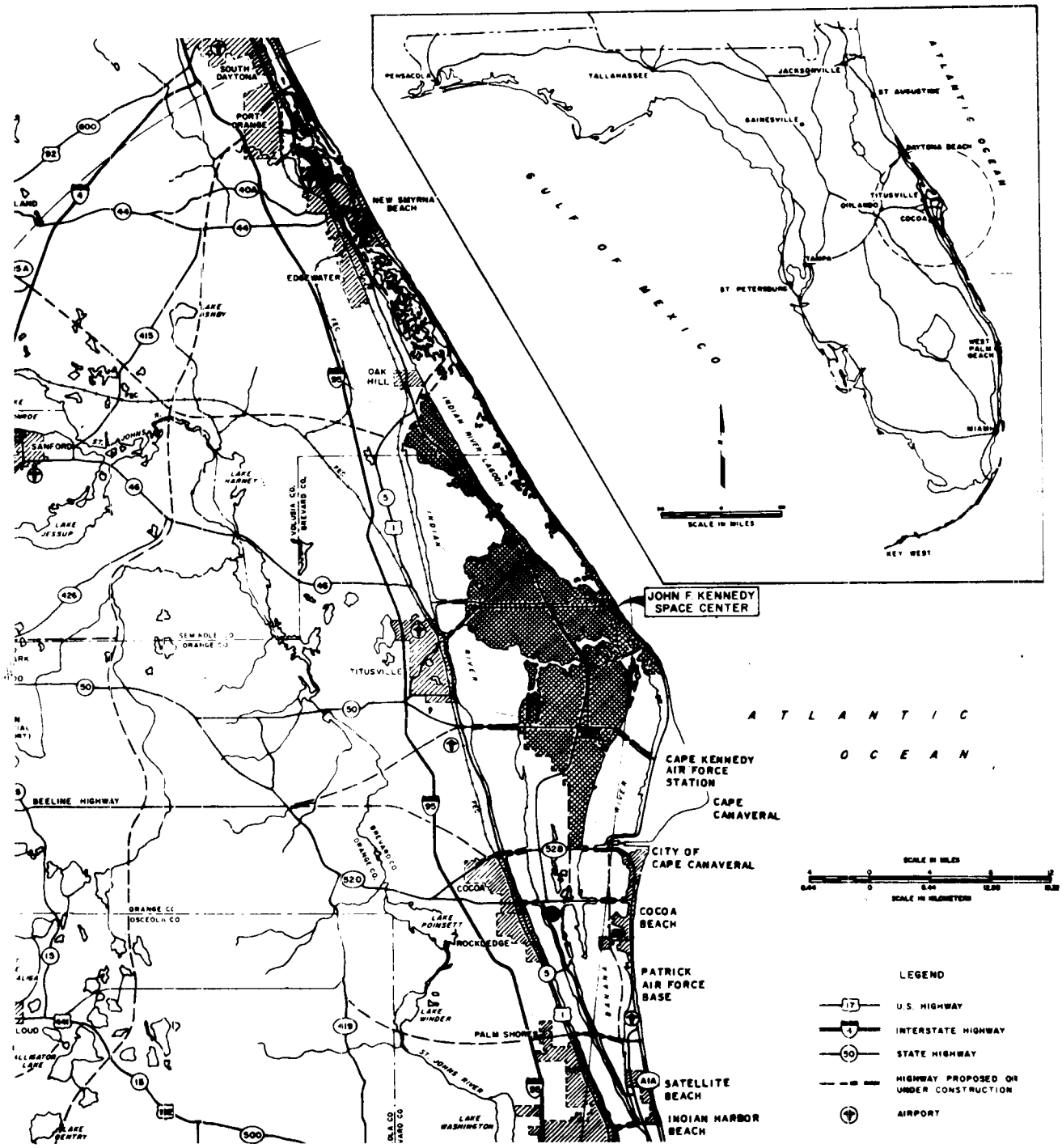
DIRECTOR OF SUPPORT OPERATIONS

	FY 74	FY 75
EXCEPTED	--	--
GS-16	2	2
GS-15	7	7
GS-14	17	17
ALL OTHER GS	190	190
TOTAL PERM.	216	216

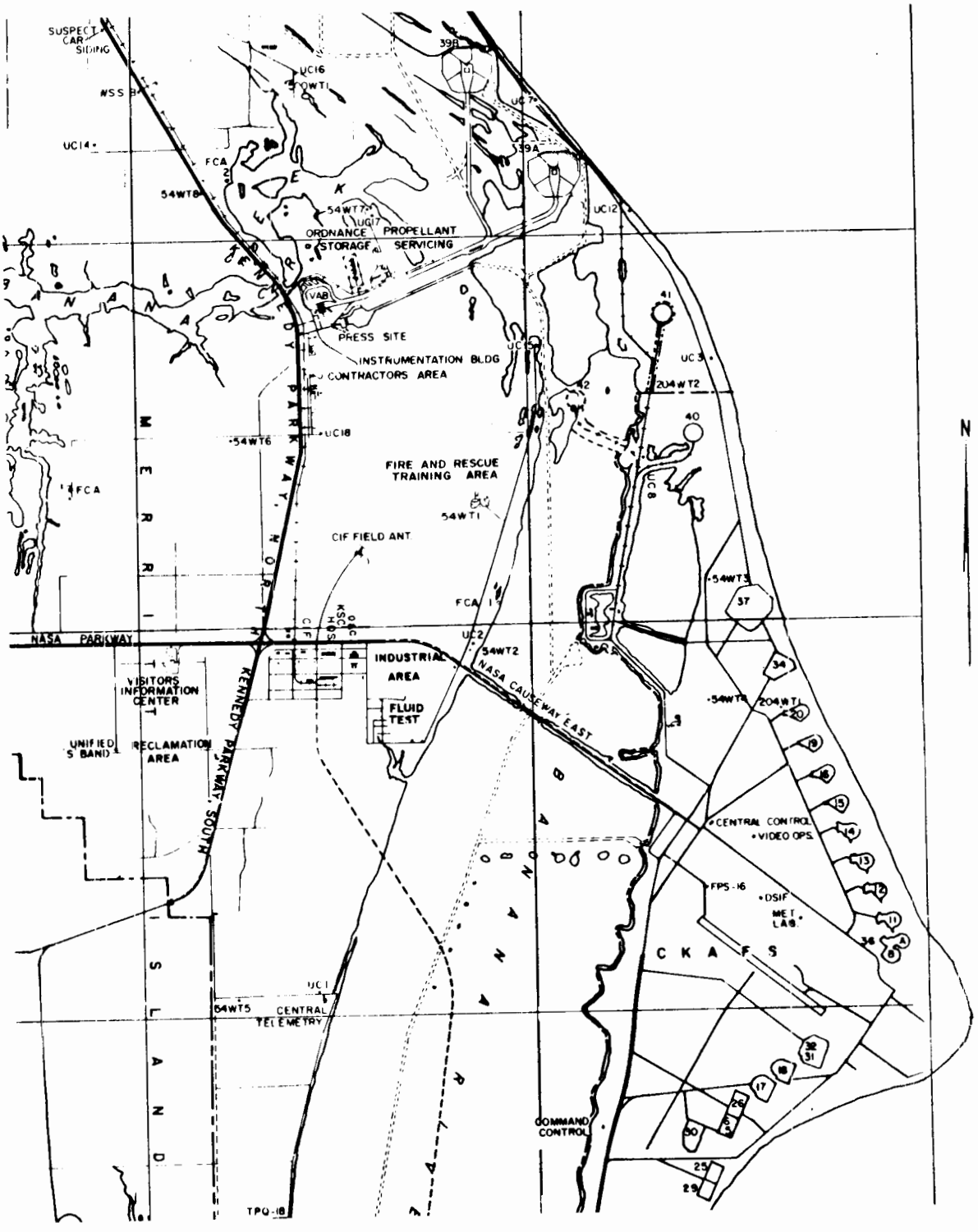
DIRECTOR OF INFORMATION SYSTEMS

	FY 74	FY 75
EXCEPTED	1	1
GS-16	2	2
GS-15	9	9
GS-14	30	30
ALL OTHER GS	214	214
TOTAL PERM.	256	256

JOHN F. KENNEDY SPACE CENTER, NASA
FISCAL YEAR 1975 ESTIMATES
AREA MAP



JOHN F. KENNEDY SPACE CENTER, NASA
FISCAL YEAR 1975 ESTIMATES
LOCATION PLAN



RPM 37

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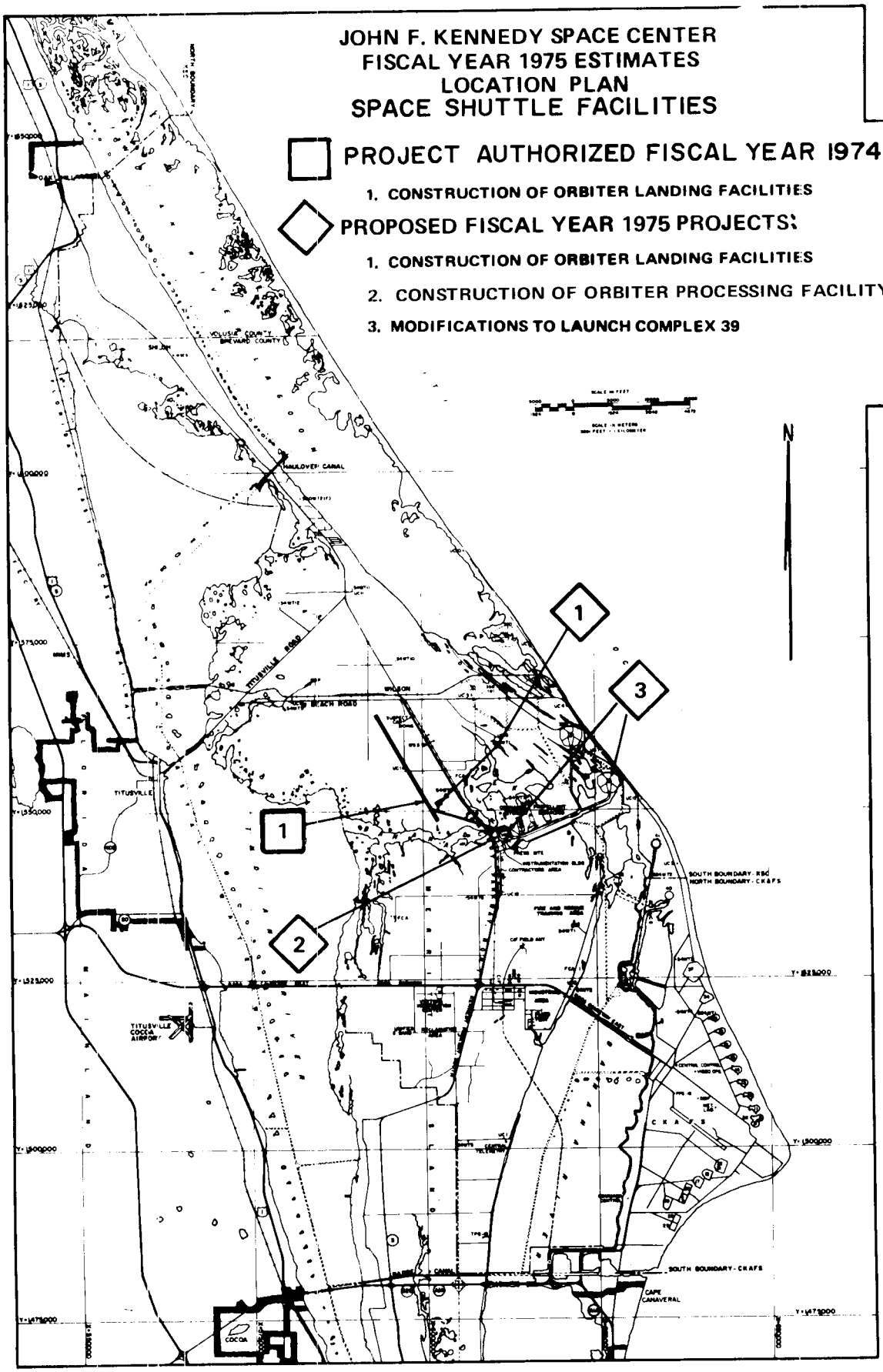
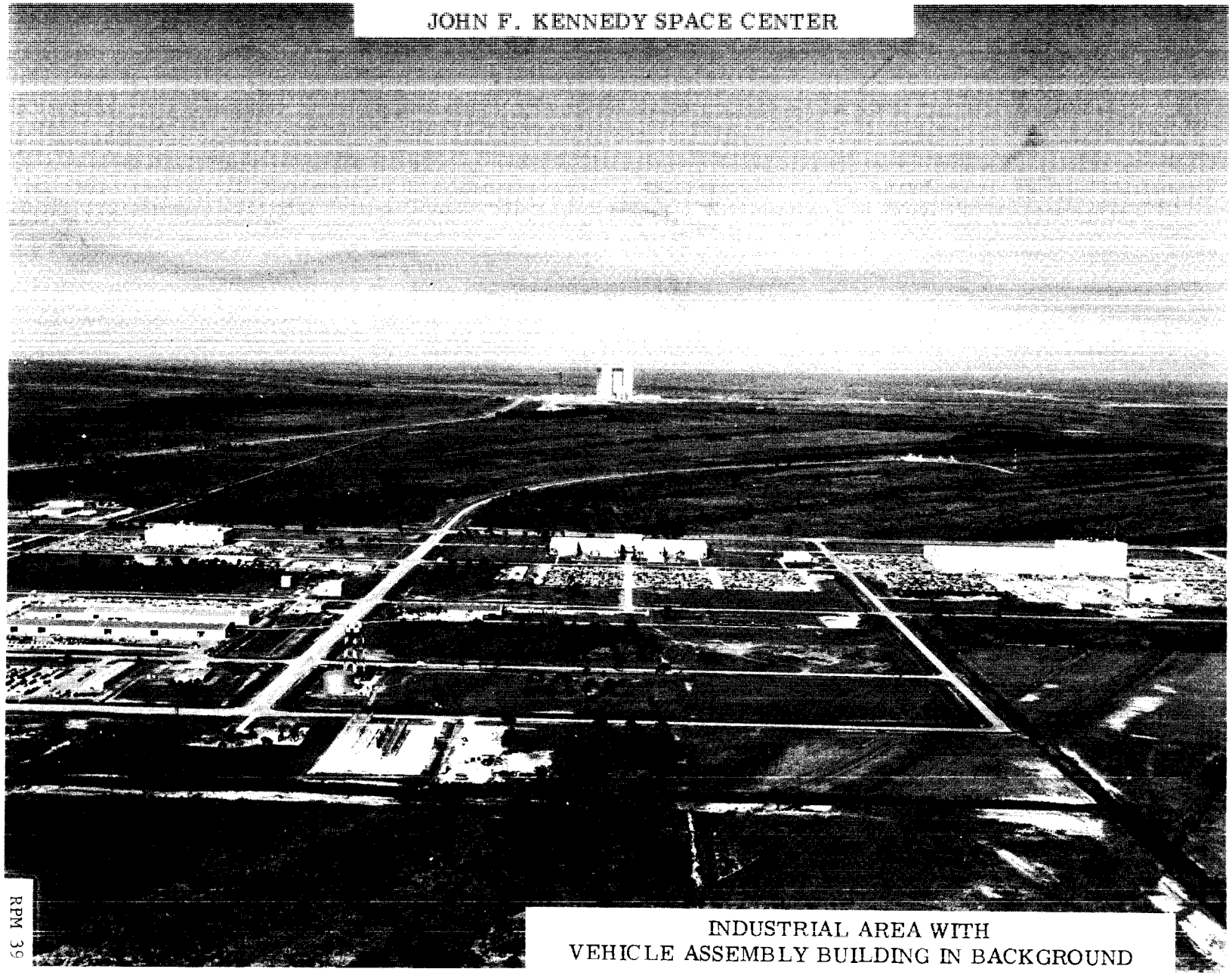
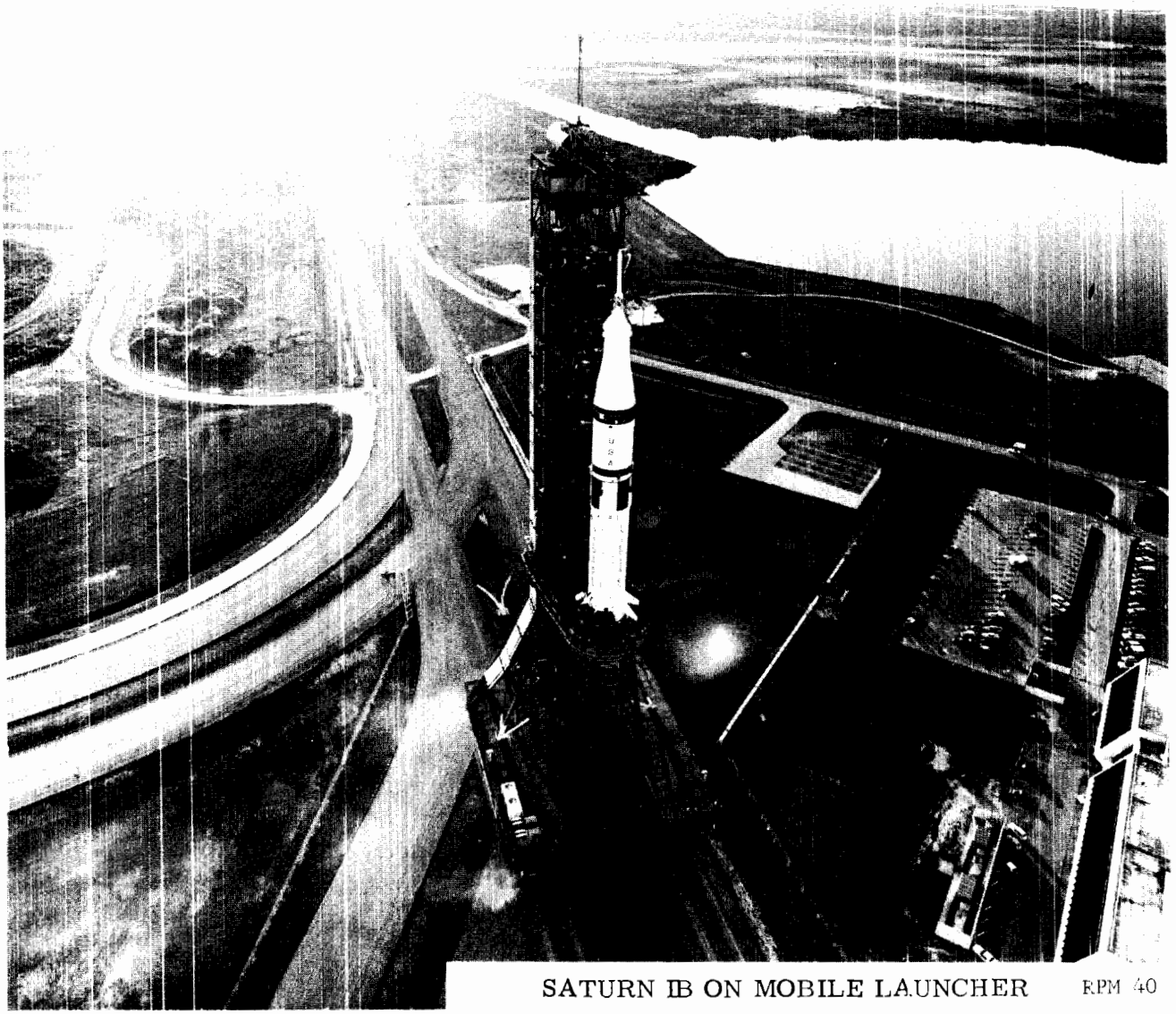

JOHN F. KENNEDY SPACE CENTER
FISCAL YEAR 1975 ESTIMATES
LOCATION PLAN
SPACE SHUTTLE FACILITIES
PROJECT AUTHORIZED FISCAL YEAR 1974
1. CONSTRUCTION OF ORBITER LANDING FACILITIES
PROPOSED FISCAL YEAR 1975 PROJECTS:
1. CONSTRUCTION OF ORBITER LANDING FACILITIES
2. CONSTRUCTION OF ORBITER PROCESSING FACILITY
3. MODIFICATIONS TO LAUNCH COMPLEX 39
N
1
2
3
TITUSVILLE
TITUSVILLE COCOA AIRPORT
COCOA
CAPE CANAVERAL
SOUTH BOUNDARY - CKAFS
NORTH BOUNDARY - CKAFS
HAULOVER CANAL
VOLUSIA COUNTY
BREVARD COUNTY

JOHN F. KENNEDY SPACE CENTER



INDUSTRIAL AREA WITH
VEHICLE ASSEMBLY BUILDING IN BACKGROUND

JOHN F. KENNEDY SPACE CENTER



SATURN IB ON MOBILE LAUNCHER

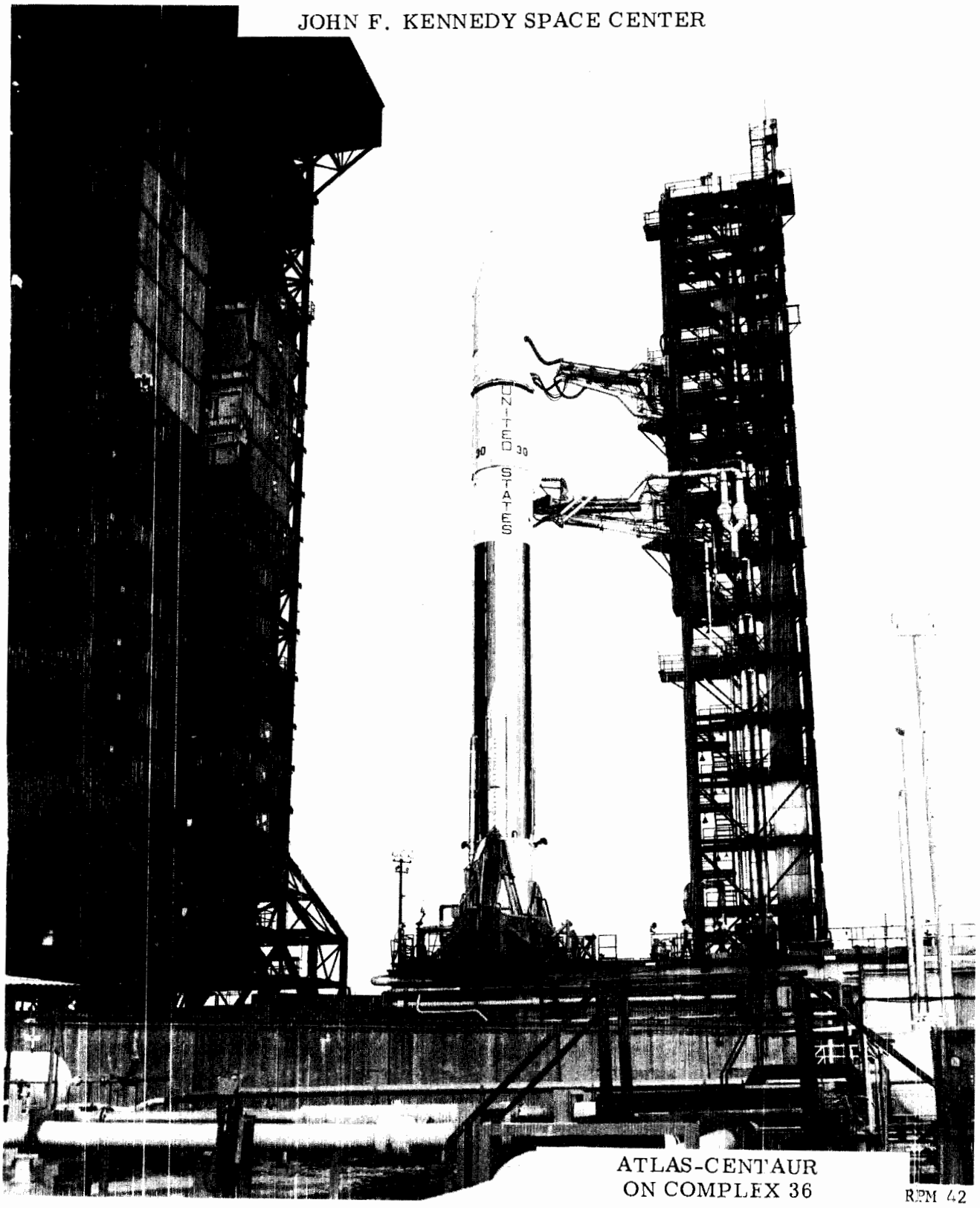
KPM 40

JOHN F. KENNEDY SPACE CENTER

DELTA ON
COMPLEX 17

RPM 41

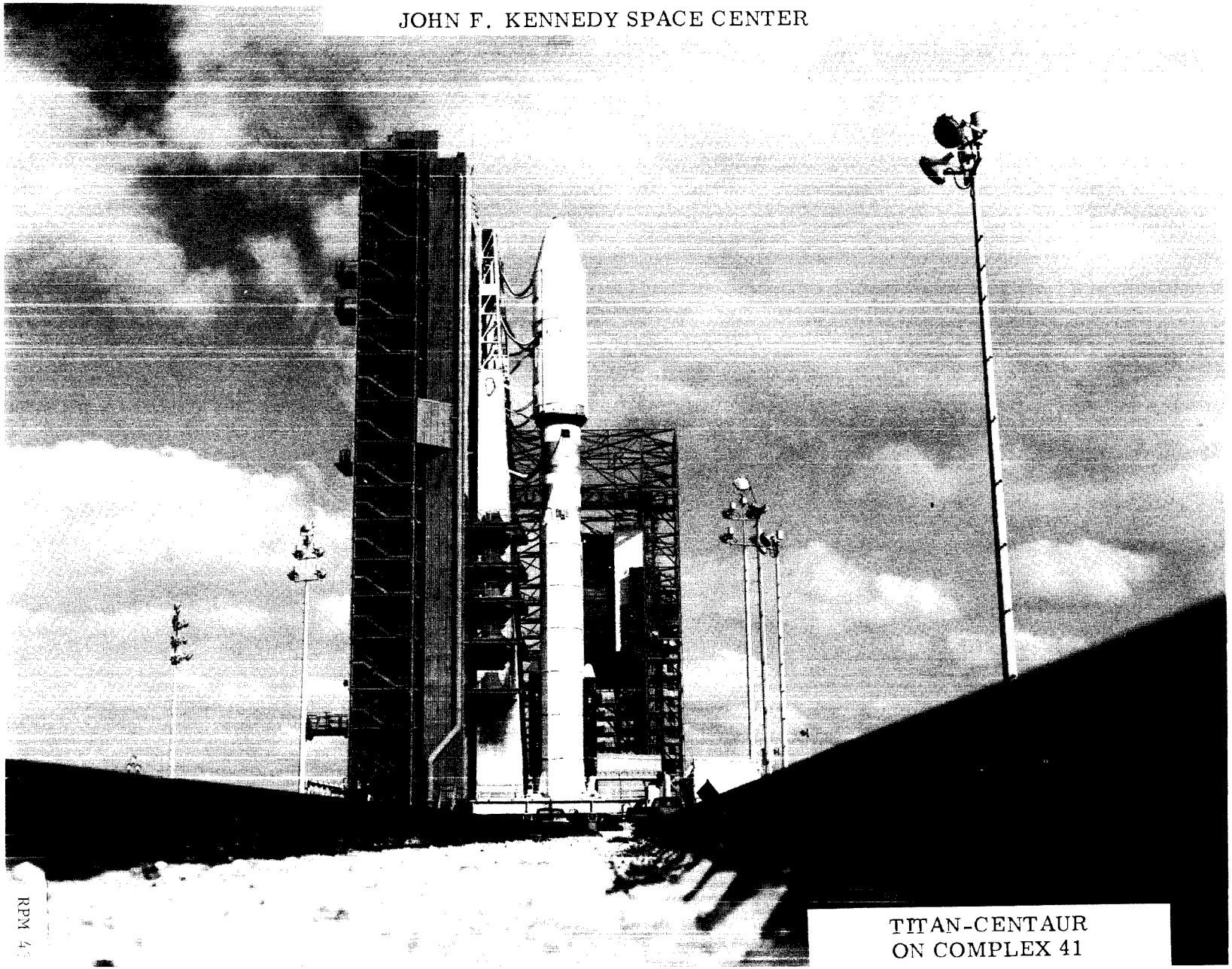
JOHN F. KENNEDY SPACE CENTER



ATLAS-CENTAUR
ON COMPLEX 36

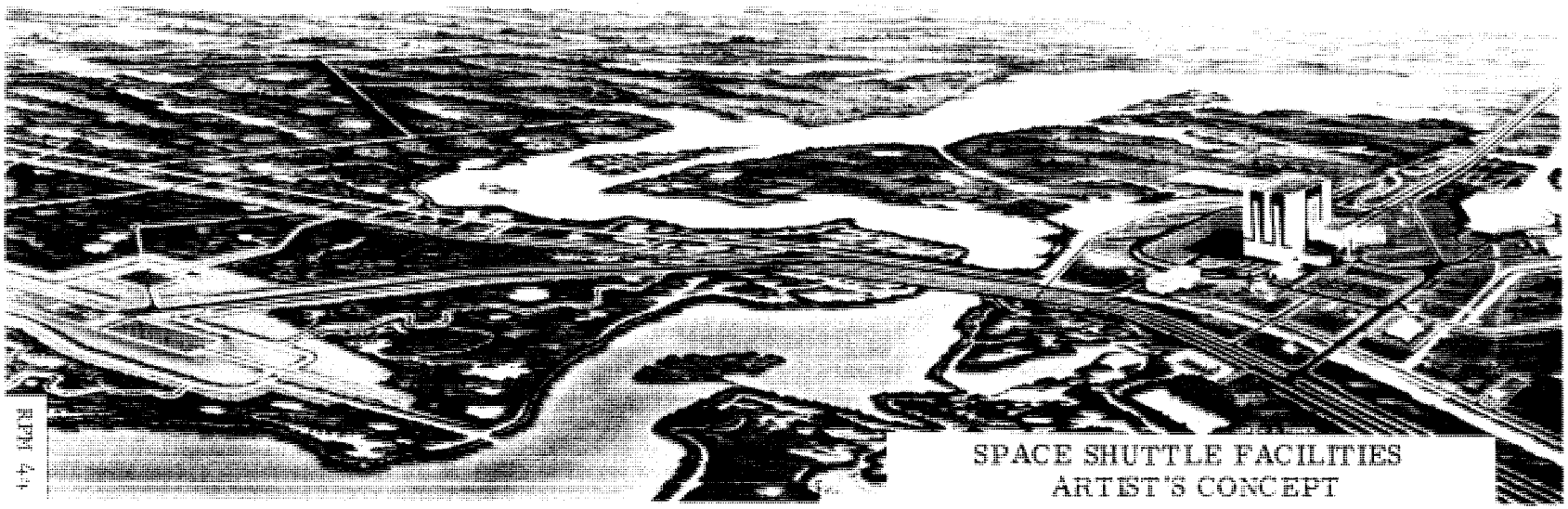
RPM 42

JOHN F. KENNEDY SPACE CENTER



TITAN-CENTAUR
ON COMPLEX 41

JOHN F. KENNEDY SPACE CENTER



SPACE SHUTTLE FACILITIES
ARTIST'S CONCEPT

KSC 64-

RESEARCH AND PROGRAM MANAGEMENT

FISCAL YEAR 1975 ESTIMATES

MARSHALL SPACE FLIGHT CENTER

MISSION

The Marshall Space Flight Center (MSFC) at Huntsville, Alabama, became a part of NASA in July 1960. Marshall serves as one of NASA's primary Centers for the design and development of space transportation systems, orbital systems, scientific payloads, and other systems for present and future space exploration. The Center has a lead role in integration and management of the Skylab program and major responsibilities for space shuttle activities, Apollo Soyuz Test Project, and scientific projects such as the High Energy Astronomy Observatory and a Sounding Rocket Space Probe as well as significant task assignments to plan and define requirements for Spacelab, Space Tug, Large Space Telescope, Concept Verification Testing, Laser Geodynamic Satellite, and environmental and applications programs. In addition, the Center conducts various technical and scientific activities in support of other NASA programs.

In addition to on-site activities at Huntsville, MSFC manages the Michoud Assembly Facility (MAF) at New Orleans, Louisiana; the Slidell Computer Complex at Slidell, Louisiana; and the Mississippi Test Facility (MTF) at Bay St. Louis, Mississippi. Also, resident offices are maintained at or adjacent to industrial sites at various locations throughout the nation.

The Center is currently involved in the direction and management of the following on-going programs:

1. The space shuttle main engine: a high thrust, throttleable liquid hydrogen, liquid oxygen fueled rocket engine capable of many reuses.

2. The solid rocket booster and external tank, which together with the shuttle orbiter, are designed for transporting scientific and applications payloads and technical and scientific personnel to and from space. The shuttle will also have a retrieval and repair capability.

3. The Apollo Soyuz Test Project, including responsibility for providing the Saturn IB launch vehicle and required engineering and management support.

4. The High Energy Astronomy Observatory, including technical and program management of an orbital scientific program designed to obtain high quality, high resolution data on cosmic ray, gamma ray and X-ray sources.

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5. A sounding rocket space probe designed for tests related to the equivalence principle of the Einstein Theory of Relativity.

6. Lead Center responsibility for orbital debris analysis with the objective of providing assessments of the potential hazard related to the random entry of orbital debris for all future NASA-launched space vehicles, for NASA spacecraft launched by other countries, and for all major NASA objects currently in orbit.

The Center has been assigned the lead role in the study and definition of several additional programs, primarily involving space payload planning and space shuttle utilization, to include:

1. The space tug, a vehicle for delivery and retrieval of automated payloads. This stage will augment the shuttle capability, particularly for high energy missions.

2. The spacelab, operating with the space shuttle as a pressurized and habitable module, providing a versatile and economical laboratory and observatory facility for manned research and applications investigations and experimentation in earth orbit.

3. The Concept Verification Testing Program (CVT), an in-house NASA effort to verify the concepts resulting from definition studies now underway, utilizing hardware which can be produced as the end product of "focused technology". Primary objectives are to demonstrate representative shuttle payload concepts and develop interface requirements. The CVT program will also support design and development of such potential hardware items as the spacelab.

4. The large space telescope, a shuttle-launched 3-meter-class optical telescope that provides for international scientific use, and which will significantly extend man's knowledge of the universe.

Marshall is also participating in the NASA Earth Resources Survey program, to include environmental applications at Huntsville and environmental activities at the Mississippi Test Facility. These activities are directed generally toward the application of space technology and associated managerial and technical disciplines to solve environmental problems. At both locations, interfaces and working relationships are being established with federal, state and local agencies to determine ways of utilizing NASA earth survey data and techniques for potential benefits at the user level. These efforts are of particular significance at MTF, where other government agencies are locating selected environmental research and earth resources activities. In addition to providing a support base for other agency operations, MTF has a primary role to provide for an active interchange of information and technology among the various activities located

at the site. This interchange will offer opportunities for interdisciplinary spinoffs, as well as providing a feedback of payload and experiment ideas for future NASA programs.

In addition to environmental efforts, certain other federal agency activities are being located at the MTF and MAF facilities, in order to achieve full utilization of their capacity and for the benefit of better cost effectiveness to the government.

In addition to on-going assignments, the Center is deeply involved in a variety of activities related to studies and plans for future space missions. These activities range from overall mission analyses of initial shuttle missions to specific studies in the scientific and applications disciplines, including programs related to laser experiments, plasma physics, life sciences, astronomy, solar observation, gravitational relativity, earth observation, solar power, earth physics, meteoroid studies, materials science, zero-G, cloud physics, solar electric propulsion, and other scientific areas within the scope of NASA's mission.

DESCRIPTION

Operations at the Marshall Space Flight Center are conducted at four primary locations:

The main Marshall Space Flight Center site is near Huntsville, Alabama on Army property at the Redstone Arsenal. The Center occupies 1,840 acres under a nonrevocable use permit from the Army. The capital investment as of June 30, 1973 was approximately $423,879,000. Certain facilities such as the Redstone Arsenal Air Field and some utilities are used jointly by NASA and the Army. The Huntsville location has a deepwater access via the Tennessee, Ohio, and Mississippi Rivers.

The Michoud Assembly Facility is located 15 miles east of New Orleans, Louisiana. The Michoud Facility occupies 891 acres and provides 3,557,935 square feet of space, including the main assembly plant which has an area of 43 acres under one roof. The Facility is located on the Gulf Intracoastal Waterway and has deepwater access via the Mississippi River. The capital investment as of June 30, 1973 was approximately $151,128,000.

The Slidell Computer Complex, a facility located at Slidell, Louisiana 20 miles northeast of the Michoud Assembly Facility occupies 14 acres and provides centralized computer services for Michoud, Mississippi Test Facility, and associated contractors. The Slidell capital investment, as of June 30, 1973 was approximately $25,915,000.

The Mississippi Test Facility is located in southwest Mississippi, approximately 50 miles northeast of New Orleans, Louisiana. Total land area is

138,800 acres of which 13,428 acres make up the actual test area owned by NASA. The remaining 125,372 acres are held as a buffer zone. In the buffer area, 7,488 acres are owned by NASA, and 117,884 acres are under restrictive easements. Capital investment for the Mississippi Test Facility as of June 30, 1973 was approximately $290,666,000. The site has deepwater access via the Pearl River and the Intracoastal Waterway. The Mississippi Test Facility is also being utilized as a host site for space and environmental activities by other government agencies.

The total capital investment of the Marshall Space Flight Center and its installations at Mississippi and Louisiana, including fixed assets in progress and contractor-held facilities at various locations ($245,567,000) as of June 30, 1973 was $1,137,155,000.

SUMMARY OF RESOURCES REQUIREMENTS

FUNDS

Function	1973	1974	1975	Change in 1975
Personnel.....	$113,098,000	$115,028,000	$107,503,000	$-7,525,000
Travel.....	2,710,000	2,788,000	2,256,000	-532,000
Facilities Services...	8,789,000	9,250,000	8,974,000	-276,000
Technical Services....	6,403,000	6,944,000	6,884,000	-60,000
Administrative Support	6,185,000	6,239,000	5,598,000	-641,000
Total, fund requirements.....	$137,185,000	$140,249,000	$131,215,000	$-9,034,000

Personnel - This reduction is related to decreased personnel levels which was partially offset by the full year's costs of the 1973 pay raises.

Travel - The decrease in FY 1975 is due to reduced personnel levels and the phase-out of the Skylab program.

Facilities Services - The decrease in FY 1975 is attributed to reduced personnel levels, closing of facilities and reduction of services, which are partially offset by price and wage rate increases.

Technical Services - The decrease in FY 1975 is due to reduced personnel levels which are partially offset by cost and wage rate increases.

Administrative Support - The decrease in FY 1975 is related to reduced personnel levels which are partially offset by increased wage rates.

PERSONNEL

	1973	1974	1975	Change in 1975
I. PERSONNEL.....	$113,098,000	$115,028,000	$107,503,000	$-7,525,000

Basis of Fund Requirements

	1973	1974	1975
A. Compensation and Benefits:			
1. Compensation:			
a. Permanent positions....	$101,478,000	$101,882,000	$94,865,000
b. Nonpermanent positions.	1,307,000	1,470,000	1,424,000
c. Reimbursable details...	99,000	230,000	241,000
d. Overtime and other compensation.....	849,000	878,000	649,000
Subtotal, Compensation.	$103,733,000	$104,460,000	$97,179,000
2. Benefits.....	$8,931,000	$10,037,000	$9,924,000
Subtotal, Compensation and Benefits.....	$112,664,000	$114,497,000	$107,103,000
B. Supporting Costs:			
1. Transfer of personnel.....	$139,000	$135,000	$120,000
2. Personnel training.....	295,000	396,000	280,000
Subtotal, Supporting Costs.....	$434,000	$531,000	$400,000
Total, Personnel and Related Costs.....	$113,098,000	$115,028,000	$107,503,000
1. Compensation.....	$103,733,000	$104,460,000	$97,179,000
a. Permanent Positions.....	$101,478,000	$101,882,000	$94,865,000

The cost of compensation for permanent positions is the largest part of personnel and related costs. The funds shown above will support 4,564 permanent positions in 1974 and 4,210 positions in 1975, a reduction of 1,004 positions from 1973. The changes in 1975, a reduction of 1,004 from

1973, result from the phase-out of Skylab not being fully offset by the build-up from the Apollo Soyuz Test Project, the space shuttle program, and other assigned programs; the phase-out of the communications program; and the curtailment of other space research programs; along with a related reduction in support positions.

Distribution of Permanent Positions by Program

	1973	1974	1975
Direct Positions			
Manned Space Flight			
Space shuttle	1,055	1,629	1,788
Space flight operations	2,356	1,283	952
Advanced missions	31	13	16
Apollo	14	---	---
Space Science			
Physics and astronomy	325	392	388
Launch vehicle procurement	24	34	35
Space Applications	54	110	140
Aeronautics and Space Technology			
Aeronautical research and technology	18	17	13
Space and nuclear research and technology	91	76	66
Technology Utilization	22	15	13
Subtotal, direct positions	3,990	3,569	3,411

	1973	1974	1975
Indirect Positions			
Director and staff	153	143	115
Administrative support	987	796	638
Research and development support	84	56	46
Subtotal, indirect positions	1,224	995	799
Total, permanent positions	5,214	4,564	4,210
Other than permanent positions	512	417	407
Total positions	5,726	4,981	4,617

Basis of Cost for Permanent Positions

In FY 1975 the cost of permanent positions will be $94,865,000, a reduction of $7,017,000 from FY 1974. This reduction is calculated as follows:

Cost of permanent positions in 1974		$101,882,000
Cost increases in 1975		+2,065,000
Within grade advances and career development:		
Full year effect of 1974 actions	$+380,000	
Partial year effect of 1975 actions	+277,000	
Full year effect of October 1973 pay raise	+1,045,000	
Extra day	+363,000	
Cost decreases in 1975		-9,082,000
Abolished positions:		
Full year effect of 1974 actions	-8,019,000	
Partial year effect of 1975 actions	-848,000	
Turnover savings	-215,000	
Cost of permanent positions in 1975		$94,865,000

Other Compensation Costs

	1973	1974	1975
b. Nonpermanent Positions	$1,307,000	$1,470,000	$1,424,000

The FY 1975 plan includes 407 positions. These positions will be used to support the following programs at approximately the levels indicated:

	1973	1974	1975
Indirect Positions			
Director and staff	153	143	115
Administrative support	987	796	638
Research and development support	84	56	46
Subtotal, indirect positions	1,224	995	799
Total, permanent positions	5,214	4,564	4,210
Other than permanent positions	452	427	372
Total positions	5,666	4,991	4,582

Basis of Cost for Permanent Positions

In FY 1975 the cost of permanent positions will be $94,865,000, a reduction of $7,017,000 from FY 1974. This reduction is calculated as follows:

Cost of permanent positions in 1974		$101,882,000
Cost increases in 1975		+2,065,000
Within grade advances and career development:		
Full year effect of 1974 actions	$+380,000	
Partial year effect of 1975 actions	+277,000	
Full year effect of October 1973 pay raise	+1,045,000	
Extra day	+363,000	
Cost decreases in 1975		-9,082,000
Abolished positions:		
Full year effect of 1974 actions	-8,019,000	
Partial year effect of 1975 actions	-848,000	
Turnover savings	-215,000	
Cost of permanent positions in 1975		$94,865,000

Other Compensation Costs

	1973	1974	1975
b. Nonpermanent Positions	$1,307,000	$1,470,000	$1,424,000

The FY 1975 plan includes 372 positions. These positions will be used to support the following programs at approximately the levels indicated:

Distribution of Nonpermanent Positions by Program

Program	Positions
College Cooperative Training	110
Vocational Cooperative Training	25
Summer Employment	75
Youth Opportunity	185
Temporary Clerical	22
Total	417

	1973	1974	1975
c. Reimbursable Details	$99,000	$230,000	$241,000

A total of 20 reimbursable detailees are assigned to NASA from DOD for the purpose of training flight crews in the area of zero gravity and for support in other research and engineering projects. This effort provides mutual benefits to NASA and DOD by providing NASA with special talent and by keeping DOD personnel current on the Manned Space Flight management and technology.

d. Overtime and Other Compensation	$849,000	$878,000	$649,000

The FY 1975 level will decrease from the FY 1974 level due to the Skylab phaseout. The FY 1975 level is less than one percent of the Personnel Compensation. This represents the minimum overtime that can be achieved and provide for the in-house effort necessary to solve unanticipated technical problems and meet program milestones.

2. Benefits	$8,931,000	$10,037,000	$9,924,000

The cost of benefits is $113,000 lower in FY 1975 than in FY 1974 because of reduced personnel levels. The following table indicates the costs of personnel benefits by the major categories:

Category of Cost			
Contribution to the Civil Service Retirement Fund	$6,988,000	$7,106,000	$6,726,000
Contribution for employee life insurance	382,000	368,000	365,000
Contribution for employee health insurance	1,097,000	1,081,000	1,018,000
Contribution to FICA	18,000	31,000	32,000
Incentive awards	60,000	123,000	84,000
Severance pay	386,000	1,328,000	1,699,000
Total	$8,931,000	$10,037,000	$9,924,000

Distribution of Nonpermanent Positions by Program

Program	Positions
College Cooperative Training	110
Vocational Cooperative Training	25
Summer Employment	75
Youth Opportunity	175
Temporary Clerical	22
Total	407

	1973	1974	1975
c. Reimbursable Details	$99,000	$230,000	$241,000

A total of 20 reimbursable detailees are assigned to NASA from DOD for the purpose of training flight crews in the area of zero gravity and for support in other research and engineering projects. This effort provides mutual benefits to NASA and DOD by providing NASA with special talent and by keeping DOD personnel current on the Manned Space Flight management and technology.

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Category of Cost			
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Contribution to FICA	18,000	31,000	32,000
Incentive awards	60,000	123,000	84,000
Severance pay	386,000	1,328,000	1,699,000
Total	$8,931,000	$10,037,000	$9,924,000

	1973	1974	1975
B. Supporting Costs.....	$434,000	$531,000	$400,000
1. Transfer of personnel.....	$139,000	$135,000	$120,000

The estimated cost in FY 1975 is based on the number and historical average cost of relocations and provides for certain relocation costs such as the expenses of selling and buying a home, and the movement of household goods.

2. Personnel training.....	$295,000	$396,000	$280,000

The personnel training cost for FY 1975 is based on the continuation of current training programs and the need to reorient skills of employees into areas compatible with the direction of the space program in the 1970's and MSFC's role in the program. A prime objective is career development to permit employees to advance to more responsible positions and to provide the Center with highly motivated and experienced personnel not readily available in the labor market. The FY 1975 level is lower than FY 1974 and is commensurate with reduced personnel levels.

TRAVEL

	1973	1974	1975	Change in 1975
II. TRAVEL.....	$2,710,000	$2,788,000	$2,256,000	-$532,000

Basis of Fund Requirements

Summary of Travel by Major Category

	1973	1974	1975
A. Program Travel.....	$2,486,000	$2,521,000	$1,951,000
B. Administrative Travel.....	$213,000	$256,000	$294,000
C. Meetings and Technical Seminars.	$11,000	$11,000	$11,000
Total, Travel.....	$2,710,000	$2,788,000	$2,256,000

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	1973	1974	1975
A. Program Travel.....	$2,486,000	$2,521,000	$1,951,000

Travel requirements are associated with lead center responsibilities for integration and management of the Skylab program and major responsibilities for the space shuttle and scientific projects such as the High Energy Astronomy Observatory and a sounding rocket space probe as well as significant task assignments to plan and define requirements for spacelab, space tug, large space telescope, concept verification testing, Apollo Soyuz Test Project, and environmental and applications programs.

B. Administrative Travel.....	$213,000	$256,000	$294,000

The increase in FY 1975 due to the continued increased activity for the Apollo Soyuz Test Project.

C. Meetings and Technical Seminars..	$11,000	$11,000	$11,000

The FY 1975 level is unchanged from prior years.

FACILITIES SERVICES

	1973	1974	1975	Change in 1975
III. FACILITIES SERVICES....	$8,789,000	$9,250,000	$8,974,000	-$276,000

Basis of Fund Requirements

Summary of Facilities Services

	1973	1974	1975
A. Maintenance and Related Services			
1. Maintenance, repair and alteration of buildings and grounds.....	$1,442,000	$1,244,000	$1,508,000
2. Custodial services.....	2,642,000	2,685,000	2,391,000
3. Maintenance of equipment.....	782,000	827,000	719,000
Subtotal.....	$4,866,000	$4,756,000	$4,618,000

	1973	1974	1975
B. Operation of Facilities			
1. Utilities.....	$3,158,000	$3,787,000	$3,702,000
2. Supplies and equipment.....	765,000	707,000	654,000
Subtotal.....	$3,923,000	$4,494,000	$4,356,000
Total, Facilities Services	$8,789,000	$9,250,000	$8,974,000
A. Maintenance and Related Services..	$4,866,000	$4,756,000	$4,618,000
1. Maintenance, repair and alteration of buildings and grounds.....	$1,442,000	$1,244,000	$1,508,000

The amount required for maintenance of buildings and grounds is $264,000 more than FY 1974. This increase reinstates minimal painting and reroofing requirements that were deferred in FY 1974 because of austere funding levels and wage and price escalation costs, and is partially offset by reduced contractor support levels in FY 1975 and the closing of facilities no longer absolutely essential for Center assignments. It also provides for alterations and modification of interior structures resulting from the planned Center reorganization and consolidation of facilities, and for modification of facilities to conform with occupational safety and health agency standards.

These services are performed by the U. S. Army Missile Command (AMC) on a reimbursable basis and by the MSFC support services contractor personnel. Over four million square feet of space are involved, of which approximately 15 percent are Army buildings (of considerable age) used and maintained by MSFC. The grounds cover 1,840 acres of which 1,242 acres are improved and 598 acres are unimproved. Maintenance is accomplished by miscellaneous crafts, a mix of some forty building and construction trades. This subcategory also includes supplies, tools, GSA and overhead and labor costs which approximates 77 percent of the maintenance costs.

2. Custodial services.....	$2,642,000	$2,685,000	$2,391,000

Custodial services are performed principally by support service contract personnel and include janitorial services for some 3,100,000 square feet of area in numerous buildings; security services that provide for badging of employees and visitors, maintaining security patrol and policing traffic (the U. S. Army provides perimeter patrol and entrance gate services for which MSFC is charged a pro rata share); laundry services comprising the cleaning and laundry of 416,000 pieces of material annually; movement and disposal of approximately 90,000 cubic yards of refuse annually at 132

different pickup points; and fire protection service furnished by the U. S. Army for some 2,600,000 square feet of area. The FY 1975 decrease of $294,000 from FY 1974 is attributable to reduced personnel levels, closing of facilities, and a reduction in service partially offset by price and wage rate increases.

	1973	1974	1975
3. Maintenance of equipment.....	$782,000	$827,000	$719,000

Although normal cost escalation is anticipated in FY 1975 over FY 1974, the continued austere measures to reduce equipment items, and reduced personnel levels will result in a decrease in FY 1975 costs.

B. Operation of Facilities.....	$3,923,000	$4,494,000	$4,356,000
1. Utilities.....	$3,158,000	$3,787,000	$3,702,000

This item includes the cost of utility services furnished by the U. S. Army Missile Command on a reimbursable basis. FY 1975 estimates provide for reduced consumption and requirements because of lower personnel levels, energy conservation measures, and closing of facilities, offset by increased unit costs associated with wage and price increases incurred by the U. S. Army.

2. Supplies and equipment.....	$765,000	$707,000	$654,000

The decrease in FY 1975 is due to the decreased manpower level.

TECHNICAL SERVICES

	1973	1974	1975	Change in 1975
IV. TECHNICAL SERVICES.....	$6,403,000	$6,944,000	$6,884,000	-$60,000

Basis of Fund Requirements

Summary of Technical Services

	1973	1974	1975
A. Automatic Data Processing			
1. Equipment.....	$510,000	$510,000	$510,000
2. Programming and operation services.....	3,715,000	4,292,000	4,429,000
Subtotal.....	$4,225,000	$4,802,000	$4,939,000

	1973	1974	1975
B. Engineering Services.....	$49,000	$59,000	$61,000
C. Scientific and Technical Information and Educational Programs			
1. Operation of Redstone Scientific and Information Center.....	$829,000	$832,000	$780,000
2. Educational/informational programs.....	852,000	822,000	705,000
3. Scientific and technical information.....	448,000	429,000	399,000
Subtotal.....	$2,129,000	$2,083,000	$1,884,000
Total, Technical Services.....	$6,403,000	$6,944,000	$6,884,000
A. Automatic Data Processing.....	$4,225,000	$4,802,000	$4,939,000

The increase of $137,000 in FY 1975 provides for price and wage escalation costs.

B. Engineering Services.....	$49,000	$59,000	$61,000

Although the FY 1975 cost is $2,000 higher than FY 1974, due to wage rate increases, the level of effort will remain the same.

C. Scientific and Technical Information and Educational Programs..	$2,129,000	$2,083,000	$1,884,000

The costs are summarized as follows:

1. Operation of Redstone Scientific and Information Center.....	$829,000	$832,000	$780,000

The level of activity in FY 1975 is expected to be below the FY 1974 level because of reduced personnel levels.

2. Educational/information programs.....	$852,000	$822,000	$705,000

The decrease of $117,000 in FY 1975 from the FY 1974 level is due to reduced personnel levels partially offset by price and wage rate increases.

	1973	1974	1975
3. Scientific and technical information.....	$448,000	$429,000	$399,000

The FY 1975 cost is below the FY 1974 level because of reduced personnel levels.

ADMINISTRATIVE SUPPORT

	1973	1974	1975	Change in 1975
V. ADMINISTRATIVE SUPPORT...	$6,185,000	$6,239,000	$5,598,000	-$641,000

Basis of Fund Requirements

Summary of Administrative Support

	1973	1974	1975
A. Communications			
1. Leased lines and long distance tolls.....	$592,000	$601,000	$585,000
2. Local telephone service.....	818,000	933,000	805,000
3. Other communications.....	123,000	132,000	127,000
Subtotal.....	$1,533,000	$1,666,000	$1,517,000
B. Administrative Printing.....	$464,000	$469,000	$440,000
C. Supplies, Materials, and Equipment.....	$982,000	$983,000	$911,000
D. Transportation			
1. Center operations.....	$1,473,000	$1,473,000	$1,240,000
2. Common carrier.....	33,000	46,000	46,000
Subtotal.....	$1,506,000	$1,519,000	$1,286,000
E. Administrative Support Services			
1. Installation support services	$1,232,000	$1,175,000	$1,046,000
2. Occupational medicine and environmental health.....	468,000	427,000	398,000
Subtotal.....	$1,700,000	$1,602,000	$1,444,000
Total, Administrative Support.....	$6,185,000	$6,239,000	$5,598,000

	1973	1974	1975
A. Communications.....	$1,533,000	$1,666,000	$1,517,000

MSFC conducts business throughout the United States requiring day-to-day contact. Consequently, the cost of communications is large. The decreased cost in FY 1975 is due to reduced personnel levels and the result of a program to eliminate equipment and costs, partially offset by rate increases.

B. Administrative Printing.....	$464,000	$469,000	$440,000

The decrease in FY 1975 provides for reduced personnel levels partially offset by price increases.

C. Supplies and Materials and Equipment.....	$982,000	$983,000	$911,000

The decrease in FY 1975 provides for decreased personnel levels partially offset by increased costs.

D. Transportation.....	$1,506,000	$1,519,000	$1,286,000

The decrease in FY 1975 is attributable to a reduction in equipment held by the Center and reduced personnel levels, partially offset by increased wage rates for support contractors.

E. Administrative Support Services.....	$1,700,000	$1,602,000	$1,444,000

The decrease in FY 1975 is due to reduced personnel levels and reduced services.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GEORGE C. MARSHALL SPACE FLIGHT CENTER

JANUARY 11, 1974

MSFC SUMMARY

	FY-74	FY-75*
EXPECTED	37	37
GS 18	39	39
GS 15	296	296
GS 14	810	810
ALL OTHER GS	3646	3646
WAGEBOARD	38	38
TOTAL PERMANENT	4864	4864
REDUCTION		-654
TOTAL PERMANENT		4210

*FY 75 CEILING OF 4210 INVOLVES A 384 REDUCTION. IT WILL BE SOME MONTHS BEFORE INTERNAL CEILINGS AND ORGANIZATIONAL STRUCTURE ARE DETERMINED FOR THE REDUCED STAFFING LEVEL

DIRECTOR

DEPUTY DIRECTOR

ASSOCIATE DIRECTOR (MANAGEMENT)

	FY-74	FY-75
EXCEPTED	3	3
GS-18	0	0
GS-15	2	2
GS-14	0	0
ALL OTHER GS	11	11
WAGEBOARD	0	0
TOTAL PERMANENT	16	16

ASSOCIATE DIRECTOR FOR SCIENCE

	FY-74	FY-75
EXCEPTED	1	1
GS-18	–	–
GS-15	2	2
GS-14	–	–
ALL OTHER GS	2	2
WAGEBOARD	–	–
TOTAL PERMANENT	5	5

CENTER PLANS & RESOURCES CONTROL OFFICE

	FY-74	FY-75
EXCEPTED	–	–
GS-18	–	–
GS-15	5	5
GS-14	9	9
ALL OTHER GS	46	46
WAGEBOARD	–	–
TOTAL PERMANENT	60	60

SAFETY & MANNED FLIGHT AWARENESS OFFICE

	FY-74	FY-75
EXCEPTED	–	–
GS-18	–	–
GS-15	1	1
GS-14	–	–
ALL OTHER GS	16	16
WAGEBOARD	–	–
TOTAL PERMANENT	21	21

PUBLIC AFFAIRS OFFICE

	FY-74	FY-75
EXCEPTED	–	–
GS-18	–	–
GS-15	1	1
GS-14	2	2
ALL OTHER GS	16	16
WAGEBOARD	–	–
TOTAL PERMANENT	19	19

CHIEF COUNSEL

	FY-74	FY-75
EXCEPTED	1	1
GS-18	–	–
GS-15	2	2
GS-14	5	5
ALL OTHER GS	6	6
WAGEBOARD	–	–
TOTAL PERMANENT	14	14

EQUAL OPPORTUNITY OFFICE

	FY-74	FY-75
EXCEPTED	–	–
GS-18	–	–
GS-15	1	1
GS-14	–	–
ALL OTHER GS	8	8
WAGEBOARD	–	–
TOTAL PERMANENT	9	9

SHUTTLE PROJECTS OFFICE

	FY-74	FY-75
EXCEPTED	3	3
GS-18	3	3
GS-15	16	13
GS-14	31	31
ALL OTHER GS	93	93
WAGEBOARD	–	–
TOTAL PERMANENT	146	140

MICHOUD ASSEMBLY FACILITY

	FY-74	FY-75
EXCEPTED	–	–
GS-18	–	–
GS-15	5	5
GS-14	8	8
ALL OTHER GS	28	30
WAGEBOARD	–	–
TOTAL PERMANENT	41	41

SKYLAB PROGRAM OFFICE

	FY-74	FY-75
EXCEPTED	1	1
GS-18	2	2
GS-15	13	13
GS-14	30	30
ALL OTHER GS	51	51
WAGEBOARD	–	–
TOTAL PERMANENT	97	97

SPACELAB PROGRAM OFFICE

	FY-74	FY-75
EXCEPTED	1	1
GS-18	1	1
GS-15	8	8
GS-14	10	10
ALL OTHER GS	27	27
WAGEBOARD	–	–
TOTAL PERMANENT	45	45

SATURN PROGRAM OFFICE

	FY-74	FY-75
EXCEPTED	1	1
GS-18	3	3
GS-15	9	9
GS-14	31	31
ALL OTHER GS	47	47
WAGEBOARD	–	–
TOTAL PERMANENT	91	91

MISSION OPERATIONS OFFICE

	FY-74	FY-75
EXCEPTED	–	–
GS-18	2	2
GS-15	5	5
GS-14	22	22
ALL OTHER GS	–	–
WAGEBOARD	–	–
TOTAL PERMANENT	30	30

SPACE SCIENCE PROJECTS OFFICE

	FY-74	FY-75
EXCEPTED	1	1
GS-18	1	1
GS-15	9	9
GS-14	18	18
ALL OTHER GS	34	34
WAGEBOARD	–	–
TOTAL PERMANENT	63	63

DIRECTOR OF PROGRAM DEVELOPMENT

	FY-74	FY-75
EXCEPTED	1	1
GS-18	2	2
GS-15	–	–
GS-14	–	–
ALL OTHER GS	2	2
WAGEBOARD	–	–
TOTAL PERMANENT	5	5

MANAGEMENT SUPPORT OFFICE

	FY-74	FY-75
EXCEPTED	–	–
GS-18	–	–
GS-15	–	–
GS-14	–	–
ALL OTHER GS	4	4
WAGEBOARD	–	–
TOTAL PERMANENT	4	4

PROGRAM PLANNING OFFICE

	FY-74	FY-75
EXCEPTED	1	1
GS-18	–	–
GS-15	3	3
GS-14	7	7
ALL OTHER GS	26	26
WAGEBOARD	–	–
TOTAL PERMANENT	37	37

ADVANCED SYSTEMS ANALYSIS OFFICE

	FY-74	FY-75
EXCEPTED	–	–
GS-18	–	–
GS-15	–	–
GS-14	–	–
ALL OTHER GS	–	–
WAGEBOARD	–	–
TOTAL PERMANENT	0	0

MISSION & PAYLOAD PLANNING OFFICE

	FY-74	FY-75
EXCEPTED	1	1
GS-18	–	–
GS-15	8	8
GS-14	7	7
ALL OTHER GS	31	31
WAGEBOARD	–	–
TOTAL PERMANENT	47	47

PRELIMINARY DESIGN OFFICE

	FY-74	FY-75
EXCEPTED	1	1
GS-18	1	1
GS-15	9	9
GS-14	20	20
ALL OTHER GS	84	84
WAGEBOARD	–	–
TOTAL PERMANENT	115	115

ADVANCED PROJECTS OFFICE

	FY-74	FY-75
EXCEPTED	1	1
GS-18	–	–
GS-15	15	15
GS-14	28	28
ALL OTHER GS	38	38
WAGEBOARD	–	–
TOTAL PERMANENT	78	78

DIRECTOR OF SCIENCE AND ENGINEERING

	FY-74	FY-75
EXCEPTED	4	4
GS-18	–	–
GS-15	2	2
GS-14	–	–
ALL OTHER GS	–	–
WAGEBOARD	5	5
TOTAL PERMANENT	11	11

PLANNING & RESOURCES OFFICE

	FY-74	FY-75
EXCEPTED	–	–
GS-18	–	–
GS-15	1	1
GS-14	1	1
ALL OTHER GS	19	19
WAGEBOARD	–	–
TOTAL PERMANENT	21	21

RESEARCH PLANNING OFFICE

	FY-74	FY-75
EXCEPTED	–	–
GS-18	1	1
GS-15	2	2
GS-14	5	5
ALL OTHER GS	11	11
WAGEBOARD	–	–
TOTAL PERMANENT	19	19

SYSTEMS/PRODUCTS OFFICE

	FY-74	FY-75
EXCEPTED	1	1
GS-18	4	4
GS-15	19	19
GS-14	29	29
ALL OTHER GS	74	74
WAGEBOARD	–	–
TOTAL PERMANENT	123	123

ENVIRONMENTAL APPLICATIONS OFFICE

	FY-74	FY-75
EXCEPTED	–	–
GS-18	1	1
GS-15	3	3
GS-14	3	3
ALL OTHER GS	4	4
WAGEBOARD	–	–
TOTAL PERMANENT	11	11

AERO-ASTRODYNAMICS LABORATORY

	FY-74	FY-75
EXCEPTED	1	1
GS-18	4	4
GS-15	12	12
GS-14	40	40
ALL OTHER GS	208	208
WAGEBOARD	–	–
TOTAL PERMANENT	265	265

ASTRONAUTICS LABORATORY

	FY-74	FY-75
EXCEPTED	2	2
GS-18	6	6
GS-15	32	32
GS-14	104	104
ALL OTHER GS	608	608
WAGEBOARD	1	1
TOTAL PERMANENT	754	754

QUALITY & RELIABILITY ASSURANCE LABORATORY

	FY-74	FY-75
EXCEPTED	1	1
GS-18	1	1
GS-15	20	20
GS-14	20	20
ALL OTHER GS	143	143
WAGEBOARD	3	2
TOTAL PERMANENT	188	188

ASTRIONICS LABORATORY

	FY-74	FY-75
EXCEPTED	3	3
GS-18	5	5
GS-15	41	41
GS-14	83	83
ALL OTHER GS	497	497
WAGEBOARD	–	–
TOTAL PERMANENT	629	628

COMPUTATION LABORATORY

	FY-74	FY-75
EXCEPTED	1	1
GS-18	1	1
GS-15	11	11
GS-14	26	26
ALL OTHER GS	99	99
WAGEBOARD	–	–
TOTAL PERMANENT	138	138

PROCESS ENGINEERING LABORATORY

	FY-74	FY-75
EXCEPTED	2	2
GS-18	1	1
GS-15	8	8
GS-14	10	10
ALL OTHER GS	312	312
WAGEBOARD	5	5
TOTAL PERMANENT	338	338

SPACE SCIENCES LABORATORY

	FY-74	FY-75
EXCEPTED	1	1
GS-18	1	1
GS-15	15	15
GS-14	17	17
ALL OTHER GS	120	120
WAGEBOARD	–	–
TOTAL PERMANENT	154	154

DIRECTOR OF ADMINISTRATION & PROGRAM SUPPORT

	FY-74	FY-75
EXCEPTED	2	2
GS-18	–	–
GS-15	1	1
GS-14	–	–
ALL OTHER GS	4	4
WAGEBOARD	–	–
TOTAL PERMANENT	7	7

LOGISTICS OFFICE

	FY-74	FY-75
EXCEPTED	–	–
GS-18	–	–
GS-15	2	2
GS-14	2	2
ALL OTHER GS	3	3
WAGEBOARD	–	–
TOTAL PERMANENT	7	7

SHUTTLE CONSTRUCTION OFFICE

	FY-74	FY-75
EXCEPTED	1	1
GS-18	–	–
GS-15	1	1
GS-14	6	6
ALL OTHER GS	4	4
WAGEBOARD	–	–
TOTAL PERMANENT	12	12

FACILITIES OFFICE

	FY-74	FY-75
EXCEPTED	–	–
GS-18	–	–
GS-15	1	1
GS-14	6	6
ALL OTHER GS	32	32
WAGEBOARD	–	–
TOTAL PERMANENT	39	39

PROCUREMENT OFFICE

	FY-74	FY-75
EXCEPTED	–	–
GS-18	–	–
GS-15	6	6
GS-14	15	15
ALL OTHER GS	210	210
WAGEBOARD	–	–
TOTAL PERMANENT	231	231

SLIDELL COMPUTER COMPLEX

	FY-74	FY-75
EXCEPTED	–	–
GS-18	–	–
GS-15	1	1
GS-14	2	2
ALL OTHER GS	5	5
WAGEBOARD	–	–
TOTAL PERMANENT	8	8

TECHNOLOGY UTILIZATION OFFICE

	FY-74	FY-75
EXCEPTED	–	–
GS-18	–	–
GS-15	1	1
GS-14	2	2
ALL OTHER GS	4	4
WAGEBOARD	–	–
TOTAL PERMANENT	7	7

MANPOWER OFFICE

	FY-74	FY-75
EXCEPTED	–	–
GS-18	–	–
GS-15	1	1
GS-14	7	7
ALL OTHER GS	66	66
WAGEBOARD	–	–
TOTAL PERMANENT	74	74

FINANCIAL MANAGEMENT OFFICE

	FY-74	FY-75
EXCEPTED	–	–
GS-18	–	–
GS-15	2	2
GS-14	7	7
ALL OTHER GS	89	89
WAGEBOARD	–	–
TOTAL PERMANENT	98	98

MANAGEMENT SERVICES OFFICE

	FY-74	FY-75
EXCEPTED	–	–
GS-18	–	–
GS-15	1	1
GS-14	5	5
ALL OTHER GS	86	86
WAGEBOARD	12	12
TOTAL PERMANENT	104	104

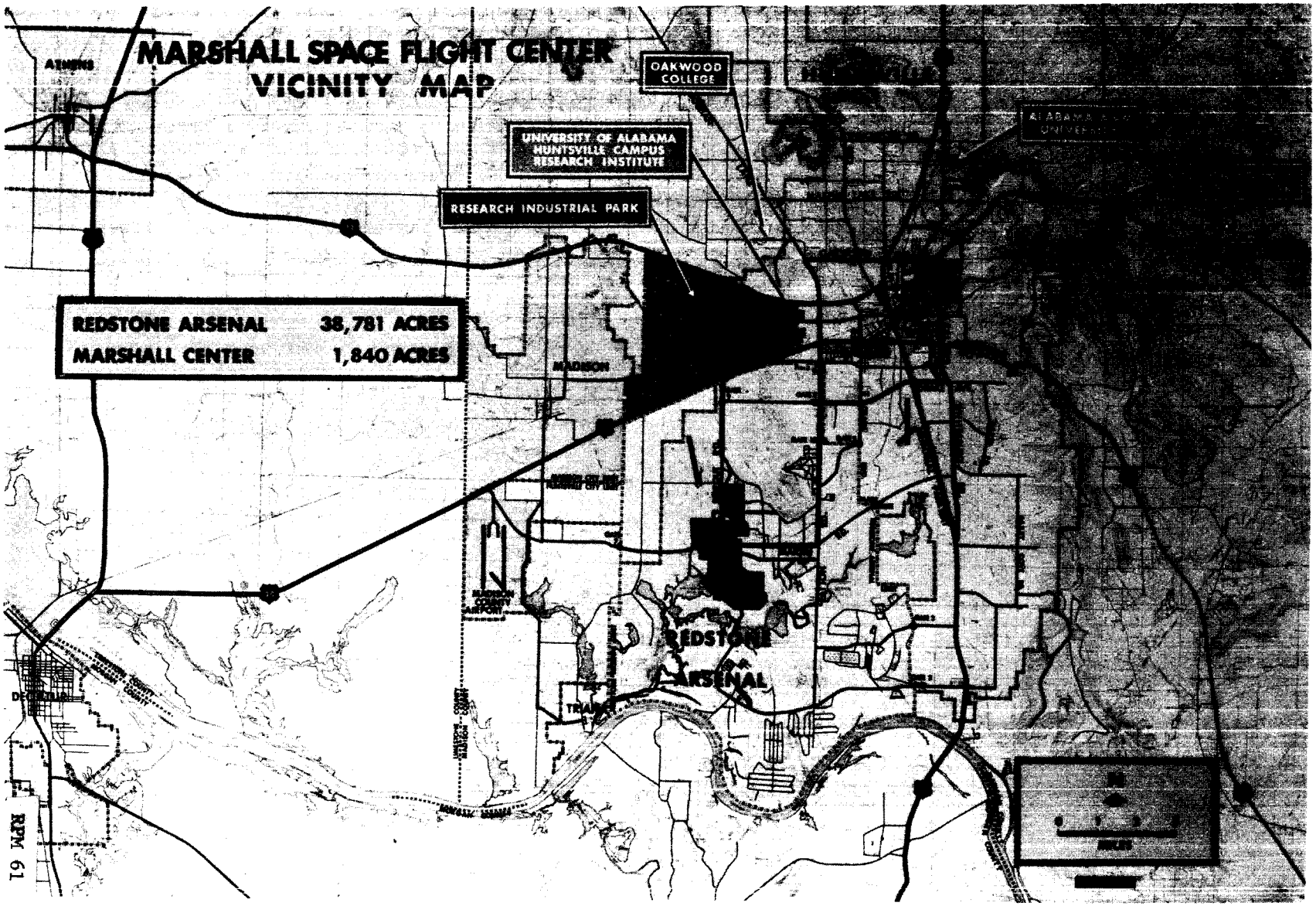
TECHNICAL SERVICES OFFICE

	FY-74	FY-75
EXCEPTED	–	–
GS-18	–	–
GS-15	–	–
GS-14	4	–
ALL OTHER GS	298	298
WAGEBOARD	17	17
TOTAL PERMANENT	319	319

DIRECTOR OF MISSISSIPPI TEST FACILITY

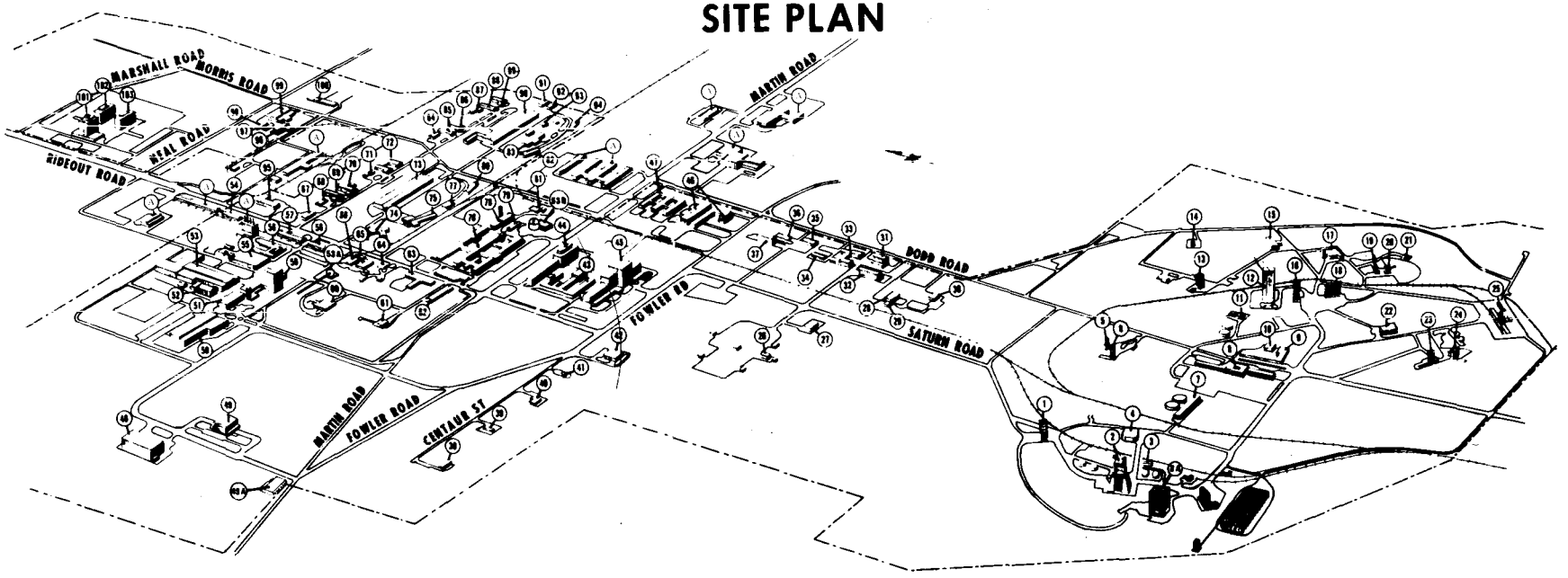
	FY-74	FY-75
EXCEPTED	1	1
GS-18	1	1
GS-15	1	1
GS-14	9	9
ALL OTHER GS	53	53
WAGEBOARD	0	0
TOTAL PERMANENT	65	65

529-958 O - 74 (Precedes p. RPM 61)


MARSHALL SPACE FLIGHT CENTER
VICINITY MAP
OAKWOOD COLLEGE
UNIVERSITY OF ALABAMA HUNTSVILLE CAMPUS RESEARCH INSTITUTE
RESEARCH INDUSTRIAL PARK
REDSTONE ARSENAL 38,781 ACRES
MARSHALL CENTER 1,840 ACRES
MADISON
REDSTONE ARSENAL

RPM 61

MARSHALL SPACE FLIGHT CENTER
SITE PLAN



HEADQUARTERS AREA

95	4207	CENTRAL COMMUNICATIONS FACILITY
96	4241	STORAGE BUILDING
97	S-4244	BUTLER BUILDING (STORAGE AND SHOPS)
98	S-4251	SUPPORT SERVICES EQUIPMENT SHED
99	4250	TECHNICAL SERVICES OPERATIONS BUILDING
100	4249	SUPPORT SERVICES OPERATIONS AND MEDICAL CENTER
101	4200	CENTRAL LABORATORY AND OFFICE BUILDING
102	4202	PROJECT ENGINEERING BUILDING
103	4201	ENGINEERING AND ADMINISTRATION BUILDING

LAB AND SUPPORT AREA

38	4628	LOW TEMPERATURE TEST FACILITY
39	4622	LIQUID HYDROGEN TEST PAD
40	4623	ACCELERATOR AND TEST CELL FACILITY
41	4624	HYDROGEN PEROXIDE STATION
42	4605	NON-DESTRUCTIVE TEST LABORATORY
43	4612	MATERIALS LABORATORY
44	4610	ASTRONAUTICS LAB
45	4619	STRUCTURES AND MECHANICS LABORATORY
46	4650	TEST SHOP & INSTRUMENT LAB
47	4663	COMPUTATION LABORATORY
48	S-4755	VEHICLE COMPONENTS HANGER
49	S-4752	COMPONENTS AND SUBASSEMBLY ACCEPTANCE BLDG.
49A		INDUSTRIAL WASTE TREATMENT FACILITY
50	4708	ASSEMBLY AND INSPECTION HANGER
51	4760	SURFACE TREATMENT FACILITY
52	S-4706	NEUTRAL BUOYANCY SIMULATOR
53	4705	ASSEMBLY SHOP AND HANGER
53A	4775	EXPERIMENTAL TEST FACILITY
53B	4467	CELESTIAL SENSOR FACILITY
54	4723	MATERIAL TEST LABORATORY
55	4711	PRECISION MACHINE SHOP
56	4712	FIELD OFFICE BUILDING (MFG. ENG. LAB)
57	4727	MACHINE SHOP AND OFFICE BUILDING
58	4728	EQUIPMENT TEST SHOP
59	4707	COMPONENT HANGER & HYDROSTATIC TEST
60	4750	HIGH ALTITUDE TEST FACILITY
61	4748	LIQUID PROPELLANT TEST SUPPORT BUILDING
62	S-4747	AIR COMPRESSOR STATION
63	4746	OFFICE, TEST DIVISION
64	4741	BERYLLIUM FACILITY
65	4732	WIND TUNNEL FACILITY
66	4733	VACUUM TANK FACILITY
67	4306	SUPPORT OFFICES
68	4312	OFFICE BUILDING
69	4311	SHOCK TUNNEL FACILITY
70	4313	STRUCTURAL TESTING LABORATORY STORAGE
71	4332	ENVIRONMENTAL TEST LABORATORY
72	4331	TESTING AND DEVELOPMENT SHOP
73	4471	STORAGE AND OFFICE BUILDING
74	4485	FINANCIAL MANAGEMENT OFFICE BUILDING
75	4491	COMPUTATION/ADP LABORATORY
76	4487	GUIDANCE AND CONTROL BUILDING ASTRIONICS LAB
77	S-4479	STORAGE SHED
78	4476	ACCELERATION AND ENVIRONMENTAL TEST FACILITY
79	S-4436	AUTOMATION CHECKOUT BUILDING
80	4492	ELECTRICAL SYSTEM LABORATORY
81	4475	HAZARDOUS OPERATIONS LABORATORY
82	4493	MACHINE AND SHEET METAL SHOP
83	4483	VEHICLE MAINTENANCE SHOP
84	4352	NITROGEN STORAGE BUILDING
85	4351	ADMINISTRATIVE BUILDING
86	4353	PHOTOGRAPHIC LABORATORY
87	4372	EQUIPMENT STORAGE
88	4371	STORAGE AND OFFICES
89	4373	GSE LABORATORY
90	4481	ENGINEERING AND MACHINE SHOP/OFFICE
91	S-4476	STORAGE BUILDING (QUONSET)
92	S-4499	STORAGE BUILDING (QUONSET)
93	4482	OPERATIONS SUPPORT BUILDING
94	4494	MARS ACTIVITIES

TEST AREA

WEST AREA

1	4696	F-1 ENGINE TEST STAND
2	4670	SATURN STATIC TEST STAND (S-IC)
3	[illegible]	HELIUM COMPRESSOR BUILDING
4	4674	CONTROL CENTER BUILDING
5		INTERIM TEST STAND
6		JUPITER "HOP" TEST STAND
7	4667	PUMP HOUSE
8	4666	TEST DIVISION ENGINEERING BUILDING
8A	4699	S-II STRUCTURAL TEST STAND

EAST AREA

9	4666	TECHNICAL DOCUMENTATION CENTER
10	4667	BOILER HOUSE AND PUMP STATION
11	S-4649	DEIONIZED WATER TREATMENT PLANT
12	4550	ADVANCED SATURN DYNAMIC TEST STAND
13	4522	TEST STAND (LOX-LH_2 COMPONENTS)
14	4530	TEST STAND (LOX-RP COMPONENTS)
15	4561	CONTROL AND SERVICE CENTER
16	4557	DYNAMIC TEST STAND (SATURN I/IB)
17	4503	COMPONENTS TEST LABORATORY
18	4548	F-1 TURBO TEST FACILITY
19	S-4539	TEST PREPARATION BUILDING
20	4540	ACOUSTIC MODEL TEST FACILITY
21	4541	CONTROL BUILDING
22	4570	BLOCKHOUSE
23	4564	POWER PLANT TEST STAND (H-1 ENGINE)
24	4514	LIQUID HYDROGEN FACILITY (S-IVB)
25	4572	STATIC TEST TOWER (S-I/IB)

TEST SUPPORT AREA

26	4646	GSE TEST CONTROL CENTER
27	4648	HIGH PRESSURE FLUID TEST FACILITY
28	S-4659	SUPPORT BUILDING (N2 VAPORIZATION FAC)
29	S-4660	BOILER HOUSE
30	S-4647	GAS STORAGE & COMPRESSOR BLDG
31	S-4655	ENGINE PREPARATION BUILDING
32	S-4656	SATURN V GSE ASSEMBLY BUILDING
33	S-4653	COMPONENTS SUPPORT BUILDING
34	4678	SUB-STORES BUILDING
35	S-4654	TECHNICAL SYSTEMS WAREHOUSE
36	S-4651	SHOP BUILDING (QUONSET)
37	4649	TRANSPORTATION HANGER
		A - - ARMY BUILDINGS

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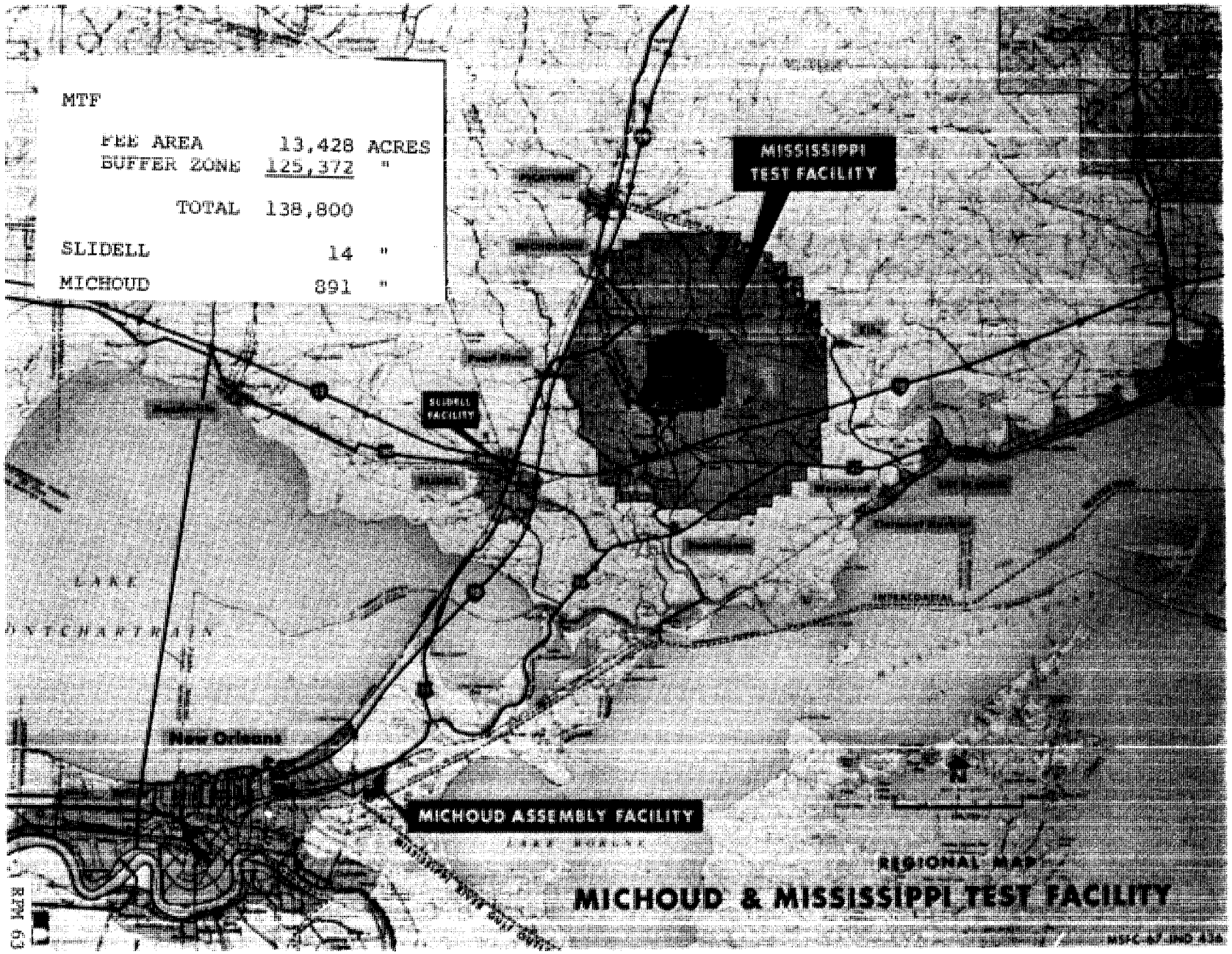
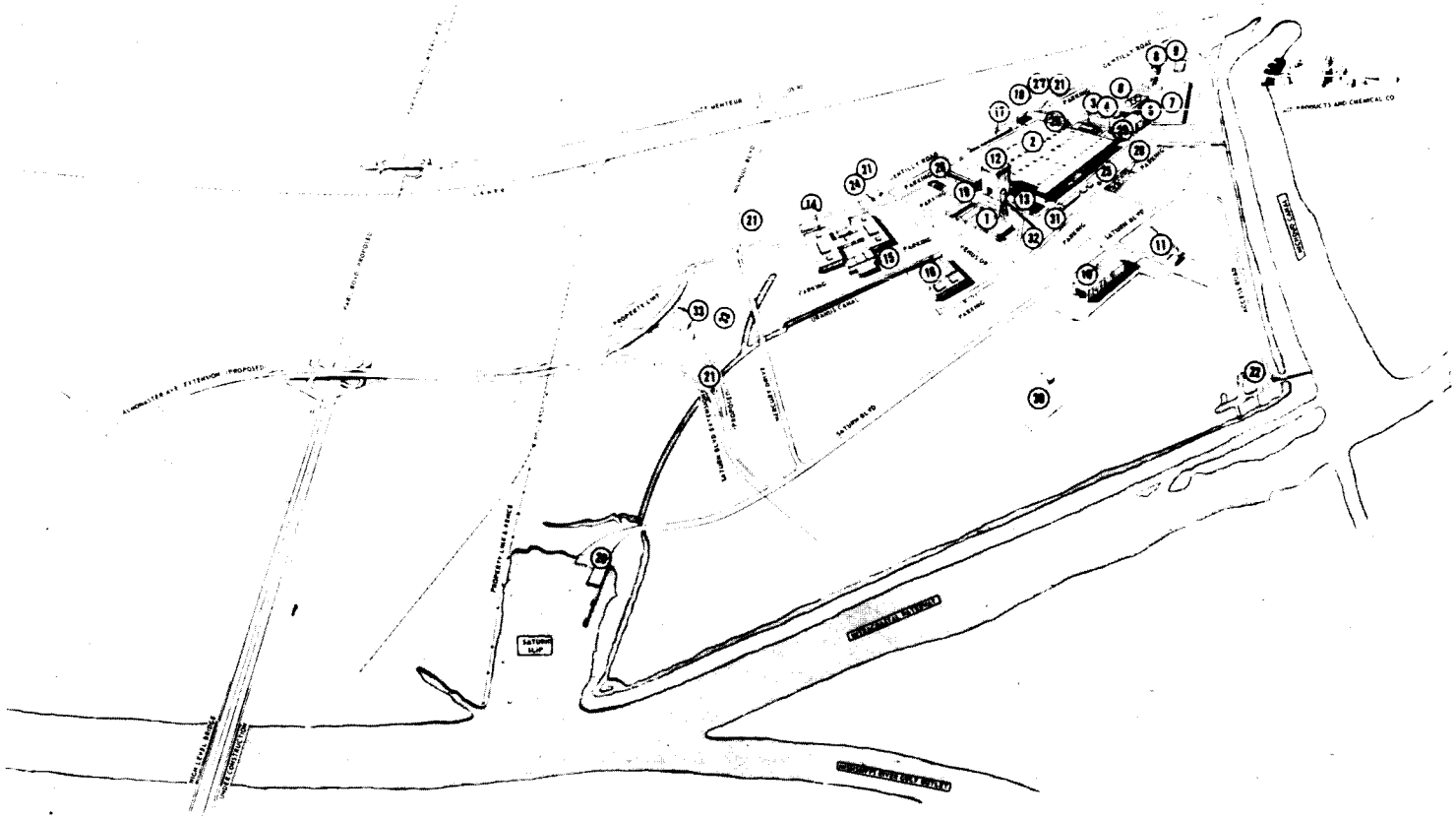

MTF
FEE AREA 13,428 ACRES
BUFFER ZONE 125,372 "
TOTAL 138,800
SLIDELL 14 "
MICHOUD 891 "
MISSISSIPPI TEST FACILITY
SLIDELL FACILITY
LAKE PONTCHARTRAIN
New Orleans
MICHOUD ASSEMBLY FACILITY
LAKE BORGNE
INTERNATIONAL
REGIONAL MAP
MICHOUD & MISSISSIPPI TEST FACILITY

MICHOUD ASSEMBLY FACILITY

SITE PLAN



MANUFACTURING AND ASSEMBLY

1	303	BOOSTER HANGAR
2	103	MANUFACTURING
3	111	LABORATORY
4	104	BATTERY CHARGING & STORAGE
5	207	BOILER HOUSE
6	202	COOLING TOWER
7	220	VEHICLE COMPONENT SUPPLY
8	203	MAINTENANCE SUPPLY
9	221	HAZARDOUS MATERIAL STORAGE

TEST FACILITIES

10	420	S-IC STAGE TEST & CHECKOUT FACILITY
11	404	HIGH PRESSURE TEST FACILITY
12	110	VERTICAL ASSEMBLY & HYDROSTATIC TEST
13	130	SYSTEMS ENGINEERING

ENGINEERING & ADMINISTRATION

14	350	OFFICE AND ENGINEERING BUILDING
15	351	CAFETERIA
16	320	CONTRACTOR SERVICES BUILDING
17	101	ADMINISTRATION
18	102	ENGINEERING
19	301	MAINTENANCE SHOP

TRANSPORTATION, UTILITIES & MISC

20	480	SATURN BARGE DOCK
21		GUARD HOUSE
22	450	MAIN PUMP STATION
23	201	PUMP STATION NO 1
24	304	PUMP STATION NO 3
25	143	PUMP STATION NO 4
26	308	WEST MASTER SUBSTATION
27	121	MAIN SUBSTATION
28		CHEMICAL WASTE LAGOON
29	119	PAINT SHOP
30	403	SALVAGE YARD
31	105	TRANSPORTATION
32		ELEVATED WATER TOWER
33		SATURN BOULEVARD EXTENSION

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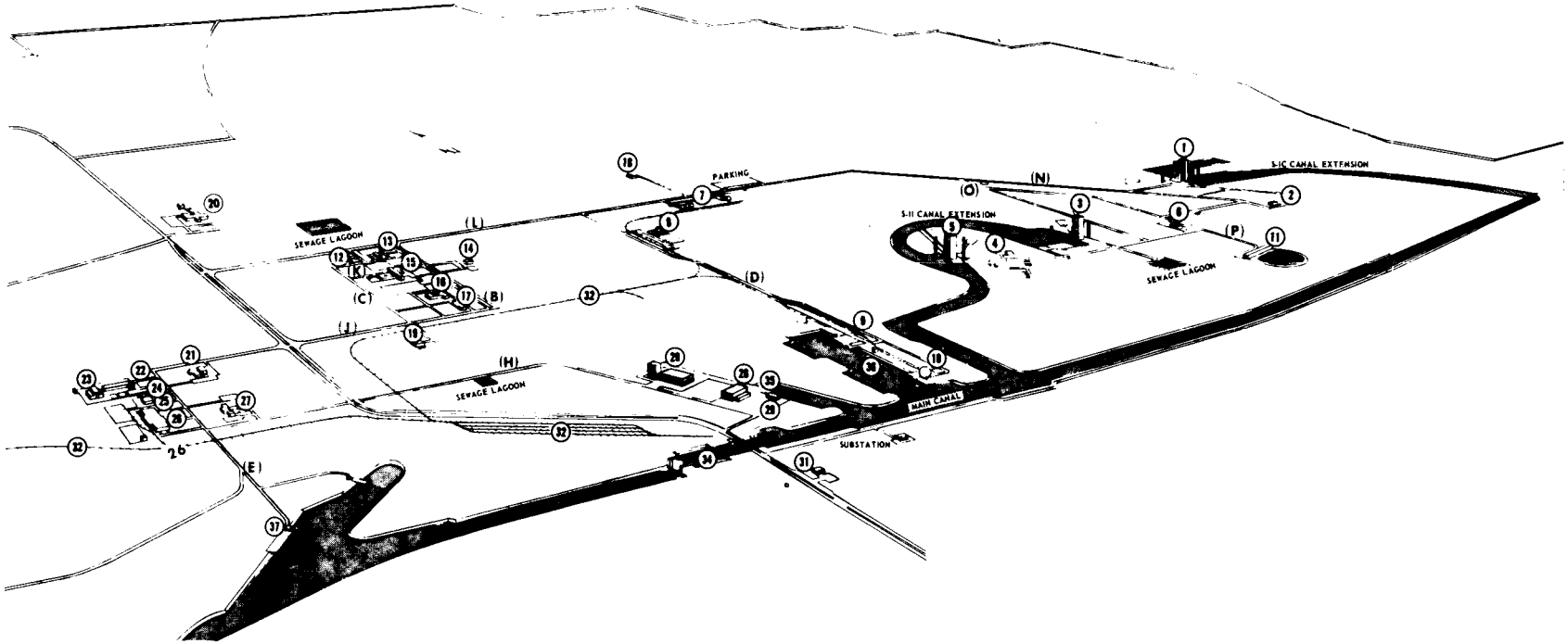
MSFC-67-IND 8943B

MISSISSIPPI TEST FACILITY
SITE PLAN



SATURN V TEST COMPLEX

1	4220	SATURN S-IC STATIC TEST FAC. (DUAL POSITION)
2	4210	S-IC TEST CONTROL CENTER
3	4122	S-II POSITION A-2
4	4110	S-II TEST CONTROL CENTER
5	4120	S-II POSITION A-1
6	4995	DATA ACQUISITION CENTER
7	3305	HIGH PRESSURE GAS COMPRESSOR FACILITY
8		RP-1 STORAGE AND TRANSFER AREA
9		LH_2 TRANSFER AREA
10		LOX STORAGE AND TRANSFER AREA
11	4400	HI PR WATER STORAGE, PUMP, & DISTR SYSTEM

ENGINEERING AND ADMINISTRATION COMPLEX

12	1201	COMMUNICATIONS & TELEPHONE BUILDING
13	1200	TEST AREA CONTROL CENTER
14	1000	DATA HANDLING CENTER
15	1100	ENGINEERING AND ADMINISTRATION BUILDING
16	1105	ELECTRONICS INSTR & MATERIALS LAB
17	1110	SONIC MEASURING FACIL - ACOUSTIC LAB
18	8201	SONIC MEASURING FACIL - METEOROLOGY LAB
19	3204	CENTRAL HEATING PLANT

INDUSTRIAL COMPLEX

20	8100	COMPONENTS SERVICE FACILITY
21	2101	EMERGENCY SERVICES BLDG.
22	2201	SITE MAINTENANCE BLDG.
23	2205	TEST MAINTENANCE BLDG
24	2202	COMPRESSED GAS CYLINDER STORAGE
25	2203	INFLAMMABLE MATERIAL STORAGE
26	2204	WAREHOUSE
27	2105	MOBILE EQUIPMENT OPERATION BLDG.
28	3202	S-IC STAGE STORAGE BUILDING
29	3203	S-II STAGE STORAGE & C/O FAC.
30	3201	CRYOGENIC BARGE SERVICE BUILDING
31	3102	SECURITY CONTROL FACILITY

TRANSPORTATION & MISC.

32		RAILROAD & SWITCHING YARD
33	2402	RP-1 TRANSFER DOCK
34	2315	NAVIGATION LOCK & BRIDGE
35		BOOSTER TRANSFER DOCK
36		CRYOGENIC DOCK & CANAL EXTEN
37	2401	CONSTRUCTION DOCK

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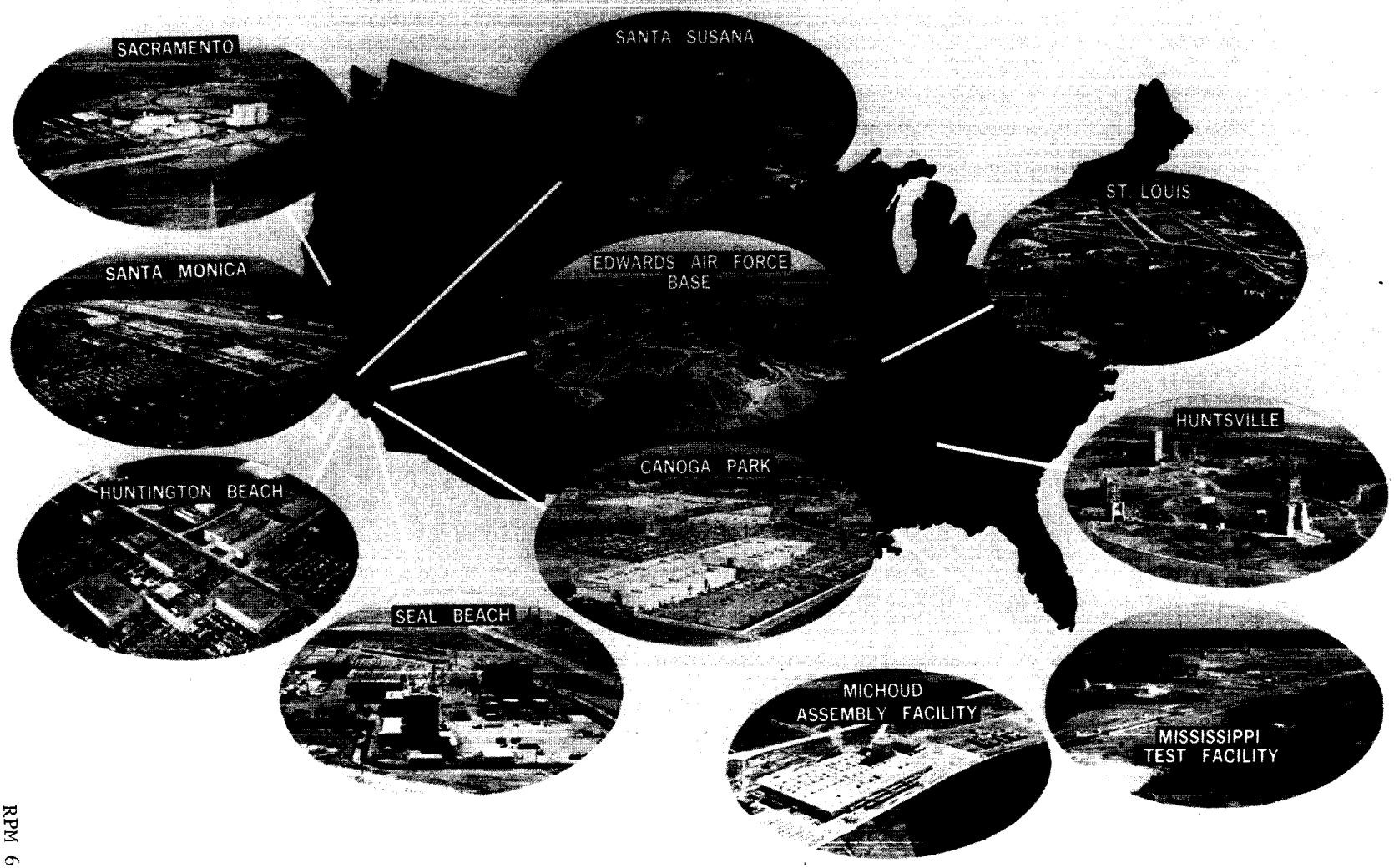
RPM 65

MARSHALL SPACE FLIGHT CENTER
PROGRAM FACILITIES



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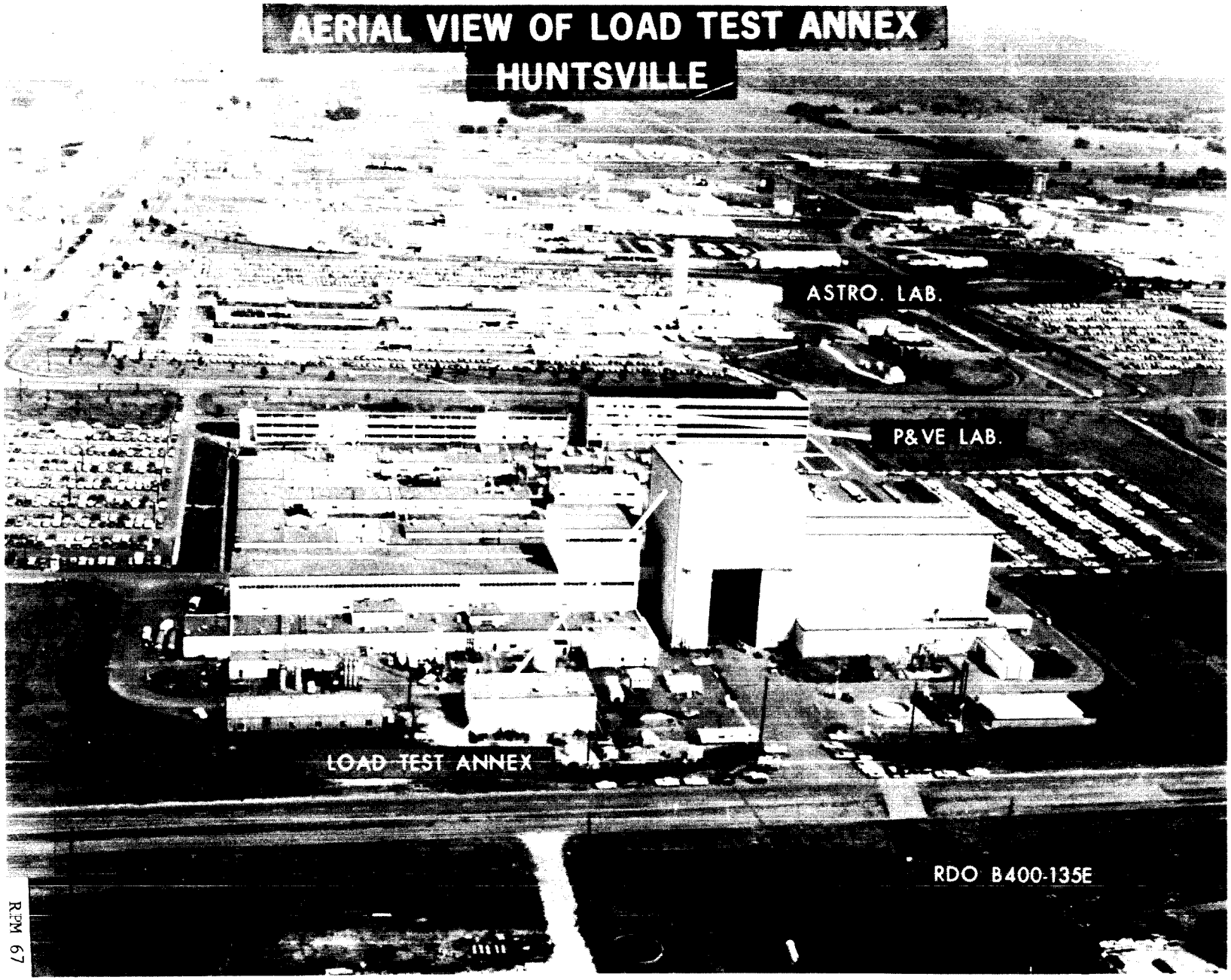
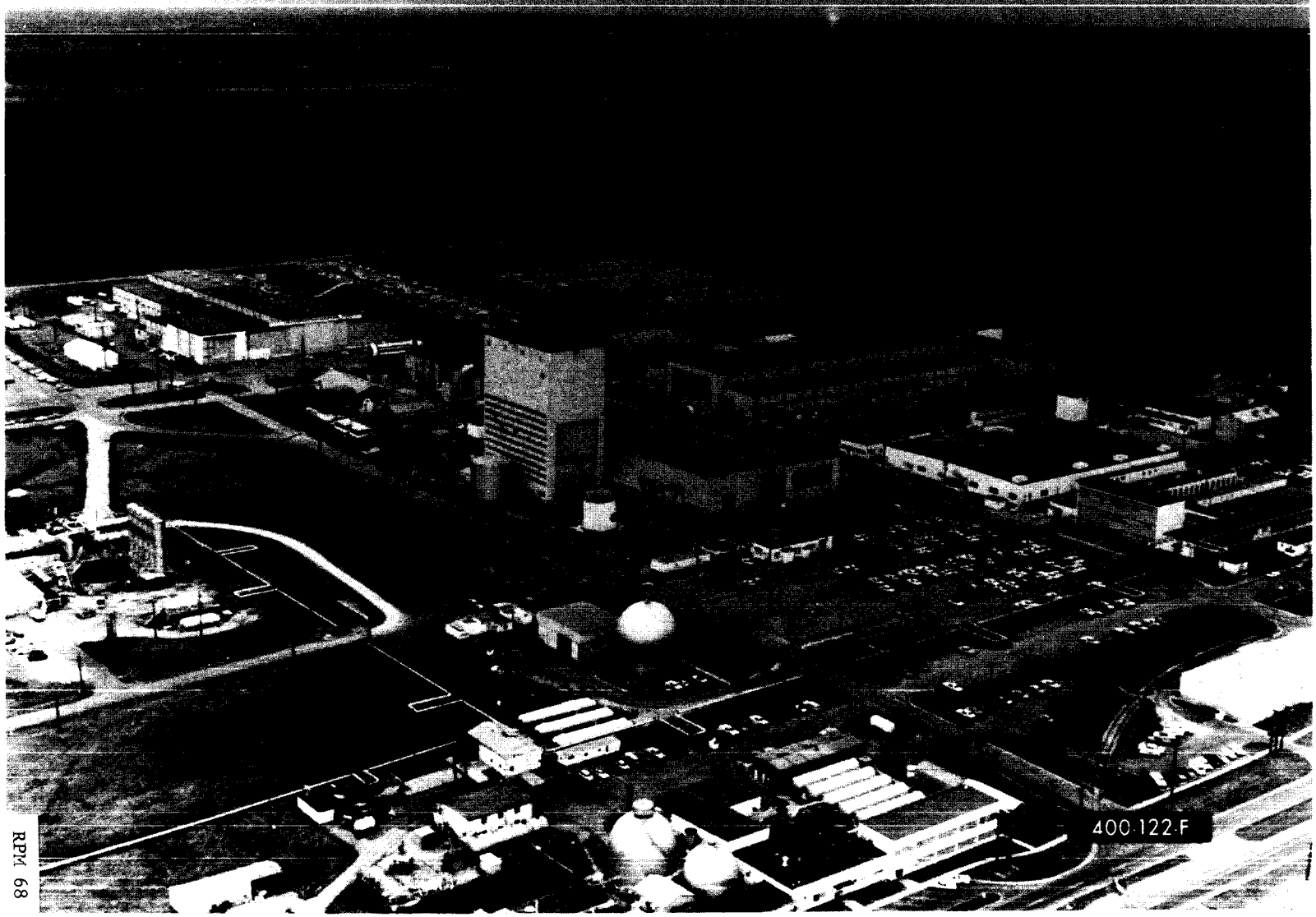

AERIAL VIEW OF LOAD TEST ANNEX
HUNTSVILLE
ASTRO. LAB.
P&VE LAB.
LOAD TEST ANNEX
RDO B400-135E

PROD. ENGR. & PROC. TECH. LAB.
HUNTSVILLE



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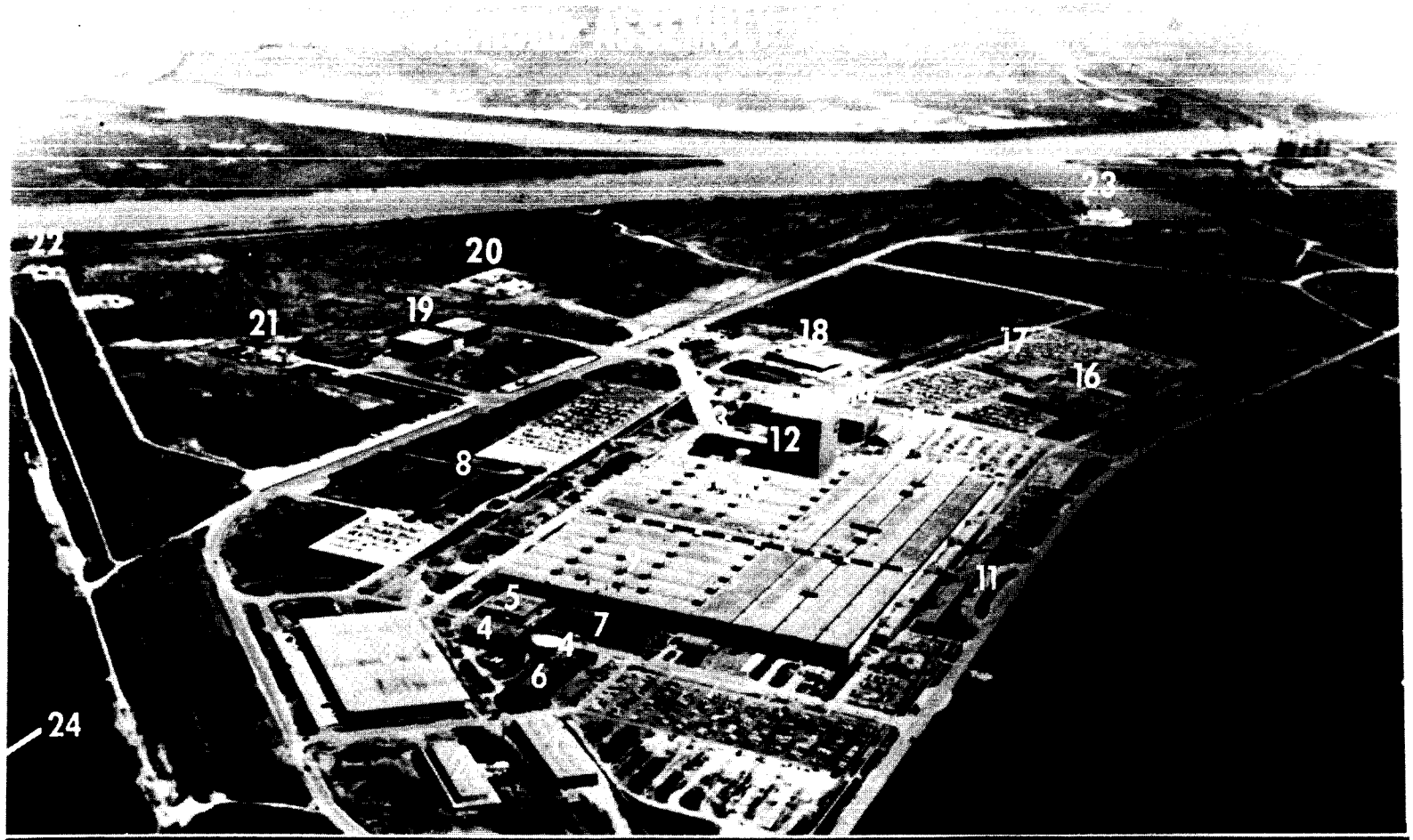
EAST TEST AREA–HUNTSVILLE
SAT V DYNAMIC TEST STAND
SAT IB DYNAMIC TEST STAND
F 1 TURBOPUMP
H-1 TEST STAND
S-IVB TEST STAND
SAT IB F 1 STATIC
TEST STAND
MSFC-69-S&E-400-215A

RPM 69



1. MAINTENANCE SUPPLY
2. HAZARDOUS MATLS STORAGE
3. VEHICLE COMPONENT SUPPLY
4. BOILER PLANT & FUEL TANKS
5. BATTERY CHARGING
6. COOLING TOWER
7. LABORATORY
8. CHEMICAL WASTE RESERVOIR
9. CHRYSLER FAB AREA (S-IB)
10. BOEING FAB AREA (S-IC)
11. ENGINEERING BUILDINGS
12. VERT ASSY & HYDROSTATIC TEST
13. SYSTEMS ENGINEERING BLDG
14. BOOSTER HANGAR
15. MAINTENANCE
16. ENGINEERING & OFFICE BLDG
17. CAFETERIA
18. CONTRACTOR SERVICES BLDG
19. STAGE TEST & CHECK OUT
20. SALVAGE YARD
21. HIGH PRESSURE TEST FACILITY
22. MAIN PUMPING STATION
23. BARGE DOCK
24. LOX & LH_2 PLANT

IND 8904F

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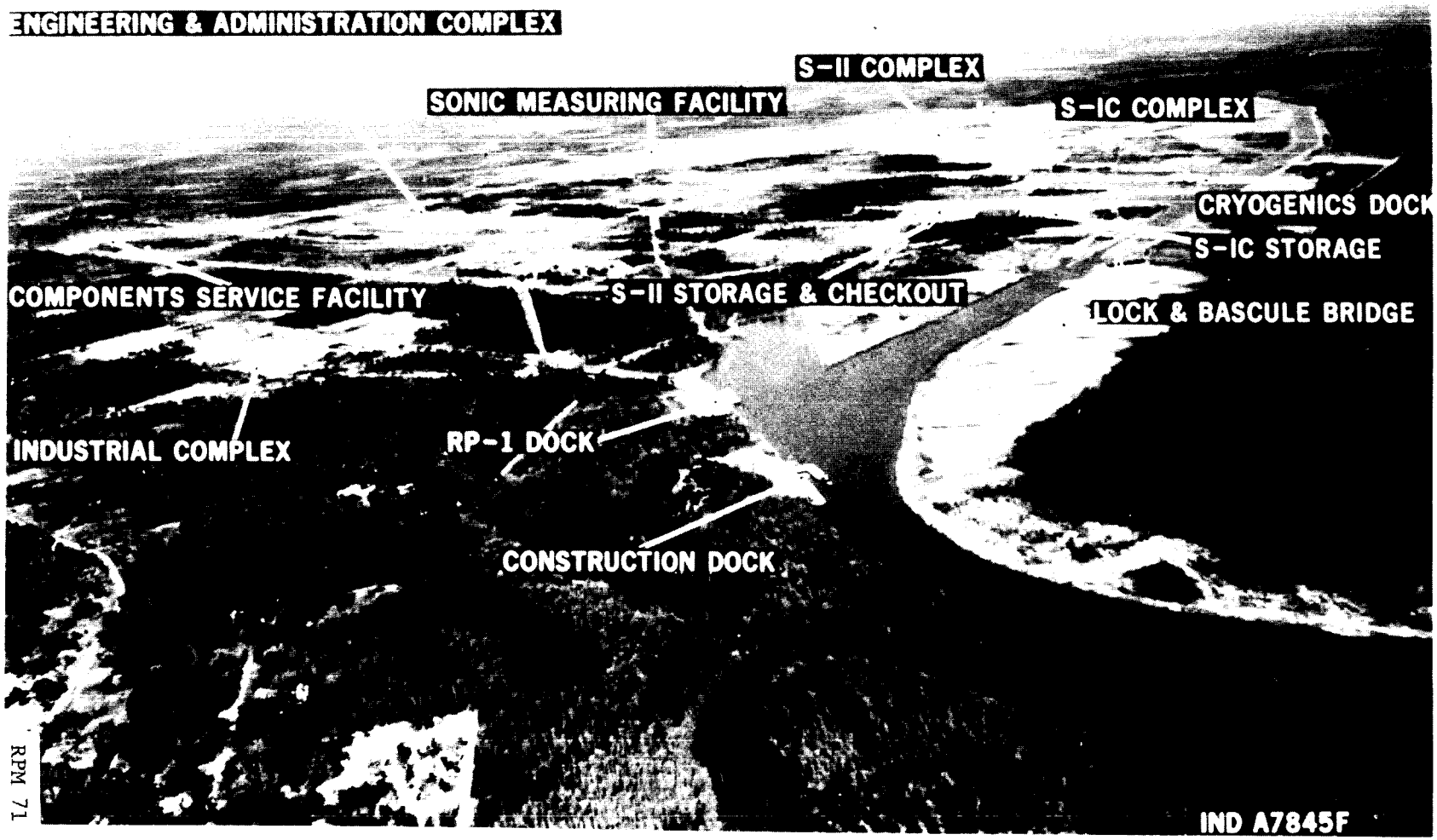
MISSISSIPPI TEST FACILITY—AERIAL VIEW



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RESEARCH AND PROGRAM MANAGEMENT

FISCAL YEAR 1975 ESTIMATES

GODDARD SPACE FLIGHT CENTER

MISSION

The Goddard Space Flight Center, established in 1959 as the first major United States installation devoted to the investigation and exploration of space, conducts a wide-ranging program of experimentation in space science and applications. The Goddard Center has developed many diverse capabilities: the management of complex satellite projects; the development of wholly integrated spacecraft, ranging from systems engineering to development, integration, and testing; the development and operation of satellite tracking networks, data acquisition and analysis; and scientific research to include both theoretical studies and the development of many significant scientific experiments flown in satellites.

The majority of the Goddard Center's personnel are located at Greenbelt, Maryland; other personnel are located at the Goddard Institute for Space Studies in New York City, and throughout the world, managing the operation of satellite tracking and communications network stations.

Goddard is responsible for the management of applications satellite projects, such as the applications technology satellites (ATS), Nimbus and earth resources technology satellites (ERTS); management of scientific satellite projects which include the orbiting solar observatory (OSO), the atmosphere explorers (AE), and the small explorer series; project management of the Delta launch vehicle; management and operation of the worldwide spaceflight tracking and data network (STDN) and NASA communications network (NASCOM); and the Center carries out an extensive sounding rocket program.

Major Goddard activities during the year were in the following areas:

Applications Satellites - Goddard is presently involved with several key applications satellite projects. They are the synchronous meteorological satellite (SMS), the earth resources technology satellite (ERTS), and the applications technology satellite (ATS). The SMS will provide continuous weather coverage from a geostationary orbit on an operational basis. The earth resources technology satellite is presently providing high quality images of the earth and aiding in a wide variety of earth resources disciplines. The ATS-F will be a highly flexible spacecraft carrying advanced meteorological, communications, air traffic control and scientific experiments. Nimbus-5, now in orbit, provides additional data on instruments designed to help in weather analysis and prediction.

Scientific Satellites - During the past year, Goddard-managed scientific satellites have continued to probe the complex nature of our solar system and the universe. Explorer 47 (IMP-H), launched in September 1972, continues the investigation of the interplanetary magnetic field and the magnetosphere that surrounds the earth. A small astronomy satellite launched from a launch platform near the equator continues gamma radiation studies. Radio astronomy explorer B, launched in June 1973, continues to make measurements of galactic and solar radio noise at frequencies below ionospheric cutoffs and external to terrestrial background interference by utilization of the moon for occulation, focusing, or aperture blocking for increased resolution and discrimination.

International Programs - Goddard continues in its responsibility to carry out international cooperative efforts in space exploration. During the past year, technical assistance and launch support were provided for the Canadian communications satellite TELESAT B, launched aboard a NASA Delta rocket. Several other cooperative programs with the Netherlands, Germany, Canada, and Great Britain will result in spacecraft launchings within the next several years.

Tracking and Data Acquisition - The Goddard-managed spaceflight tracking and data network (STDN) provided tracking and communications coverage for all of NASA's satellites. The Apollo subnet of the STDN provided the tracking support for all Apollo lunar missions and is providing the tracking for the earth-orbiting Skylab missions.

Sounding Rockets - During 1973 more than 35 sounding rocket launchings, primarily from Wallops Station, Virginia, were conducted by Goddard bringing to just under 1,600 the number of sounding rocket launchings in the program since 1959.

DESCRIPTION

The Goddard Space Flight Center, located 15 miles northeast of Washington, D. C., at Greenbelt, Maryland, is situated on a 554-acre main site. Three additional nearby plots of 620 acres comprise the remote site area and contain the Goddard Antenna Test Range, the Goddard Optical Facility, the Propulsion Research Facility, the Magnetic Fields Component Test Facility, the Attitude Control Test Facility, and the Network Training and Test Facility.

The total capital investment for the Goddard Space Flight Center, including fixed assets in progress and contractor-held facilities at various locations as of June 30, 1973, was $700,394,000 (including capital type facilities of the network and other supporting activities including equipment aboard ships and aircraft).

SUMMARY OF RESOURCES REQUIREMENTS

FUNDS

Functions	1973	1974	1975	Change in 1975
Personnel.....	$81,907,000	$83,622,000	$84,178,000	$+556,000
Travel.....	2,211,000	2,245,000	2,245,000	---
Facilities services....	4,600,000	5,706,000	7,421,000	+1,715,000
Technical services.....	2,813,000	2,281,000	1,882,000	-399,000
Administrative support.	4,205,000	4,568,000	4,853,000	+285,000
Total, fund requirements.....	$95,736,000	$98,422,000	$100,579,000	$+2,157,000

Personnel - Increase in 1975 reflects the full year's effect of the October 1973 pay raise, the cost of promotions and within grade increases, an increase in the cooperative vocational training program, and higher training costs partially offset by turnover savings and the full year effect of the 1974 manpower reductions.

Travel - Level travel budget reflects reduction in number of trips offset by higher transportation costs.

Facilities Services - The increase in 1975 is due to higher utility rates, support contract wage increases, and the addition of rental charges for real property previously funded by GSA.

Technical Services - The reduction in 1975 reflects the transfer of programmatic ADP leases to R&D, partially offset by support contract wage increases and the cost of a new business computer.

Administrative Support - The increase in 1975 is due primarily to higher communications rates and support contract wage increases.

PERSONNEL

	1973	1974	1975	Change in 1975
I. PERSONNEL.....	$81,907,000	$83,622,000	$84,178,000	$+556,000

Basis of Fund Requirements

	1973	1974	1975
A. Compensation and Benefits:			
1. Compensation:			
a. Permanent positions.....	$74,139,000	$75,020,000	$75,762,000
b. Nonpermanent positions...	452,000	514,000	577,000
c. Reimbursable details.....	5,000	---	---
d. Overtime and other compensation.....	553,000	598,000	606,000
Subtotal, Compensation...	$75,149,000	$76,132,000	$76,945,000
2. Benefits.....	6,353,000	6,819,000	6,555,000
Subtotal, Compensation and Benefits.....	$81,502,000	$82,951,000	$83,500,000
B. Supporting Costs:			
1. Transfer of personnel.....	$119,000	$140,000	$118,000
2. Personnel training.....	286,000	531,000	560,000
Subtotal, Supporting Costs...	$405,000	$671,000	$678,000
Total, Personnel and Related Costs.....	$81,907,000	$83,622,000	$84,178,000
1. Compensation.....	$75,149,000	$76,132,000	$76,945,000
a. Permanent Positions.....	$74,139,000	$75,020,000	$75,762,000

The funds shown above will support 3,808 permanent positions in 1974 and 1975.

Over two thirds of Goddard's permanent positions are used in direct support of the various R&D programs. The following table summarizes the actual and planned utilization of positions for direct program activity and for indirect support.

Distribution of Permanent Positions by Program

	1973	1974	1975
Direct Positions			
Manned Space Flight			
Space shuttle	1	2	2
Space flight operations	29	17	19
Apollo	5	1	1
Space Applications	740	735	611
Space Science			
Physics and astronomy	1,079	984	1,106
Lunar and planetary exploration	143	132	145
Launch vehicle procurement	46	56	56
Aeronautics and Space Technology			
Space and nuclear research and technology	56	64	74
Tracking and Data Acquisition	715	699	676
Technology Utilization	7	7	7
Subtotal, direct positions	2,821	2,697	2,697
Indirect Positions			
Director and Staff	15	16	16
Administrative support	860	836	837
Research and Development Support	270	259	258
Subtotal, indirect positions	1,145	1,111	1,111
Total, permanent positions	3,966	3,808	3,808
Other than permanent positions	276	328	337
TOTAL, positions	4,242	4,136	4,145

Distribution of Permanent Positions by Program

	1973	1974	1975
Direct Positions			
Manned Space Flight			
Space shuttle	1	2	2
Space flight operations	29	17	19
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Technology Utilization	7	7	7
Subtotal, direct positions	2,821	2,697	2,697
Indirect Positions			
Director and Staff	15	16	16
Administrative support	860	836	837
Research and Development Support	270	259	258
Subtotal, indirect positions	1,145	1,111	1,111
Total, permanent positions	3,966	3,808	3,808
Other than permanent positions	286	328	330
TOTAL, positions	4,252	4,136	4,138

Basis of Cost for Permanent Positions

In 1975 the cost of permanent positions will be $75,762,000, an increase of $742,000 from 1974. This increase results as follows:

Cost of permanent positions in 1974		$75,020,000
Cost of increases in 1975		3,185,000
Within grade advances and career development:		
Full year effect of 1974 actions	$820,000	
Partial year effect of 1975 actions	990,000	
Extra day	299,000	
Full year effect of October 1973 pay raise	1,076,000	
Cost decreases in 1975		-2,443,000
Full year effect of 1974 actions	-1,752,000	
Partial year effect of 1975 actions	-101,000	
Turnover savings	-590,000	
Cost of permanent positions in 1975		$75,762,000

Other Compensation Costs

	1973	1974	1975
b. Nonpermanent Positions			
Cost	$452,000	$514,000	$577,000
Positions	276	328	337

These positions will be used to support the following programs in FY 1975 at approximately the levels indicated below. The increase in FY 1975 reflects a full year's effect of (1) the October 1973 pay raise and (2) an increase in the college cooperative training program of 15 positions.

Distribution of Nonpermanent Positions by Program

	FY 1975
College Cooperative Training	45
Summer Employment	114
Opportunity Programs	160
Temporary Clerical	18
Total	337

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Cost of permanent positions in 1974		$75,020,000
Cost of increases in 1975		3,185,000
Within grade advances and career development:		
Full year effect of 1974 actions	$820,000	
Partial year effect of 1975 actions	990,000	
Extra day	299,000	
Full year effect of October 1973 pay raise	1,076,000	
Cost decreases in 1975		-2,443,000
Full year effect of 1974 actions	-1,752,000	
Partial year effect of 1975 actions	-101,000	
Turnover savings	-590,000	
Cost of permanent positions in 1975		$75,762,000

Other Compensation Costs

	1973	1974	1975
b. Nonpermanent Positions			
Cost	$452,000	$514,000	$577,000
Positions	286	328	330

These positions will be used to support the following programs in FY 1975 at approximately the levels indicated below. The increase in FY 1975 reflects a full year's effect of (1) the October 1973 pay raise and (2) an increase in the college cooperative training program of 15 positions.

Distribution of Nonpermanent Positions by Program

	FY 1975
College Cooperative Training	45
Summer Employment	114
Opportunity Programs	~~160~~
Temporary Clerical	~~11~~
Total	~~330~~

	1973	1974	1975
c. Reimbursable Details.....	$5,000	---	---

In the past the services of a small group of military officers was utilized in Goddard's programs where such assignments were of mutual benefit.

d. Overtime and Other Compensation.....	$553,000	$598,000	$606,000

The increase in FY 1975 reflects a full year's effect of the October 1973 Federal employees' pay raise. Overtime at Goddard is required to meet peak operational requirements where additional man-hours of work are essential, generally culminating in the launch of a manned or automated spacecraft. Some of the areas involved are fabrication, experimentation, testing, launching, and tracking of the spacecraft.

2. Benefits.....	$6,353,000	$6,819,000	$6,555,000

The following table indicates the costs of personnel benefits by major categories:

Category of Cost			
Contribution to the Civil Service Retirement Fund.....	$5,173,000	$5,230,000	$5,302,000
Contribution for employee life insurance.....	258,000	268,000	278,000
Contribution for employee health insurance.....	771,000	802,000	890,000
Contribution to FICA.....	11,000	15,000	20,000
Incentive awards.....	24,000	30,000	35,000
Other personnel benefits.....	16,000	25,000	30,000
Severance pay.....	100,000	449,000	---
Total.....	$6,353,000	$6,819,000	$6,555,000

B. Supporting Costs.....	$405,000	$671,000	$678,000
1. Transfer of Personnel.....	$119,000	$140,000	$118,000

The decrease is due to fewer planned moves in FY 1975.

2. Personnel Training.....	$286,000	$531,000	$560,000

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A prime objective of training is career development to permit employees to advance to more responsible positions and to provide the Center with highly motivated and experienced personnel not readily available in the labor market. The low FY 1973 figure is due primarily to the depression of the training budget in FY 1973 (from $493 thousand) as part of an overall effort to reduce personnel costs in order to assist in absorbing the January 1973 pay raise. This was done by deferring many planned courses including on and off-site activities. The FY 1974 budget resumes the required level of effort plus increases related to higher tuition costs. The small increase in FY 1975 is due to increased tuition costs.

TRAVEL

	1973	1974	1975	Change in 1975
II. TRAVEL.....	$2,211,000	$2,245,000	$2,245,000	---

Basis of Fund Requirements

Summary of Travel by Major Category

	1973	1974	1975
A. Program Travel.....	$1,835,000	$1,896,000	$1,896,000
B. Administrative Travel.....	115,000	111,000	111,000
C. Meetings and Technical Seminars.....	261,000	238,000	238,000
Total, Travel.....	$2,211,000	$2,245,000	$2,245,000
A. Program Travel.....	$1,835,000	$1,896,000	$1,896,000

Program travel is the largest part of the travel function and accounts for approximately 85% of the travel requirements for 1975. Goddard has approximately 200 active R&D contracts in excess of $100,000. Technical officers are required to review contractors' performance at design reviews, fabrication and during integration and test of the spacecraft. A substantial amount of travel is required to coordinate the interface of experiments with the spacecraft. Due to the numerous technical problems associated with R&D effort, it is imperative that government monitoring of the contractor performance be accomplished to maintain schedule and cost controls.

Included in this category is overseas travel to launch and tracking sites required for instrumentation of the tracking sites, and inspection of the sites prior to launch. The San Marco platform off the east coast of Africa is used for several launches per year. In addition, sounding rockets are launched in various parts of the world such as Alaska, Canada and South America.

The estimate for 1975 is in consonance with the planned launch schedule in 1975, including such major launches as AE-D, ANS-A, ERTS-B, SAS-C, and Intelsat.

	1973	1974	1975
B. Administrative Travel.....	$115,000	$111,000	$111,000

Administrative travel for the coordination of general management matters remains constant for 1975.

C. Meetings and Technical Seminars.....	$261,000	$238,000	$238,000

Travel to meetings and technical seminars remains unchanged from 1974. Included among the nongovernment sponsored meetings are the American Astronautical Society, the American Geophysical Union, the American Association for the Advancement of Science, the Institutes of Electrical and Electronic Engineers, and the Committee on Space Research.

FACILITIES SERVICES

	1973	1974	1975	Change in 1975
III. FACILITIES SERVICES..	$4,600,000	$5,706,000	$7,421,000	$+1,715,000

Basis of Fund Requirements

Summary of Facilities Services

	1973	1974	1975
A. Rental of Real Property.....	$90,000	$95,000	$1,401,000
B. Maintenance and Related Services			
1. Maintenance, repair and alterations of buildings and grounds.....	$711,000	$838,000	$877,000
2. Custodial services.....	843,000	1,329,000	1,401,000
3. Maintenance of equipment.....	211,000	330,000	350,000
Subtotal.....	$1,765,000	$2,497,000	$2,628,000

	1973	1974	1975
C. Operation of Facilities			
1. Utilities.....	$1,945,000	$2,379,000	$2,619,000
2. Supplies and equipment.....	800,000	735,000	773,000
Subtotal.....	$2,745,000	$3,114,000	$3,392,000
Total, Facilities Services..	$4,600,000	$5,706,000	$7,421,000
A. Rental of Real Property.....	$90,000	$95,000	$1,401,000

The increase in FY 1975 is due to the change in funding whereby each agency is required to fund for its rental of real property previously funded by GSA.

B. Maintenance and Related Services....	$1,765,000	$2,497,000	$2,628,000
1. Maintenance, repair and alterations of buildings and grounds.....	$711,000	$838,000	$877,000

This activity provides for maintenance of buildings, grounds, and utility systems. This includes items such as 25 buildings comprising 2,191,000 square feet, 1,092 acres of ground, 489 acres of surfaced areas and utility systems with a value of $8,833,000. (The increase from FY 1973 to FY 1974 is due to alterations and repairs to office and laboratory space required to accommodate programmatic and institutional adjustments.) The FY 1975 increase in this area is attributable to wage rate increases for various contractors who perform the above functions. The estimates reflect the same level of effort in FY 1974 and FY 1975.

2. Custodial services.....	$843,000	$1,329,000	$1,401,000

Custodial services include security, janitorial, laundry activities, and refuse handling. Security is provided by a support service contractor utilizing 48 manyears of effort. The janitorial services are also provided by a support service contractor requiring 110 manyears of effort. The FY 1975 increase is due to higher wage rates in the janitorial contract. The estimates reflect the same level of effort in FY 1974 and FY 1975.

3. Maintenance of equipment.....	$211,000	$330,000	$350,000

The increase between FY 1973 and FY 1974 is due to contractual cost increases for maintenance of equipment, in addition to the inclusion of deferred maintenance of plant equipment and implementation of a systematic preventive maintenance program. The FY 1975 increase is due to contractual wage raises.

	1973	1974	1975
C. Operation of Facilities.....	$2,745,000	$3,114,000	$3,392,000
1. Utilities.....	$1,945,000	$2,379,000	$2,619,000

The increased cost in 1975 is due primarily to increased electric power, gas, and sewage disposal rates.

2. Supplies and equipment.....	$800,000	$735,000	$773,000

The increased cost in 1975 is due to price increases for valves, pipes, fittings, etc., used to maintain the facilities and utility systems of the center.

TECHNICAL SERVICES

	1973	1974	1975	Change in 1975
IV. TECHNICAL SERVICES.....	$2,813,000	$2,281,000	$1,882,000	$-399,000

Basis of Fund Requirements

Summary of Technical Services

	1973	1974	1975
A. Automatic Data Processing			
1. Equipment.....	$1,650,000	$878,000	$437,000
2. Programming and operation services.....	644,000	700,000	730,000
Subtotal.....	$2,294,000	$1,578,000	$1,167,000
B. Engineering Services.....	$68,000	$51,000	$51,000

	1973	1974	1975
C. Scientific and Technical Information and Educational Programs			
1. Operation of NASA technical libraries.....	$63,000	$349,000	$375,000
2. Educational/informational programs.....	177,000	166,000	156,000
3. Scientific and technical information.....	211,000	137,000	133,000
Subtotal.....	$451,000	$652,000	$664,000
Total, Technical Services.	$2,813,000	$2,281,000	$1,882,000
A. Automatic Data Processing.....	$2,294,000	$1,578,000	$1,167,000

The decrease from FY 1973 to FY 1975 reflects the phased transfer of certain ADP leases, which have been identified to programmatic activities, to the R&D appropriation. The FY 1975 request includes funds to increase the capacity of the business data computer in January 1975 to provide for an increased workload resulting from more sophisticated agency accounting and manpower reporting systems. In addition, increases in programming and operations cost are due to wage rate increases. The level of contractor effort is the same for FY 1974 and FY 1975.

B. Engineering Services.....	$68,000	$51,000	$51,000

The level for engineering services remains unchanged for 1975.

C. Scientific and Technical Information and Educational Programs...	$451,000	$652,000	$664,000

The costs are summarized as follows:

1. Operation of technical libraries	$63,000	$349,000	$375,000

The library collection includes over 60,000 books, 35,000 volumes of bound journals and 1,800 current journals. The increase in FY 1975 is due to higher contractor wage rates; the level of contractor effort is the same for FY 1974 and FY 1975.

	1973	1974	1975
2. Educational/informational programs.....	$177,000	$166,000	$156,000

Research, development and operational missions in aeronautics and space provide substantive knowledge and serve as an educational stimulus to students and teachers by developing curriculum supplements in space-related areas such as physics, biology, chemistry, and math; assisting teacher workshops and professional education meetings; sponsorship of the Youth Science Congresses; and participation in science fairs.

3. Scientific and technical information.....	$211,000	$137,000	$133,000

The level of effort for this category is planned to be essentially the same as FY 1974, with a slight decrease in costs.

ADMINISTRATIVE SUPPORT

	1973	1974	1975	Change in 1975
V. ADMINISTRATIVE SUPPORT...	$4,205,000	$4,568,000	$4,853,000	$+285,000

Basis of Fund Requirements

Summary of Administrative Support Services

	1973	1974	1975
A. Communications			
1. Leased lines and long distance tolls.....	$753,000	$769,000	$794,000
2. Local telephone services.....	906,000	971,000	1,020,000
3. Other communications.....	12,000	13,000	14,000
Subtotal.....	$1,671,000	$1,753,000	$1,828,000
B. Administrative Printing and Reproduction.....	$120,000	$130,000	$130,000
C. Supplies, Materials, and Equipment..	$839,000	$823,000	$889,000

	1973	1974	1975
D. Transportation			
1. Center operations.....	$10,000	$7,000	$8,000
2. Common carrier.....	1,177,000	1,322,000	1,412,000
Subtotal.....	$1,187,000	$1,329,000	$1,420,000
E. Administrative Support Services			
1. Installation support services...	$115,000	$247,000	$278,000
2. Occupational medicine and environmental health.....	273,000	286,000	308,000
Subtotal.....	$388,000	$533,000	$586,000
Total, Administrative Support.....	$4,205,000	$4,568,000	$4,853,000
A. Communications.....	$1,671,000	$1,753,000	$1,828,000

Increases for FY 1975 are attributable to rate increases.

B. Administrative Printing and Reproduction.....	$120,000	$130,000	$130,000

Estimates for administrative printing provide the same level of support for all three years.

C. Supplies, Materials, and Equipment..	$839,000	$823,000	$889,000

The increase in this category is based on cost increases particularly for periodical subscriptions. The number of subscriptions has been reduced for FY 1974 and will be further reduced in FY 1975; however, the cost of subscriptions is rising at an annual rate of 22% which has more than offset the reductions that were made. The remaining increase is due to cost increases for supplies and materials throughout administrative areas of the center.

D. Transportation.....	$1,187,000	$1,329,000	$1,420,000

The increase for 1975 is to cover wage raises for the on-site transportation contractor while maintaining the same level of effort as FY 1974.

	1973	1974	1975
E. Administrative Support Services.....	$388,000	$533,000	$586,000

The increase in FY 1975 is due to wage rate increases in the contracts for Xerox operators and medical services. The estimates reflect contractor manpower at the same level of effort for FY 1974 and FY 1975.

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GODDARD SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
ORGANIZATION AND STAFFING SUMMARY

STAFFING SUMMARY

	74	75
EXCEPTED	33	33
GS 16	21	21
GS 15	311	311
GS 14	524	524
ALL OTHER GS	2762	2762
WAGE BOARD	157	157
TOTAL	3808	3808

CHIEF ADVANCED PLANS STAFF

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	1	1
GS 14	1	1
ALL OTHER GS	1	1
WAGE BOARD	-	-
TOTAL	4	4

OFFICE OF THE DIRECTOR

	74	75
EXCEPTED	4	4
GS 16	-	-
GS 15	-	-
GS 14	-	-
ALL OTHER GS	8	8
WAGE BOARD	-	-
TOTAL	12	12

METEOROLOGY PROGRAM OFFICE

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	4	4
GS 14	5	5
ALL OTHER GS	14	14
WAGE BOARD	-	-
TOTAL	23	23

DIRECTOR SYSTEMS RELIABILITY

	74	75
EXCEPTED	2	2
GS 16	-	-
GS 15	5	4
GS 14	4	5
ALL OTHER GS	4	4
WAGE BOARD	-	-
TOTAL	15	15

TEST AND EVALUATION DIVISION

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	11	11
GS 14	27	27
ALL OTHER GS	134	134
WAGE BOARD	-	-
TOTAL	173	173

QUALITY ASSURANCE DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	5	5
GS 14	11	10
ALL OTHER GS	51	52
WAGE BOARD	-	-
TOTAL	67	67

DIRECTOR ADMINISTRATION AND MANAGEMENT

	74	75
EXCEPTED	2	2
GS 16	-	-
GS 15	7	7
GS 14	7	7
ALL OTHER GS	54	54
WAGE BOARD	-	-
TOTAL	70	70

PROCUREMENT DIVISION

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	7	7
GS 14	18	18
ALL OTHER GS	199	199
WAGE BOARD	-	-
TOTAL	225	225

PROGRAM SUPPORT DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	2	2
GS 14	16	16
ALL OTHER GS	115	115
WAGE BOARD	-	-
TOTAL	133	133

MANPOWER UTILIZATION DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	1	1
GS 14	1	1
ALL OTHER GS	68	68
WAGE BOARD	-	-
TOTAL	70	70

FACILITIES ENGINEERING DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	2	2
GS 14	5	5
ALL OTHER GS	59	59
WAGE BOARD	-	-
TOTAL	66	66

EXPERIMENTAL FABRICATION AND ENGINEERING DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	2	2
GS 14	2	2
ALL OTHER GS	101	101
WAGE BOARD	2	2
TOTAL	108	108

FINANCIAL MANAGEMENT DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	1	1
GS 14	5	5
ALL OTHER GS	83	83
WAGE BOARD	-	-
TOTAL	89	89

MANAGEMENT SERVICES AND SUPPLY DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	1	1
GS 14	1	1
ALL OTHER GS	94	94
WAGE BOARD	22	22
TOTAL	118	118

PLANT OPERATIONS AND MAINTENANCE DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	1	1
GS 14	1	1
ALL OTHER GS	27	27
WAGE BOARD	115	115
TOTAL	144	144

TECHNICAL INFORMATION DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	-	-
GS 14	1	1
ALL OTHER GS	53	53
WAGE BOARD	18	18
TOTAL	72	72

DIRECTOR NETWORKS

	74	75
EXCEPTED	1	1
GS 16	2	2
GS 15	6	6
GS 14	6	6
ALL OTHER GS	20	20
WAGE BOARD	-	-
TOTAL	35	35

NETWORK ENGINEERING DIVISION

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	11	11
GS 14	34	35
ALL OTHER GS	128	127
WAGE BOARD	-	-
TOTAL	174	174

NASA COMMUNICATIONS DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	2	2
GS 14	11	11
ALL OTHER GS	53	53
WAGE BOARD	-	-
TOTAL	66	66

NETWORK OPERATIONS DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	21	21
GS 14	23	23
ALL OTHER GS	92	92
WAGE BOARD	-	-
TOTAL	136	136

NETWORK PROCEDURES & EVALUATION DIVISION

	74	75
EXCEPTED	-	-
GS 16	1	1
GS 15	5	5
GS 14	12	13
ALL OTHER GS	88	87
WAGE BOARD	-	-
TOTAL	106	106

DIRECTOR MISSION & DATA OPERATIONS

	74	75
EXCEPTED	2	2
GS 16	-	-
GS 15	2	2
GS 14	1	1
ALL OTHER GS	4	4
WAGE BOARD	-	-
TOTAL	9	9

MISSION OPERATIONS DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	7	7
GS 14	15	15
ALL OTHER GS	41	41
WAGE BOARD	-	-
TOTAL	63	63

ADVANCED DATA SYSTEMS DIVISION

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	5	4
GS 14	10	10
ALL OTHER GS	45	46
WAGE BOARD	-	-
TOTAL	61	61

MISSION OPERATIONS COMPUTING CENTER

	74	75
EXCEPTED	-	-
GS 16	1	1
GS 15	4	4
GS 14	8	8
ALL OTHER GS	30	30
WAGE BOARD	-	-
TOTAL	43	43

INFORMATION PROCESSING DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	7	9
GS 14	9	10
ALL OTHER GS	86	83
WAGE BOARD	-	-
TOTAL	102	102

OPERATIONS SUPPORT COMPUTING DIVISION

	74	75
EXCEPTED	-	-
GS 16	1	1
GS 15	4	4
GS 14	10	9
ALL OTHER GS	45	46
WAGE BOARD	-	-
TOTAL	60	60

MISSION SUPPORT COMPUTING AND ANALYSIS DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	4	4
GS 14	5	4
ALL OTHER GS	50	51
WAGE BOARD	-	-
TOTAL	59	59

GEODYNAMICS PROGRAM DIVISION

	74	75
EXCEPTED	1	1
GS 16	1	1
GS 15	8	10
GS 14	8	9
ALL OTHER GS	20	17
WAGE BOARD	-	-
TOTAL	38	38

DIRECTOR PROJECTS

	74	75
EXCEPTED	2	2
GS 16	1	1
GS 15	8	9
GS 14	10	12
ALL OTHER GS	10	7
WAGE BOARD	-	-
TOTAL	31	31

OAO PROJECT

	74	75
EXCEPTED	-	-
GS 16	2	2
GS 15	5	5
GS 14	5	5
ALL OTHER GS	5	5
WAGE BOARD	-	-
TOTAL	17	17

AE PROJECT

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	2	2
GS 14	4	4
ALL OTHER GS	4	4
WAGE BOARD	-	-
TOTAL	10	10

ERTS/NIMBUS PROJECT

	74	75
EXCEPTED	1	1
GS 16	1	1
GS 15	8	8
GS 14	12	11
ALL OTHER GS	8	9
WAGE BOARD	-	-
TOTAL	30	30

OSO PROJECT

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	3	3
GS 14	6	6
ALL OTHER GS	6	6
WAGE BOARD	-	-
TOTAL	15	15

ATS PROJECT

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	4	4
GS 14	2	2
ALL OTHER GS	3	3
WAGE BOARD	-	-
TOTAL	10	10

DELTA PROJECT

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	4	4
GS 14	15	14
ALL OTHER GS	20	21
WAGE BOARD	-	-
TOTAL	40	40

ITOS PROJECT

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	2	2
GS 14	4	3
ALL OTHER GS	5	6
WAGE BOARD	-	-
TOTAL	11	11

SMS PROJECT

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	4	4
GS 14	2	2
ALL OTHER GS	5	5
WAGE BOARD	-	-
TOTAL	11	11

TIROS-N- PROJECT

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	4	5
GS 14	1	2
ALL OTHER GS	10	8
WAGE BOARD	-	-

DIRECTOR SPACE APPLICATIONS AND TECHNOLOGY

	74	75
EXCEPTED	1	1
GS 16	1	1
GS 15	-	-
GS 14	-	-
ALL OTHER GS	5	5
WAGE BOARD	-	-
TOTAL	7	7

EXPLORER PROJECTS OFFICE

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	8	8
GS 14	7	6
ALL OTHER GS	20	21
WAGE BOARD	-	-
TOTAL	35	35

INTERNATIONAL PROJECTS OFFICE

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	6	6
GS 14	-	-
ALL OTHER GS	5	5
WAGE BOARD	-	-
TOTAL	11	11

ELECTRONICS DIVISION

	74	75
EXCEPTED	-	-
GS 16	2	2
GS 15	10	9
GS 14	20	21
ALL OTHER GS	88	88
WAGE BOARD	-	-
TOTAL	120	120

MECHANICAL DIVISION

	74	75
EXCEPTED	-	-
GS 16	1	1
GS 15	8	7
GS 14	15	15
ALL OTHER GS	77	78
WAGE BOARD	-	-
TOTAL	101	101

EARTH OBSERVATIONS SYSTEMS AND SYSTEMS ENGINEERING DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	21	21
GS 14	38	39
ALL OTHER GS	95	94
WAGE BOARD	-	-
TOTAL	154	154

SOUNDING ROCKET DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	10	10
GS 14	16	16
ALL OTHER GS	97	97
WAGE BOARD	-	-
TOTAL	123	123

COMMUNICATIONS AND NAVIGATION DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	11	11
GS 14	18	17
ALL OTHER GS	25	26
WAGE BOARD	-	-
TOTAL	54	54

ENGINEERING PHYSICS DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	13	13
GS 14	15	14
ALL OTHER GS	94	95
WAGE BOARD	-	-
TOTAL	122	122

DIRECTOR SPACE AND EARTH SCIENCES

	74	75
EXCEPTED	1	1
GS 16	1	1
GS 15	1	1
GS 14	4	4
ALL OTHER GS	24	24
WAGE BOARD	-	-
TOTAL	31	31

LABORATORY FOR PLANETARY ATMOSPHERES

	74	75
EXCEPTED	1	1
GS 16	2	2
GS 15	3	3
GS 14	13	12
ALL OTHER GS	68	69
WAGE BOARD	-	-
TOTAL	87	87

GODDARD INSTITUTE FOR SPACE STUDIES

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	5	5
GS 14	2	2
ALL OTHER GS	15	15
WAGE BOARD	-	-
TOTAL	23	23

LABORATORY FOR SPACE PHYSICS

	74	75
EXCEPTED	1	1
GS 16	2	2
GS 15	6	6
GS 14	14	14
ALL OTHER GS	52	52
WAGE BOARD	-	-
TOTAL	75	75

LABORATORY FOR METEOROLOGY AND EARTH SCIENCES

	74	75
EXCEPTED	2	2
GS 16	-	-
GS 15	11	11
GS 14	10	10
ALL OTHER GS	60	60
WAGE BOARD	-	-
TOTAL	83	83

LABORATORY FOR HIGH ENERGY ASTROPHYSICS

	74	75
EXCEPTED	1	1
GS 16	1	1
GS 15	5	4
GS 14	8	8
ALL OTHER GS	60	61
WAGE BOARD	-	-
TOTAL	75	75

LABORATORY FOR OPTICAL ASTRONOMY

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	4	4
GS 14	6	5
ALL OTHER GS	39	40
WAGE BOARD	-	-
TOTAL	50	50

LABORATORY FOR SOLAR PHYSICS

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	2	2
GS 14	8	7
ALL OTHER GS	43	44
WAGE BOARD	-	-
TOTAL	54	54

LABORATORY FOR EXTRATERRESTRIAL PHYSICS

	74	75
EXCEPTED	-	-
GS 16	1	1
GS 15	4	3
GS 14	11	13
ALL OTHER GS	41	40
WAGE BOARD	-	-
TOTAL	57	57

NATIONAL SPACE SCIENCE DATA CENTER

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	3	3
GS 14	-	-

	74	75
EXCEPTED	33	33
GS 16	21	21
GS 15	311	311
GS 14	524	524
ALL OTHER GS	2762	2762
WAGE BOARD	157	157
TOTAL	3808	3808

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	1	1
GS 14	1	1
ALL OTHER GS	1	1
WAGE BOARD	-	-
TOTAL	4	4

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	-	-
GS 14	-	-
ALL OTHER GS	8	8
WAGE BOARD	-	-
TOTAL	12	12

METEOROLOGY PROGRAM OFFICE

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	4	4
GS 14	5	5
ALL OTHER GS	14	14
WAGE BOARD	-	-
TOTAL	23	23

DIRECTOR SYSTEMS RELIABILITY

	74	75
EXCEPTED	2	2
GS 16	-	-
GS 15	5	4
GS 14	4	5
ALL OTHER GS	4	4
WAGE BOARD	-	-
TOTAL	15	15

TEST AND EVALUATION DIVISION

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	11	11
GS 14	27	27
ALL OTHER GS	134	134
WAGE BOARD	-	-
TOTAL	173	173

QUALITY ASSURANCE DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	5	5
GS 14	11	10
ALL OTHER GS	51	52
WAGE BOARD	-	-
TOTAL	67	67

DIRECTOR ADMINISTRATION AND MANAGEMENT

	74	75
EXCEPTED	2	2
GS 16	-	-
GS 15	7	7
GS 14	7	7
ALL OTHER GS	54	54
WAGE BOARD	-	-
TOTAL	70	70

PROCUREMENT DIVISION

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	7	7
GS 14	18	18
ALL OTHER GS	199	199
WAGE BOARD	-	-
TOTAL	225	225

PROGRAM SUPPORT DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	2	2
GS 14	16	16
ALL OTHER GS	115	115
WAGE BOARD	-	-
TOTAL	133	133

MANPOWER UTILIZATION DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	1	1
GS 14	1	1
ALL OTHER GS	68	68
WAGE BOARD	-	-
TOTAL	70	70

FACILITIES ENGINEERING DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	2	2
GS 14	5	5
ALL OTHER GS	59	59
WAGE BOARD	-	-
TOTAL	66	66

EXPERIMENTAL FABRICATION AND ENGINEERING DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	2	2
GS 14	3	3
ALL OTHER GS	101	101
WAGE BOARD	2	2
TOTAL	108	108

FINANCIAL MANAGEMENT DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	1	1
GS 14	5	5
ALL OTHER GS	83	83
WAGE BOARD	-	-
TOTAL	89	89

MANAGEMENT SERVICES AND SUPPLY DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	1	1
GS 14	1	1
ALL OTHER GS	94	94
WAGE BOARD	22	22
TOTAL	118	118

PLANT OPERATIONS AND MAINTENANCE DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	1	1
GS 14	1	1
ALL OTHER GS	27	27
WAGE BOARD	115	115
TOTAL	144	144

TECHNICAL INFORMATION DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	-	-
GS 14	1	1
ALL OTHER GS	53	53
WAGE BOARD	18	18
TOTAL	72	72

DIRECTOR NETWORKS

	74	75
EXCEPTED	1	1
GS 16	2	2
GS 15	6	6
GS 14	6	6
ALL OTHER GS	20	20
WAGE BOARD	-	-
TOTAL	35	35

NETWORK ENGINEERING DIVISION

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	11	11
GS 14	34	35
ALL OTHER GS	128	127
WAGE BOARD	-	-
TOTAL	174	174

NASA COMMUNICATIONS DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	2	2
GS 14	11	11
ALL OTHER GS	53	53
WAGE BOARD	-	-
TOTAL	66	66

NETWORK OPERATIONS DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	21	21
GS 14	23	23
ALL OTHER GS	92	92
WAGE BOARD	-	-
TOTAL	136	136

NETWORK PROCEDURES & EVALUATION DIVISION

	74	75
EXCEPTED	-	-
GS 16	1	1
GS 15	5	5
GS 14	12	13
ALL OTHER GS	88	87
WAGE BOARD	-	-
TOTAL	106	106

DIRECTOR MISSION & DATA OPERATIONS

	74	75
EXCEPTED	2	2
GS 16	-	-
GS 15	2	2
GS 14	1	1
ALL OTHER GS	4	4
WAGE BOARD	-	-
TOTAL	9	9

MISSION OPERATIONS DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	7	7
GS 14	15	15
ALL OTHER GS	41	41
WAGE BOARD	-	-
TOTAL	63	63

ADVANCED DATA SYSTEMS DIVISION

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	5	4
GS 14	10	10
ALL OTHER GS	45	46
WAGE BOARD	-	-
TOTAL	61	61

MISSION OPERATIONS COMPUTING CENTER

	74	75
EXCEPTED	-	-
GS 16	1	1
GS 15	4	4
GS 14	8	8
ALL OTHER GS	30	30
WAGE BOARD	-	-
TOTAL	43	43

INFORMATION PROCESSING DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	7	9
GS 14	9	10
ALL OTHER GS	86	83
WAGE BOARD	-	-
TOTAL	102	102

OPERATIONS SUPPORT COMPUTING DIVISION

	74	75
EXCEPTED	-	-
GS 16	1	1
GS 15	4	4
GS 14	10	9
ALL OTHER GS	45	46
WAGE BOARD	-	-
TOTAL	60	60

MISSION SUPPORT COMPUTING AND ANALYSIS DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	4	4
GS 14	5	4
ALL OTHER GS	50	51
WAGE BOARD	-	-
TOTAL	59	59

GEODYNAMICS PROGRAM DIVISION

	74	75
EXCEPTED	1	1
GS 16	1	1
GS 15	8	10
GS 14	8	9
ALL OTHER GS	20	17
WAGE BOARD	-	-
TOTAL	38	38

DIRECTOR PROJECTS

	74	75
EXCEPTED	2	2
GS 16	1	1
GS 15	8	9
GS 14	10	12
ALL OTHER GS	10	7
WAGE BOARD	-	-
TOTAL	31	31

OAO PROJECT

	74	75
EXCEPTED	-	-
GS 16	2	2
GS 15	5	5
GS 14	5	5
ALL OTHER GS	5	5
WAGE BOARD	-	-
TOTAL	17	17

AE PROJECT

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	2	2
GS 14	4	4
ALL OTHER GS	4	4
WAGE BOARD	-	-
TOTAL	10	10

ERTS/NIMBUS PROJECT

	74	75
EXCEPTED	1	1
GS 16	1	1
GS 15	8	8
GS 14	12	11
ALL OTHER GS	8	9
WAGE BOARD	-	-
TOTAL	30	30

OSO PROJECT

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	3	3
GS 14	6	6
ALL OTHER GS	6	6
WAGE BOARD	-	-
TOTAL	15	15

ATS PROJECT

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	4	4
GS 14	2	2
ALL OTHER GS	3	3
WAGE BOARD	-	-
TOTAL	10	10

DELTA PROJECT

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	4	4
GS 14	15	14
ALL OTHER GS	20	21
WAGE BOARD	-	-
TOTAL	40	40

ITOS PROJECT

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	2	2
GS 14	4	3
ALL OTHER GS	5	6
WAGE BOARD	-	-
TOTAL	11	11

SMS PROJECT

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	4	4
GS 14	2	2
ALL OTHER GS	5	5
WAGE BOARD	-	-
TOTAL	11	11

TIROS-N- PROJECT

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	4	5
GS 14	1	2
ALL OTHER GS	10	8
WAGE BOARD	-	-
TOTAL	15	15

DIRECTOR SPACE APPLICATIONS AND TECHNOLOGY

	74	75
EXCEPTED	1	1
GS 16	1	1
GS 15	-	-
GS 14	-	-
ALL OTHER GS	5	5
WAGE BOARD	-	-
TOTAL	7	7

EXPLORER PROJECTS OFFICE

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	8	8
GS 14	7	6
ALL OTHER GS	20	21
WAGE BOARD	-	-
TOTAL	35	35

INTERNATIONAL PROJECTS OFFICE

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	6	6
GS 14	-	-
ALL OTHER GS	5	5
WAGE BOARD	-	-
TOTAL	11	11

ELECTRONICS DIVISION

	74	75
EXCEPTED	-	-
GS 16	2	2
GS 15	10	9
GS 14	20	21
ALL OTHER GS	88	88
WAGE BOARD	-	-
TOTAL	120	120

MECHANICAL DIVISION

	74	75
EXCEPTED	-	-
GS 16	1	1
GS 15	8	7
GS 14	15	15
ALL OTHER GS	77	78
WAGE BOARD	-	-
TOTAL	101	101

EARTH OBSERVATIONS SYSTEMS AND SYSTEMS ENGINEERING DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	21	21
GS 14	38	39
ALL OTHER GS	95	94
WAGE BOARD	-	-
TOTAL	154	154

SOUNDING ROCKET DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	10	10
GS 14	16	16
ALL OTHER GS	97	97
WAGE BOARD	-	-
TOTAL	123	123

COMMUNICATIONS AND NAVIGATION DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	11	11
GS 14	18	17
ALL OTHER GS	25	26
WAGE BOARD	-	-
TOTAL	54	54

ENGINEERING PHYSICS DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	13	13
GS 14	15	14
ALL OTHER GS	94	95
WAGE BOARD	-	-
TOTAL	122	122

DIRECTOR SPACE AND EARTH SCIENCES

	74	75
EXCEPTED	1	1
GS 16	1	1
GS 15	1	1
GS 14	4	4
ALL OTHER GS	24	24
WAGE BOARD	-	-
TOTAL	31	31

LABORATORY FOR PLANETARY ATMOSPHERES

	74	75
EXCEPTED	1	1
GS 16	2	2
GS 15	3	3
GS 14	13	12
ALL OTHER GS	68	69
WAGE BOARD	-	-
TOTAL	87	87

LABORATORY FOR SPACE PHYSICS

	74	75
EXCEPTED	1	1
GS 16	2	2
GS 15	6	6
GS 14	14	14
ALL OTHER GS	52	52
WAGE BOARD	-	-
TOTAL	75	75

LABORATORY FOR HIGH ENERGY ASTROPHYSICS

	74	75
EXCEPTED	1	1
GS 16	1	1
GS 15	5	4
GS 14	8	8
ALL OTHER GS	60	61
WAGE BOARD	-	-
TOTAL	75	75

LABORATORY FOR SOLAR PHYSICS

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	2	2
GS 14	8	7
ALL OTHER GS	43	44
WAGE BOARD	-	-
TOTAL	54	54

NATIONAL SPACE SCIENCE DATA CENTER

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	3	3
GS 14	-	-
ALL OTHER GS	11	11
WAGE BOARD	-	-
TOTAL	15	15

GODDARD INSTITU FOR SPACE STUDI

	74
EXCEPTED	1
GS 16	-
GS 15	2
ALL OTHER GS	15
WAGE BOARD	-
TOTAL	23

LABORATORY FO METEOROLOGY A EARTH SCIENCE

	74
EXCEPTED	2
GS 16	-
GS 15	11
GS 14	10
ALL OTHER GS	60
WAGE BOARD	-
TOTAL	83

LABORATORY FO OPTICAL ASTRONO

	74
EXCEPTED	1
GS 16	-
GS 15	4
GS 14	6
ALL OTHER GS	39
WAGE BOARD	-
TOTAL	50

LABORATORY F EXTRATERRESTRIAL P

	74
EXCEPTED	-
GS 16	1
GS 15	4
GS 14	11
ALL OTHER GS	41
WAGE BOARD	-
TOTAL	57

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GODDARD SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
ORGANIZATION AND STAFFING SUMMARY

STAFFING SUMMARY

	74	75
EXCEPTED	33	33
GS 16	21	21
GS 15	311	311
GS 14	524	524
ALL OTHER GS	2762	2762
WAGE BOARD	157	157
TOTAL	3808	3808

CHIEF ADVANCED PLANS STAFF

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	1	1
GS 14	1	1
ALL OTHER GS	1	1
WAGE BOARD	-	-
TOTAL	4	4

OFFICE OF THE DIRECTOR

	74	75
EXCEPTED	4	4
GS 16	-	-
GS 15	-	-
GS 14	-	-
ALL OTHER GS	8	8
WAGE BOARD	-	-
TOTAL	12	12

METEOROLOGY PROGRAM OFFICE

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	4	4
GS 14	5	5
ALL OTHER GS	14	14
WAGE BOARD	-	-
TOTAL	23	23

DIRECTOR SYSTEMS RELIABILITY

	74	75
EXCEPTED	2	2
GS 16	-	-
GS 15	5	4
GS 14	4	5
ALL OTHER GS	4	4
WAGE BOARD	-	-
TOTAL	15	15

TEST AND EVALUATION DIVISION

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	11	11
GS 14	27	27
ALL OTHER GS	134	134
WAGE BOARD	-	-
TOTAL	173	173

QUALITY ASSURANCE DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	5	5
GS 14	11	10
ALL OTHER GS	51	52
WAGE BOARD	-	-
TOTAL	67	67

DIRECTOR ADMINISTRATION AND MANAGEMENT

	74	75
EXCEPTED	2	2
GS 16	-	-
GS 15	7	7
GS 14	7	7
ALL OTHER GS	54	54
WAGE BOARD	-	-
TOTAL	70	70

PROCUREMENT DIVISION

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	7	7
GS 14	18	18
ALL OTHER GS	199	199
WAGE BOARD	-	-
TOTAL	225	225

PROGRAM SUPPORT DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	2	2
GS 14	16	16
ALL OTHER GS	115	115
WAGE BOARD	-	-
TOTAL	133	133

MANPOWER UTILIZATION DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	1	1
GS 14	1	1
ALL OTHER GS	68	68
WAGE BOARD	-	-
TOTAL	70	70

FACILITIES ENGINEERING DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	2	2
GS 14	5	5
ALL OTHER GS	59	59
WAGE BOARD	-	-
TOTAL	66	66

EXPERIMENTAL FABRICATION AND ENGINEERING DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	2	2
GS 14	3	3
ALL OTHER GS	101	101
WAGE BOARD	2	2
TOTAL	108	108

FINANCIAL MANAGEMENT DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	1	1
GS 14	5	5
ALL OTHER GS	83	83
WAGE BOARD	-	-
TOTAL	89	89

MANAGEMENT SERVICES AND SUPPLY DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	1	1
GS 14	1	1
ALL OTHER GS	94	94
WAGE BOARD	22	22
TOTAL	118	118

PLANT OPERATIONS AND MAINTENANCE DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	1	1
GS 14	1	1
ALL OTHER GS	27	27
WAGE BOARD	115	115
TOTAL	144	144

TECHNICAL INFORMATION DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	-	-
GS 14	1	1
ALL OTHER GS	53	53
WAGE BOARD	18	18
TOTAL	72	72

DIRECTOR NETWORKS

	74	75
EXCEPTED	1	1
GS 16	2	2
GS 15	6	6
GS 14	6	6
ALL OTHER GS	20	20
WAGE BOARD	-	-
TOTAL	35	35

NETWORK ENGINEERING DIVISION

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	11	11
GS 14	34	35
ALL OTHER GS	128	127
WAGE BOARD	-	-
TOTAL	174	174

NASA COMMUNICATIONS DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	2	2
GS 14	11	11
ALL OTHER GS	53	53
WAGE BOARD	-	-
TOTAL	66	66

NETWORK OPERATIONS DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	21	21
GS 14	23	23
ALL OTHER GS	92	92
WAGE BOARD	-	-
TOTAL	136	136

NETWORK PROCEDURES & EVALUATION DIVISION

	74	75
EXCEPTED	-	-
GS 16	1	1
GS 15	5	5
GS 14	12	13
ALL OTHER GS	88	87
WAGE BOARD	-	-
TOTAL	106	106

DIRECTOR MISSION & DATA OPERATIONS

	74	75
EXCEPTED	2	2
GS 16	-	-
GS 15	2	2
GS 14	1	1
ALL OTHER GS	4	4
WAGE BOARD	-	-
TOTAL	9	9

MISSION OPERATIONS DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	7	7
GS 14	15	15
ALL OTHER GS	41	41
WAGE BOARD	-	-
TOTAL	63	63

ADVANCED DATA SYSTEMS DIVISION

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	5	4
GS 14	10	10
ALL OTHER GS	45	46
WAGE BOARD	-	-
TOTAL	61	61

MISSION OPERATIONS COMPUTING CENTER

	74	75
EXCEPTED	-	-
GS 16	1	1
GS 15	4	4
GS 14	8	8
ALL OTHER GS	30	30
WAGE BOARD	-	-
TOTAL	43	43

INFORMATION PROCESSING DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	7	9
GS 14	9	10
ALL OTHER GS	86	83
WAGE BOARD	-	-
TOTAL	102	102

OPERATIONS SUPPORT COMPUTING DIVISION

	74	75
EXCEPTED	-	-
GS 16	1	1
GS 15	4	4
GS 14	10	9
ALL OTHER GS	45	46
WAGE BOARD	-	-
TOTAL	60	60

MISSION SUPPORT COMPUTING AND ANALYSIS DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	4	4
GS 14	5	4
ALL OTHER GS	50	51
WAGE BOARD	-	-
TOTAL	59	59

GEODYNAMICS PROGRAM DIVISION

	74	75
EXCEPTED	1	1
GS 16	1	1
GS 15	8	10
GS 14	8	9
ALL OTHER GS	20	17
WAGE BOARD	-	-
TOTAL	38	38

DIRECTOR PROJECTS

	74	75
EXCEPTED	2	2
GS 16	1	1
GS 15	8	9
GS 14	10	12
ALL OTHER GS	10	7
WAGE BOARD	-	-
TOTAL	31	31

OAO PROJECT

	74	75
EXCEPTED	-	-
GS 16	2	2
GS 15	5	5
GS 14	5	5
ALL OTHER GS	5	5
WAGE BOARD	-	-
TOTAL	17	17

AE PROJECT

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	2	2
GS 14	4	4
ALL OTHER GS	4	4
WAGE BOARD	-	-
TOTAL	10	10

ERTS/NIMBUS PROJECT

	74	75
EXCEPTED	1	1
GS 16	1	1
GS 15	8	8
GS 14	12	11
ALL OTHER GS	8	9
WAGE BOARD	-	-
TOTAL	30	30

OSO PROJECT

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	3	3
GS 14	6	6
ALL OTHER GS	6	6
WAGE BOARD	-	-
TOTAL	15	15

ATS PROJECT

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	4	4
GS 14	2	2
ALL OTHER GS	3	3
WAGE BOARD	-	-
TOTAL	10	10

DELTA PROJECT

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	4	4
GS 14	15	14
ALL OTHER GS	20	21
WAGE BOARD	-	-
TOTAL	40	40

ITOS PROJECT

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	2	2
GS 14	4	3
ALL OTHER GS	5	6
WAGE BOARD	-	-
TOTAL	11	11

SMS PROJECT

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	4	4
GS 14	2	2
ALL OTHER GS	5	5
WAGE BOARD	-	-
TOTAL	11	11

TIROS-N- PROJECT

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	4	5
GS 14	1	2
ALL OTHER GS	10	8
WAGE BOARD	-	-

DIRECTOR SPACE APPLICATIONS AND TECHNOLOGY

	74	75
EXCEPTED	1	1
GS 16	1	1
GS 15	-	-
GS 14	-	-
ALL OTHER GS	5	5
WAGE BOARD	-	-
TOTAL	7	7

EXPLORER PROJECTS OFFICE

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	8	8
GS 14	7	6
ALL OTHER GS	20	21
WAGE BOARD	-	-
TOTAL	35	35

INTERNATIONAL PROJECTS OFFICE

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	6	6
GS 14	-	-
ALL OTHER GS	5	5
WAGE BOARD	-	-
TOTAL	11	11

ELECTRONICS DIVISION

	74	75
EXCEPTED	-	-
GS 16	2	2
GS 15	10	9
GS 14	20	21
ALL OTHER GS	88	88
WAGE BOARD	-	-
TOTAL	120	120

MECHANICAL DIVISION

	74	75
EXCEPTED	-	-
GS 16	1	1
GS 15	8	7
GS 14	15	15
ALL OTHER GS	77	78
WAGE BOARD	-	-
TOTAL	101	101

EARTH OBSERVATIONS SYSTEMS AND SYSTEMS ENGINEERING DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	21	21
GS 14	38	39
ALL OTHER GS	95	94
WAGE BOARD	-	-
TOTAL	154	154

SOUNDING ROCKET DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	10	10
GS 14	16	16
ALL OTHER GS	97	97
WAGE BOARD	-	-
TOTAL	123	123

COMMUNICATIONS AND NAVIGATION DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	11	11
GS 14	18	17
ALL OTHER GS	25	26
WAGE BOARD	-	-
TOTAL	54	54

ENGINEERING PHYSICS DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	13	13
GS 14	15	14
ALL OTHER GS	94	95
WAGE BOARD	-	-
TOTAL	122	122

SPAC[illegible] S[illegible]

	74	75
EXCEPTED		
GS 16		
GS 15		
GS 14		
ALL OTHER		
WAGE BOA		
TOTAL		

LABORATORY FOR PLANETARY ATMOSPHERES

	74	75
EXCEPTED	1	1
GS 16	2	2
GS 15	3	3
GS 14	13	12
ALL OTHER GS	68	69
WAGE BOARD	-	-
TOTAL	87	87

LABORATORY FOR SPACE PHYSICS

	74	75
EXCEPTED	1	1
GS 16	2	2
GS 15	6	6
GS 14	14	14
ALL OTHER GS	52	52
WAGE BOARD	-	-
TOTAL	75	75

LABORATORY FOR HIGH ENERGY ASTROPHYSICS

	74	75
EXCEPTED	1	1
GS 16	1	1
GS 15	5	4
GS 14	8	8
ALL OTHER GS	60	61
WAGE BOARD	-	-
TOTAL	75	75

LABORATORY FOR SOLAR PHYSICS

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	2	2
GS 14	8	7
ALL OTHER GS	43	44
WAGE BOARD	-	-
TOTAL	54	54

NATIONAL SP[illegible] DATA C[illegible]

EXCEPTED	
GS 16	
GS 15	
GS 14	
ALL OTHER GS	

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	74	75
EXCEPTED	33	33
GS 16	21	21
GS 15	311	311
GS 14	524	524
ALL OTHER GS	2762	2762
WAGE BOARD	157	157
TOTAL	3808	3808

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	1	1
GS 14	1	1
ALL OTHER GS	1	1
WAGE BOARD	-	-
TOTAL	4	4

	74	75
EXCEPTED	4	4
GS 16	-	-
GS 15	-	-
GS 14	-	-
ALL OTHER GS	8	8
WAGE BOARD	-	-
TOTAL	12	12

METEOROLOGY PROGRAM OFFICE

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	4	4
GS 14	5	5
ALL OTHER GS	14	14
WAGE BOARD	-	-
TOTAL	23	23

DIRECTOR SYSTEMS RELIABILITY

	74	75
EXCEPTED	2	2
GS 16	-	-
GS 15	5	4
GS 14	4	5
ALL OTHER GS	4	4
WAGE BOARD	-	-
TOTAL	15	15

TEST AND EVALUATION DIVISION

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	11	11
GS 14	27	27
ALL OTHER GS	134	134
WAGE BOARD	-	-
TOTAL	173	173

QUALITY ASSURANCE DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	5	5
GS 14	11	10
ALL OTHER GS	51	52
WAGE BOARD	-	-
TOTAL	67	67

DIRECTOR ADMINISTRATION AND MANAGEMENT

	74	75
EXCEPTED	2	2
GS 16	-	-
GS 15	7	7
GS 14	7	7
ALL OTHER GS	54	54
WAGE BOARD	-	-
TOTAL	70	70

PROCUREMENT DIVISION

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	7	7
GS 14	18	18
ALL OTHER GS	199	199
WAGE BOARD	-	-
TOTAL	225	225

PROGRAM SUPPORT DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	2	2
GS 14	16	16
ALL OTHER GS	115	115
WAGE BOARD	-	-
TOTAL	133	133

MANPOWER UTILIZATION DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	1	1
GS 14	1	1
ALL OTHER GS	68	68
WAGE BOARD	-	-
TOTAL	70	70

FACILITIES ENGINEERING DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	2	2
GS 14	5	5
ALL OTHER GS	59	59
WAGE BOARD	-	-
TOTAL	66	66

EXPERIMENTAL FABRICATION AND ENGINEERING DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	2	2
GS 14	3	3
ALL OTHER GS	101	101
WAGE BOARD	2	2
TOTAL	108	108

FINANCIAL MANAGEMENT DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	1	1
GS 14	5	5
ALL OTHER GS	83	83
WAGE BOARD	-	-
TOTAL	89	89

MANAGEMENT SERVICES AND SUPPLY DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	1	1
GS 14	1	1
ALL OTHER GS	94	94
WAGE BOARD	22	22
TOTAL	118	118

PLANT OPERATIONS AND MAINTENANCE DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	1	1
GS 14	1	1
ALL OTHER GS	27	27
WAGE BOARD	115	115
TOTAL	144	144

TECHNICAL INFORMATION DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	-	-
GS 14	1	1
ALL OTHER GS	53	53
WAGE BOARD	18	18
TOTAL	72	72

DIRECTOR NETWORKS

	74	75
EXCEPTED	1	1
GS 16	2	2
GS 15	6	6
GS 14	6	6
ALL OTHER GS	20	20
WAGE BOARD	-	-
TOTAL	35	35

NETWORK ENGINEERING DIVISION

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	11	11
GS 14	34	35
ALL OTHER GS	128	127
WAGE BOARD	-	-
TOTAL	174	174

NASA COMMUNICATIONS DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	2	2
GS 14	11	11
ALL OTHER GS	53	53
WAGE BOARD	-	-
TOTAL	66	66

NETWORK OPERATIONS DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	21	21
GS 14	23	23
ALL OTHER GS	92	92
WAGE BOARD	-	-
TOTAL	136	136

NETWORK PROCEDURES & EVALUATION DIVISION

	74	75
EXCEPTED	-	-
GS 16	1	1
GS 15	5	5
GS 14	12	13
ALL OTHER GS	88	87
WAGE BOARD	-	-
TOTAL	106	106

DIRECTOR MISSION & DATA OPERATIONS

	74	75
EXCEPTED	2	2
GS 16	-	-
GS 15	2	2
GS 14	1	1
ALL OTHER GS	4	4
WAGE BOARD	-	-
TOTAL	9	9

MISSION OPERATIONS DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	7	7
GS 14	15	15
ALL OTHER GS	41	41
WAGE BOARD	-	-
TOTAL	63	63

ADVANCED DATA SYSTEMS DIVISION

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	5	4
GS 14	10	10
ALL OTHER GS	45	46
WAGE BOARD	-	-
TOTAL	61	61

MISSION OPERATIONS COMPUTING CENTER

	74	75
EXCEPTED	-	-
GS 16	1	1
GS 15	4	4
GS 14	8	8
ALL OTHER GS	30	30
WAGE BOARD	-	-
TOTAL	43	43

INFORMATION PROCESSING DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	7	9
GS 14	9	10
ALL OTHER GS	86	83
WAGE BOARD	-	-
TOTAL	102	102

OPERATIONS SUPPORT COMPUTING DIVISION

	74	75
EXCEPTED	-	-
GS 16	1	1
GS 15	4	4
GS 14	10	9
ALL OTHER GS	45	46
WAGE BOARD	-	-
TOTAL	60	60

MISSION SUPPORT COMPUTING AND ANALYSIS DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	4	4
GS 14	5	4
ALL OTHER GS	50	51
WAGE BOARD	-	-
TOTAL	59	59

GEODYNAMICS PROGRAM DIVISION

	74	75
EXCEPTED	1	1
GS 16	1	1
GS 15	8	10
GS 14	8	9
ALL OTHER GS	20	17
WAGE BOARD	-	-
TOTAL	38	38

DIRECTOR PROJECTS

	74	75
EXCEPTED	2	2
GS 16	1	1
GS 15	8	9
GS 14	10	12
ALL OTHER GS	10	7
WAGE BOARD	-	-
TOTAL	31	31

OAO PROJECT

	74	75
EXCEPTED	-	-
GS 16	2	2
GS 15	5	5
GS 14	5	5
ALL OTHER GS	5	5
WAGE BOARD	-	-
TOTAL	17	17

AE PROJECT

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	2	2
GS 14	4	4
ALL OTHER GS	4	4
WAGE BOARD	-	-
TOTAL	10	10

ERTS/NIMBUS PROJECT

	74	75
EXCEPTED	1	1
GS 16	1	1
GS 15	8	8
GS 14	12	11
ALL OTHER GS	8	9
WAGE BOARD	-	-
TOTAL	30	30

OSO PROJECT

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	3	3
GS 14	6	6
ALL OTHER GS	6	6
WAGE BOARD	-	-
TOTAL	15	15

ATS PROJECT

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	4	4
GS 14	2	2
ALL OTHER GS	3	3
WAGE BOARD	-	-
TOTAL	10	10

DELTA PROJECT

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	4	4
GS 14	15	14
ALL OTHER GS	20	21
WAGE BOARD	-	-
TOTAL	40	40

ITOS PROJECT

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	2	2
GS 14	4	3
ALL OTHER GS	5	6
WAGE BOARD	-	-
TOTAL	11	11

SMS PROJECT

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	4	4
GS 14	2	2
ALL OTHER GS	5	5
WAGE BOARD	-	-
TOTAL	11	11

TIROS-N- PROJECT

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	4	5
GS 14	1	2
ALL OTHER GS	10	8
WAGE BOARD	-	-
TOTAL	15	15

DIRECTOR SPACE APPLICATIONS AND TECHNOLOGY

	74	75
EXCEPTED	1	1
GS 16	1	1
GS 15	-	-
GS 14	-	-
ALL OTHER GS	5	5
WAGE BOARD	-	-
TOTAL	7	7

EXPLORER PROJECTS OFFICE

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	8	8
GS 14	7	6
ALL OTHER GS	20	21
WAGE BOARD	-	-
TOTAL	35	35

INTERNATIONAL PROJECTS OFFICE

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	6	6
GS 14	-	-
ALL OTHER GS	5	5
WAGE BOARD	-	-
TOTAL	11	11

ELECTRONICS DIVISION

	74	75
EXCEPTED	-	-
GS 16	2	2
GS 15	10	9
GS 14	20	21
ALL OTHER GS	88	88
WAGE BOARD	-	-
TOTAL	120	120

MECHANICAL DIVISION

	74	75
EXCEPTED	-	-
GS 16	1	1
GS 15	8	7
GS 14	15	15
ALL OTHER GS	77	78
WAGE BOARD	-	-
TOTAL	101	101

EARTH OBSERVATIONS SYSTEMS AND SYSTEMS ENGINEERING DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	21	21
GS 14	38	39
ALL OTHER GS	95	94
WAGE BOARD	-	-
TOTAL	154	154

SOUNDING ROCKET DIVISION

	74	75
EXCEPTED	-	-
GS 16	—	—
GS 15	10	10
GS 14	16	16
ALL OTHER GS	97	97
WAGE BOARD	-	-
TOTAL	123	123

COMMUNICATIONS AND NAVIGATION DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	11	11
GS 14	18	17
ALL OTHER GS	25	26
WAGE BOARD	-	-
TOTAL	54	54

ENGINEERING PHYSICS DIVISION

	74	75
EXCEPTED	-	-
GS 16	-	-
GS 15	13	13
GS 14	15	14
ALL OTHER GS	94	95
WAGE BOARD	-	-
TOTAL	122	122

DIRECTOR SPACE AND EARTH SCIENCES

	74	75
EXCEPTED	1	1
GS 16	1	1
GS 15	1	1
GS 14	4	4
ALL OTHER GS	24	24
WAGE BOARD	-	-
TOTAL	31	31

LABORATORY FOR PLANETARY ATMOSPHERES

	74	75
EXCEPTED	1	1
GS 16	2	2
GS 15	3	3
GS 14	13	12
ALL OTHER GS	68	69
WAGE BOARD	-	-
TOTAL	87	87

GODDARD INSTITUTE FOR SPACE STUDIES

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	5	5
GS 14	2	2
ALL OTHER GS	15	15
WAGE BOARD	-	-
TOTAL	23	23

LABORATORY FOR SPACE PHYSICS

	74	75
EXCEPTED	1	1
GS 16	2	2
GS 15	6	6
GS 14	14	14
ALL OTHER GS	52	52
WAGE BOARD	-	-
TOTAL	75	75

LABORATORY FOR METEOROLOGY AND EARTH SCIENCES

	74	75
EXCEPTED	2	2
GS 16	-	-
GS 15	11	11
GS 14	10	10
ALL OTHER GS	60	60
WAGE BOARD	-	-
TOTAL	83	83

LABORATORY FOR HIGH ENERGY ASTROPHYSICS

	74	75
EXCEPTED	1	1
GS 16	1	1
GS 15	5	4
GS 14	8	8
ALL OTHER GS	60	61
WAGE BOARD	-	-
TOTAL	75	75

LABORATORY FOR OPTICAL ASTRONOMY

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	4	4
GS 14	6	5
ALL OTHER GS	39	40
WAGE BOARD	-	-
TOTAL	50	50

LABORATORY FOR SOLAR PHYSICS

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	2	2
GS 14	8	7
ALL OTHER GS	43	44
WAGE BOARD	-	-
TOTAL	54	54

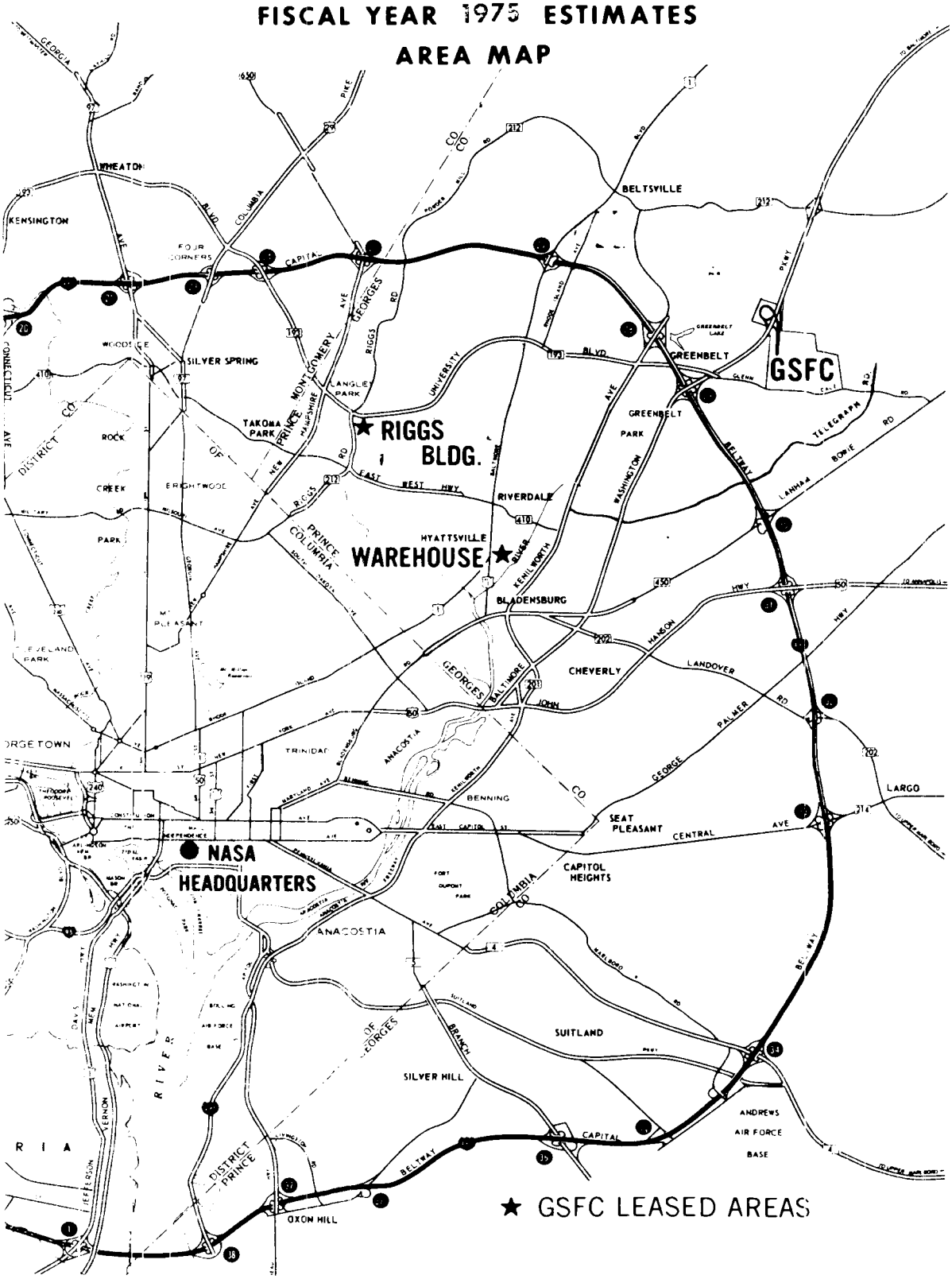
LABORATORY FOR EXTRATERRESTRIAL PHYSICS

	74	75
EXCEPTED	-	-
GS 16	1	1
GS 15	4	3
GS 14	11	13
ALL OTHER GS	41	40
WAGE BOARD	-	-
TOTAL	57	57

NATIONAL SPACE SCIENCE DATA CENTER

	74	75
EXCEPTED	1	1
GS 16	-	-
GS 15	3	3
GS 14	-	-
ALL OTHER GS	11	11
WAGE BOARD	-	-
TOTAL	15	15

GODDARD SPACE FLIGHT CENTER
FISCAL YEAR 1975 ESTIMATES
AREA MAP



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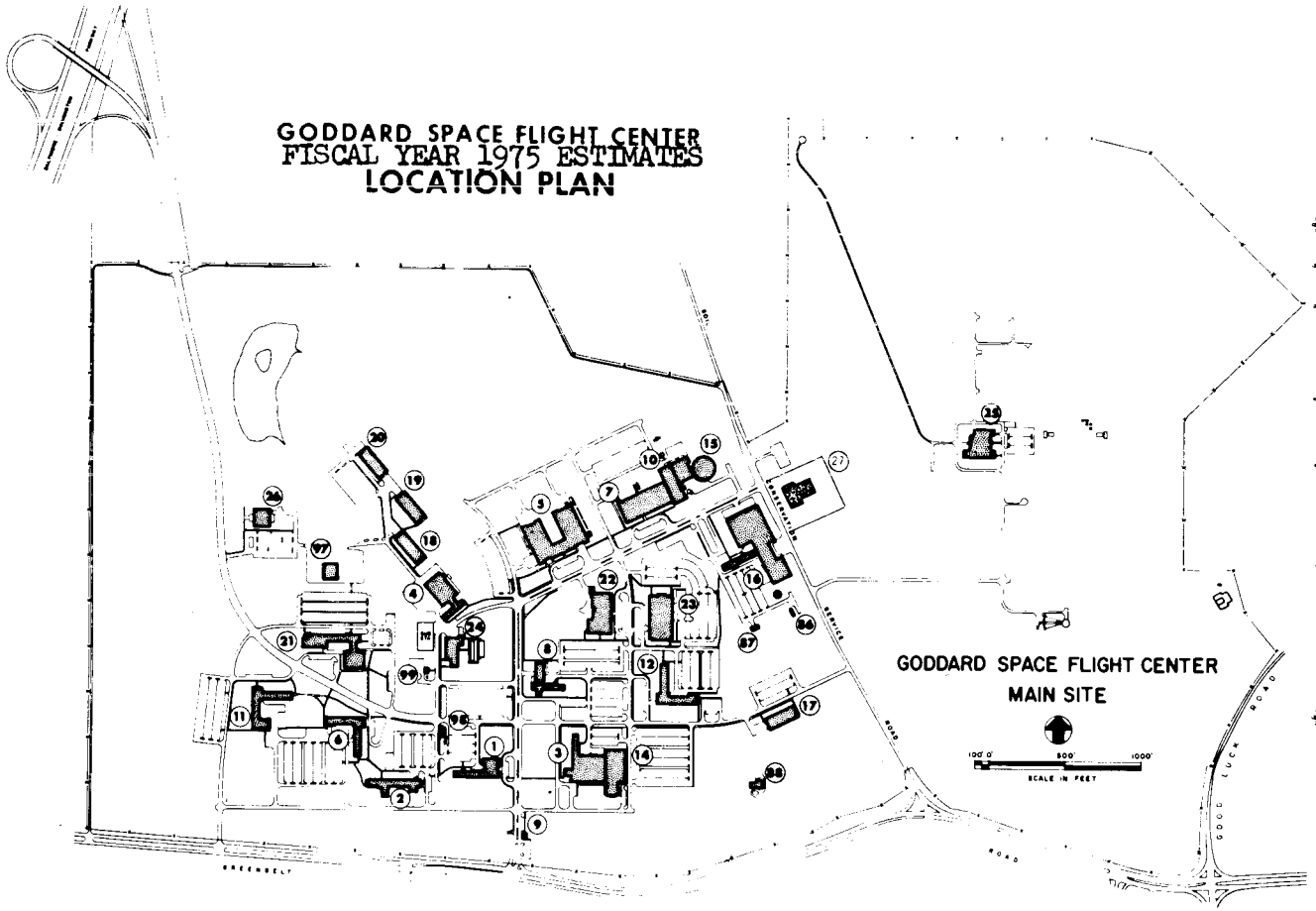

1 SPACE PROJECTS BUILDING
2 RESEARCH PROJECTS LABORATORY
3 CENTRAL FLIGHT CONTROL & RANGE OPERATIONS BUILDING
4 GENERAL PURPOSE FACILITY BUILDING
* 5 INSTRUMENT CONSTRUCTION & INSTALLATION LABORATORY
* 6 SPACE SCIENCES LABORATORY
7 PAYLOAD TESTING FACILITY
* 8 SATELLITE SYSTEMS BUILDING
9 MAIN GATE HOUSE
10 ENVIRONMENTAL TESTING LABORATORY
11 APPLIED SCIENCES LABORATORY
*12 TRACKING & TELEMETRY LABORATORY
14 SPACECRAFT OPERATIONS FACILITY
15 LAUNCH PHASE SIMULATOR
*16 DEVELOPMENT OPERATIONS BUILDING
17 MULTI-PURPOSE BUILDING
18 BUSINESS OPERATIONS BUILDING
19 MULTI-PURPOSE BUILDING
20 GEOCHEMISTRY BUILDING
*21 METEOROLOGICAL SYSTEMS DEVELOPMENT LABORATORY
*22 MECHANICAL TEST FACILITY & QUALITY ASSURANCE LABORATORY
23 DATA INTERPRETATION LABORATORY
24 CENTRAL HEATING & REFRIGERATION PLANT
*25 NETWORK TRAINING & TEST FACILITY
26 NASA SPACE SCIENCE DATA CENTER
27 MOBILE EQUIPMENT SUPPORT FACILITY
86 ANTENNA CONTROL BUILDING
87 GAS CYLINDER STORAGE BUILDING
88 WWV FACILITY
97 MAINTENANCE SHOPS (AUTO)
98 BUDGET BUILDING
99 CONSTRUCTION FIELD OFFICE

NOTE: Asterisk (*) identifies buildings involved in 1975 project: Rehabilitation and Modification of Science and Applications Laboratories.

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WALLOPS STATION

MISSION

Wallops Station is responsible for planning and conducting applied research and development with emphasis on scientific payload development, instrumentation, facilities and techniques utilized in rocket borne experiments, aeronautical and terminal area research projects and ecological studies.

Wallops Station prepares, assembles, launches, tracks and acquires scientific information from space vehicles. Its facilities are utilized by the scientists and engineers from the laboratories and research centers of NASA, other governmental agenices, colleges and universities, and the worldwide scientific community. Wallops Station personnel assist these scientific research teams with their projects; develop, as necessary, special types of instrumentation and equipment to complete the mission and manage NASA research projects.

Research at Wallops Station is directed toward gathering information about the earth's atmosphere and its near space environment. The Station utilizes launch vehicles ranging in size from the small Arcas and Hasp meteorological rockets to the 72-foot Scout rocket with orbital capability in obtaining scientific data about the atmosphere and the near space environment. Sixteen satellites have been launched. Wallops Station has launched approximately 8,000 research vehicles consisting of from one to seven stages in the quest for scientific knowledge.

Wallops facilities are utilized for many other research projects, such as space component tests, helicopter and aircraft drop tests, helicopter and aircraft noise projects, anti-skid tests on grooved runways, V/STOL terminal air research, collision avoidance programs, and laser and radar tracking of aircraft and satellites.

Wallops Station exercises project management responsibility for several NASA sponsored projects such as GEOS-C, the Experimental Inter-American Meteorological Rocket Network (EXAMETNET), the Polar Cusp, operation of remote site launching and tracking facilities, and operation of NASA's portable range facilities for sounding rockets.

The Station is also responsible for a portion of the National Sounding Rocket Program. This requires interface with the scientific, university and international community; engineering support including analytical, feasibility, and design studies, payload, vehicles and recovery system engineering, test and evaluation; and data analysis and reporting.

A portion of the Station's effort is devoted to NASA's program of international cooperation in space research. Foreign countries are provided with training programs for their personnel, assistance in activation of launch sites, and with technical assistance and advice in launching experiments and in operation of their ranges. Representatives of foreign countries have visited Wallops Station to observe operations or seek assistance in establishing sounding rocket facilities of their own.

Wallops Station is involved in the applications of remote sensing from aircraft and space platforms in the Chesapeake Bay area. As part of the program the Station is working closely with user groups to develop remote sensing analysis and monitoring techniques for studying the ecology of the area.

DESCRIPTION

The Station includes three separate areas on the Atlantic Coast of Virginia's eastern shore: the main base, the Wallops Island launching site, and the Wallops mainland site. The administrative offices, range control center, support shops, and main telemetry buildings are located on the main base. Wallops Island is about seven miles southeast of the main base and is connected to the mainland by a causeway and bridge. The island is about five miles long and only one-half mile wide at its widest point. Located on the island are rocket storage buildings, blockhouses, assembly shops and launch sites. The Wallops mainland site is a one-half mile strip west of the island which houses the radar and optical tracking sites.

Wallops Station, totaling 6,561 acres, consists of 2,313 acres on the main base; 3,000 acres on Wallops Island; 108 acres on the mainland tracking site; and 1,140 acres of unusable marsh land. The total capital investment, including fixed assets in progress and contractor-held facilities at various locations, as of June 30, 1973 was $120,543,000.

SUMMARY OF RESOURCES REQUIREMENTS

FUNDS

Functions	1973	1974	1975	Change in 1975
Personnel.....	$7,431,000	$7,848,000	$8,037,000	+$189,000
Travel.....	215,000	260,000	265,000	+5,000
Facilities Services.....	2,142,000	2,391,000	2,413,000	+22,000
Technical Services.....	164,000	201,000	227,000	+26,000
Administrative Support..	752,000	722,000	762,000	+40,000
Total, fund requirements.....	$10,704,000	$11,422,000	$11,704,000	+$282,000

Personnel - Increase in 1975 reflects the full year's effect of the October 1973 pay raise, the cost of promotions and within grade increases, and higher training costs partially offset by turnover savings and the full year effect of the 1974 manpower reductions.

Travel - Increase in 1975 due to wage increases for shuttle bus support contractor.

Facilities Services - Increase in 1975 due to custodial and supply management support contract wage increases and higher fuel costs.

Technical Services - Increase in 1975 to cover support contract wage increases and full year's cost of new business ADP equipment purchased in 1974.

Administrative Support - Increase in 1975 results from switchboard operations support contract wage increases and replacement of a 45-passenger bus.

PERSONNEL

	1973	1974	1975	Change in 1975
I. PERSONNEL.....	$7,431,000	$7,848,000	$8,037,000	+$189,000

Bais of Fund Requirements

	1973	1974	1975
A. Compensation and Benefits:			
1. Compensation:			
a. Permanent positions.....	$6,619,000	$6,892,000	$7,050,000
b. Nonpermanent positions....	89,000	140,000	140,000
c. Overtime and other compensation.....	79,000	111,000	112,000
Subtotal, Compensation....	$6,787,000	$7,143,000	$7,302,000
2. Benefits.....	608,000	634,000	654,000
Subtotal, Compensation and Benefits.....	$7,395,000	$7,777,000	$7,956,000
B. Supporting Costs:			
1. Transfer of personnel.....	---	$6,000	$6,000
2. Personnel training.....	$36,000	65,000	75,000
Subtotal, Supporting Costs	$36,000	$71,000	$81,000
Total, Personnel and Related Cost.....	$7,431,000	$7,848,000	$8,037,000
1. Compensation.....	$6,787,000	$7,143,000	$7,302,000
a. Permanent Positions.....	6,619,000	6,892,000	7,050,000

The funds shown above will support 420 permanent positions in 1974 and 1975. These levels represent a reduction 17 positions from 1973.

Over 50% of Wallops permanent positions are used in direct support of the various R&D programs. The following table summarizes the actual and planned utilization of positions for direct program activity and for indirect support.

Distribution of Permanent Positions By Program

	1973	1974	1975
Direct Positions			
Manned Space Flight			
Space flight operations	6	4	5
Space Science			
Physics and astronomy	85	83	83
Lunar and planetary exploration	2	2	2
Launch vehicle procurement	3	3	3
Space Applications	58	64	62
Aeronautics and Space Technology			
Aeronautical research and technology	34	36	36
Space and nuclear research and technology	8	2	2
Tracking and Data Acquisition	57	52	53
Subtotal, direct positions	253	246	246
Indirect Positions			
Director and staff	5	5	4
Administrative support	74	69	69
Research and development support	105	100	101
Subtotal, indirect positions	184	174	174
Total, permanent positions	437	420	420
Other than permanent positions	44	44	37
Total positions	481	464	457

Distribution of Permanent Positions By Program

	1973	1974	1975
Direct Positions			
Manned Space Flight			
Space flight operations	6	4	5
Space Science			
Physics and astronomy	85	83	83
Lunar and planetary exploration	2	2	2
Launch vehicle procurement	3	3	3
Space Applications	58	64	62
Aeronautics and Space Technology			
Aeronautical research and technology	34	36	36
Space and nuclear research and technology	8	2	2
Tracking and Data Acquisition	57	52	53
Subtotal, direct positions	253	246	246
Indirect Positions			
Director and staff	5	5	4
Administrative support	74	69	69
Research and development support	105	100	101
Subtotal, indirect positions	184	174	174
Total, permanent positions	437	420	420
Other than permanent positions	34	44	44
Total positions	471	464	464

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Basis of Cost for Permanent Positions

In 1975 the cost of permanent positions will be $7,050,000 an increase of $158,000 from 1974. This increase is calculated as follows:

Cost of permanent positions in 1974.....		$6,892,000
Cost of increases in 1975.....		286,000
Within grade advances and career development:		
Full year effect of 1974 actions.....	$79,000	
Partial year effect of 1975 actions.....	97,000	
Full year effect of October 1973 pay raise...	83,000	
Extra day.....	27,000	
Cost decreases in 1975.....		-128,000
Abolished positions and turnover savings:		
Full year effect of 1974 actions.....	—95,000	
Partial year effect of 1975 actions.....	—33,000	
Cost of Permanent Positions in 1975.....		$7,050,000

Other Compensation Costs

	1973	1974	1975
b. Nonpermanent Positions.....	$89,000	$140,000	$140,000

The 1975 plan includes 37 nonpermanent positions. These include 20 positions to be used for Wallops participation in the President's Youth Opportunity Campaign, 5 positions to be filled by cooperative engineering students who alternate between working at Wallops and attending college (co-ops), 10 regular summer employees, and 2 other temporary positions.

c. Overtime and Other Compensation.....	$79,000	$111,000	$112,000

Wallops provides launching facilities, instrumentation, and tracking and data acquisition facilities necessary for recovery operations, as well as administrative and management support of NASA programs. Many factors beyond the Station's control, such as schedules, weather holds, range clearance, require the personnel operating and supporting the above facilities to work long hours which exceed a 40 hour week and the eight hour day.

Basis of Cost for Permanent Positions

In 1975 the cost of permanent positions will be $7,050,000 an increase of $158,000 from 1974. This increase is calculated as follows:

Cost of permanent positions in 1974.....		$6,892,000
Cost of increases in 1975.....		286,000
Within grade advances and career development:		
Full year effect of 1974 actions.....	$79,000	
Partial year effect of 1975 actions.....	97,000	
Full year effect of October 1973 pay raise...	83,000	
Extra day.....	27,000	
Cost decreases in 1975.....		-128,000
Abolished positions and turnover savings:		
Full year effect of 1974 actions.....	—95,000	
Partial year effect of 1975 actions.....	—33,000	
Cost of Permanent Positions in 1975.....		$7,050,000

Other Compensation Costs

	1973	1974	1975
b. Nonpermanent Positions.....	$89,000	$140,000	$140,000

The 1974 and 1975 plans include 47 nonpermanent positions for each year. These include 30 positions to be used for Wallops participation in the President's Youth Opportunity Campaign, 5 positions to be filled by cooperative engineering students who alternate between working at Wallops and attending college (co-ops), 10 regular summer employees, and 2 other temporary positions.

c. Overtime and Other Compensation.....	$79,000	$111,000	$112,000

Wallops provides launching facilities, instrumentation, and tracking and data acquisition facilities necessary for recovery operations, as well as administrative and management support of NASA programs. Many factors beyond the Station's control, such as schedules, weather holds, range clearance, require the personnel operating and supporting the above facilities to work long hours which exceed a 40 hour week and the eight hour day.

	1973	1974	1975
2. Benefits	$608,000	$634,000	$654,000

The following table indicates the cost of personnel benefits by the major categories:

Category of Cost			
Contribution to the Civil Service Retirement Fund	$462,000	$485,000	$500,000
Contribution for employee life insurance	26,000	29,000	35,000
Contribution to employee health insurance	97,000	103,000	104,000
FICA	4,000	10,000	8,000
Incentive awards	1,000	5,000	5,000
Other personnel benefits	2,000	2,000	2,000
Severance pay	16,000	---	---
Total	$608,000	$634,000	$654,000

B. Supporting Costs	$36,000	$71,000	$81,000

The costs are summarized as follows:

1. Transfer of personnel	---	$6,000	$6,000
2. Personnel training	$36,000	$65,000	$75,000

The increase in 1975 is due to higher tuition costs.

TRAVEL

	1973	1974	1975	Change in 1975
II. TRAVEL	$215,000	$260,000	$265,000	+5,000

Basis of Fund Requirements

Summary of Travel by Major Category

		1973	1974	1975
A.	Program Travel.....	$115,000	$141,000	$141,000
B.	Administrative Travel.....	$81,000	$101,000	$106,000
C.	Meetings and Technical Seminars.....	$19,000	$18,000	$18,000
	Total, Travel.....	$215,000	$260,000	$265,000
A.	Program Travel.....	$115,000	$141,000	$141,000

The 1975 level for program travel funds approximately 300 trips to locations throughout the United States and other countries in support of various R&D activities; GEOS-C, Sounding Rockets, and the Earth Resources program, account for most of the trips in this country. Travel to foreign countries in support of launches and to tracking sites is required for the projects listed below.

International Cooperative Meteorological Program - trips to Russia, New Zealand and Peru.
Sounding Rocket Support - trips to Spain, Sweden and Canada.
San Marco Support - trips to Kenya.
Polar Cusp Project - trips to Canada.

The level of funding for FY 1975 is unchanged from FY 1974 and supports the planned launch schedule.

B.	Administrative Travel.....	$81,000	$101,000	$106,000

The increases in FY 1974 and FY 1975 reflect wage rate increases in the contract for shuttle services at Wallops.

C.	Meetings and Technical Seminars.....	$19,000	$18,000	$18,000

The schedule involves approximately 156 trips to such locations as Washington D. C., Langley Research Center, Goddard, Houston, Colorado, and North Carolina.

FACILITIES SERVICES

	1973	1974	1975	Change in 1975
III. FACILITIES SERVICES	$2,142,000	$2,391,000	$2,413,000	$+22,000

Basis of Fund Requirements

Summary of Facilities Services

	1973	1974	1975
A. Maintenance and Related Services			
1. Maintenance, repair, and alterations of buildings and grounds.....	$467,000	$608,000	$566,000
2. Custodial services.....	603,000	697,000	720,000
3. Maintenance of equipment.....	166,000	170,000	180,000
Subtotal.....	$1,236,000	$1,475,000	$1,466,000
B. Operation of Facilities			
1. Utilities.....	$331,000	$331,000	$331,000
2. Supplies and equipment.....	575,000	585,000	616,000
Subtotal.....	$906,000	$916,000	$947,000
Total, Facilities Services.....	$2,142,000	$2,391,000	$2,413,000

A. Maintenance and Related Services..	$1,236,000	$1,475,000	$1,466,000
1. Maintenance, repair and alterations of buildings and grounds.....	$467,000	$608,000	$566,000

This category includes over 330 buildings and approximately one million square feet of building space on 6,561 acres.

The corrosive environment at Wallops Station caused by its proximity to the ocean, requires frequent maintenance and repair of exterior surfaces, roofing, utility distribution systems, mechanical doors, hardware, and building equipment. An example of the various projects planned in FY 1975 are as follows:

(1) Repair floor of Transformer Vault Building Z-41.
(2) Repair leaks in U-40 Telescope Dome.
(3) Wall partitions for facilities engineering and mechanical systems Branch E-108.
(4) Modification of lighting system in SCOUT modification facility.

	1973	1974	1975
2. Custodial services.....	$603,000	$697,000	$720,000

The increase in 1975 reflects increases in wage rates for service contracts.

3. Maintenance of equipment.....	$166,000	$170,000	$180,000

The increase in 1975 of $10,000 reflects increased wage rates for the heating plant operations, and maintenance service contract.

B. Operation of Facilities.....	$906,000	$916,000	$947,000
1. Utilities.....	$331,000	$331,000	$331,000

Wallops is presently operating in accordance with the current energy conservation program. However, energy savings are constantly being offset by increases in the cost of purchasing electric power. Electricity is the only purchased utility.

2. Supplies and equipment.....	$575,000	$585,000	$616,000

The increase in FY 1975 is primarily in the area of building materials, fuels and lubricants, due to increased purchase prices for these items.

TECHNICAL SERVICES

	1973	1974	1975	Change in 1975
IV. TECHNICAL SERVICES.....	$164,000	$201,000	$227,000	+26,000

Basis of Fund Requirements

Summary of Technical Services

	1973	1974	1975
A. Automatic Data Processing			
1. Equipment	$12,000	$15,000	$25,000
2. Programming and operation services	73,000	76,000	80,000
Subtotal	$85,000	$91,000	$105,000
B. Engineering Services	$9,000	$27,000	$32,000
C. Scientific and Technical Information and Educational Programs			
1. Operation of NASA technical libraries	$69,000	$75,000	$82,000
2. Educational/informational programs	1,000	8,000	8,000
Subtotal	$70,000	$83,000	$90,000
Total, Technical Services	$164,000	$201,000	$227,000
A. Automatic Data Processing	$85,000	$91,000	$105,000

The increase in 1975 is to meet the wage rate increases of the service contracts for programming, operations, and maintenance, and a full year cost of the rental of the business data remote unit.

B. Engineering Services	$9,000	$27,000	$32,000

The increase in 1975 is due to wage rate increase for chemical analysis support contractors.

C. Scientific and Technical Information and Educational Programs	$70,000	$83,000	$90,000

The increase in 1975 is required to meet the wage rate increases of the contract for library services and to cover increased prices of subscriptions.

ADMINISTRATIVE SUPPORT

	1973	1974	1975	Change in 1975
V. ADMINISTRATIVE SUPPORT.....	$752,000	$722,000	$762,000	+40,000

Basis of Fund Requirements

Summary of Administrative Support

	1973	1974	1975
A. Communications			
1. Leased lines and long distance..	$3,000	$3,000	$3,000
2. Local telephone service.....	82,000	90,000	99,000
3. Other communications.....	---	2,000	2,000
Subtotal.....	$85,000	$95,000	$104,000
B. Administrative Printing.....	$54,000	$56,000	$50,000
C. Supplies, Materials, and Equipment..	$549,000	$485,000	$520,000
D. Transportation			
1. Center operations.....	$15,000	$37,000	$41,000
2. Common carrier.....	23,000	23,000	23,000
Subtotal.....	$38,000	$60,000	$64,000
E. Administrative Support Services			
1. Occupational medicine and Environmental health.....	$26,000	$26,000	$24,000
Subtotal.....	$26,000	$26,000	$24,000
Total, Administrative Support.....	$752,000	$722,000	$762,000
A. Communications.....	$85,000	$95,000	$104,000

The increase in the 1975 estimate reflects wage rate increases for the switchboard operations service contract.

	1973	1974	1975
B. Administrative Printing.....	$54,000	$56,000	$50,000

The reduction in 1975 reflects the separation of one contract photo technician.

C. Supplies, Materials, and Equipment..	$549,000	$485,000	$520,000

The increase in 1975 is to cover the cost of replacing a 45-passenger bus.

D. Transportation.....	$38,000	$60,000	$64,000

The increase in 1975 is due to higher contract costs for administrative aircraft servicing and maintenance.

E. Administrative Support Services.....	$26,000	$26,000	$24,000

The decrease in FY 1975 reflects a slight decrease in the medical services required.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
ORGANIZATION AND STAFFING CHART
WALLOPS STATION

STAFFING SUMMARY

	CY 74	BY 75
Excepted	2	2
GS-16	1	1
GS-15	12	12
GS-14	25	25
All Other GS	335	335
Wage Grade	45	45
Total Permanent	420	420

DIRECTOR

	CY	BY
Excepted	2	2
GS-16	0	0
GS-15	2	1
GS-14	0	0
All Other GS	1	1
Wage Grade	0	0
Total Permanent	5	4

OPERATIONS DIRECTORATE

	CY	BY
Excepted	-	-
GS-16	0	0
GS-15	2	2
GS-14	6	6
All Other GS	118	118
Wage Grade	0	0
Total Permanent	126	126

ENGINEERING DIRECTORATE

	CY	BY
Excepted	-	-
GS-16	1	1
GS-15	5	6
GS-14	12	12
All Other GS	75	74
Wage Grade	0	0
Total Permanent	93	93

ADMINISTRATION DIRECTORATE

	CY	BY
Excepted	-	-
GS-16	-	-
GS-15	1	1
GS-14	1	1
All Other GS	71	71
Wage Grade	0	0
Total Permanent	73	73

TECHNICAL SUPPORT DIRECTORATE

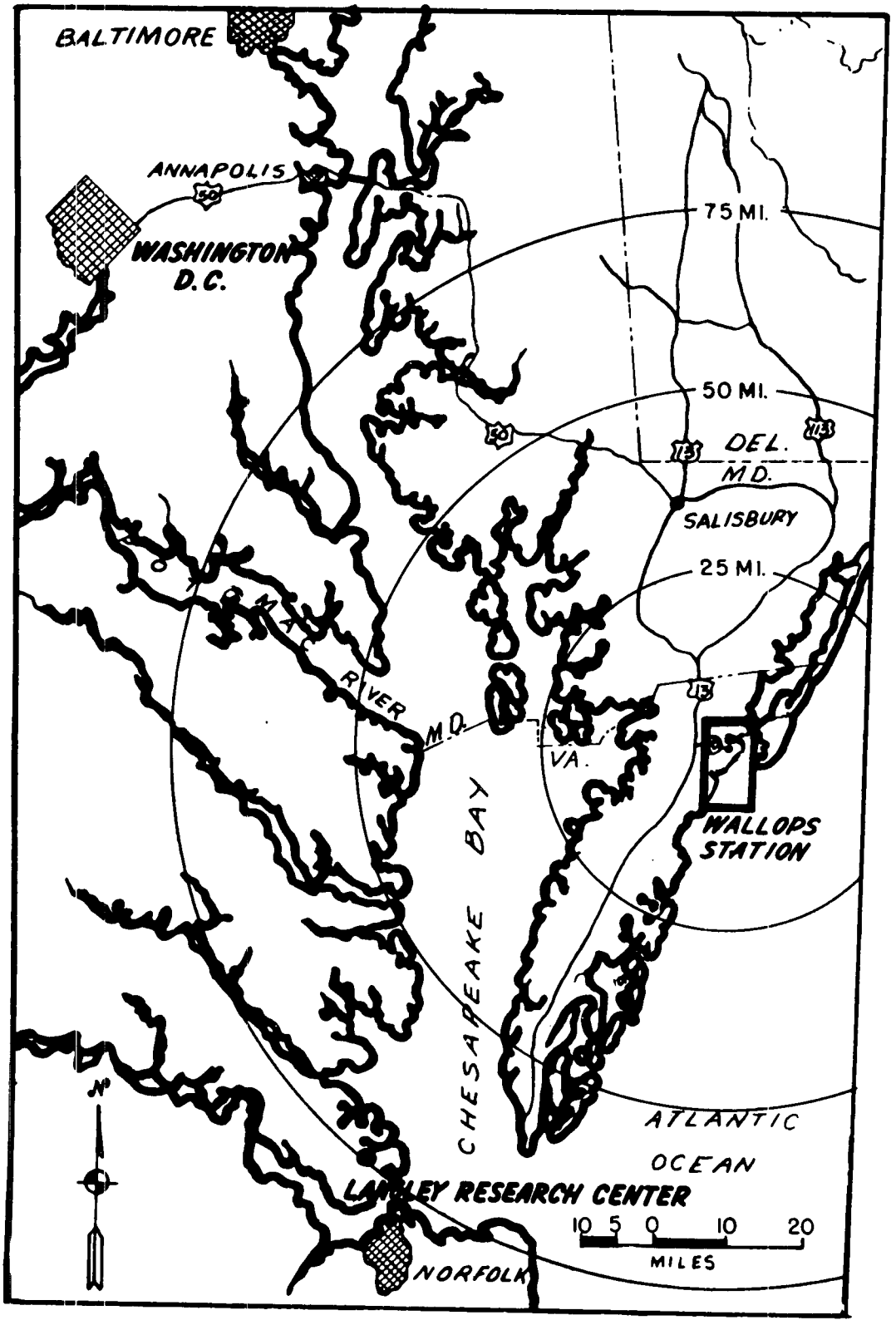
	CY	BY
Excepted	-	-
GS-16	-	-
GS-15	1	1
GS-14	0	0
All Other GS	62	63
Wage Grade	45	45
Total Permanent	108	109

APPLIED SCIENCE DIRECTORATE

	CY	BY
Excepted	-	-
GS-16	-	-
GS-15	1	1
GS-14	6	6
All Other GS	8	8
Wage Grade	0	0
Total Permanent	15	15

RPM 104

WALLOPS STATION LOCATION

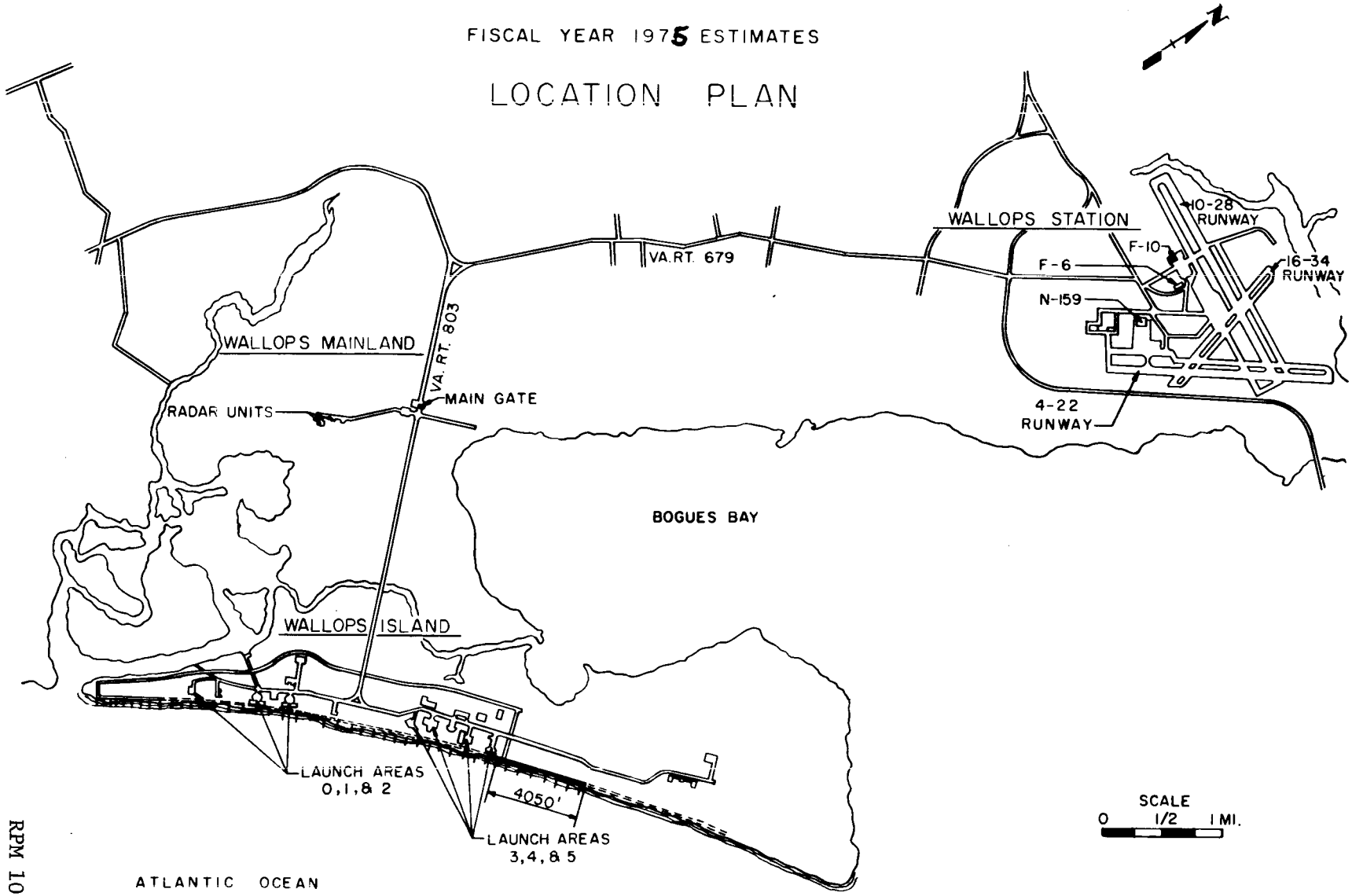


RPM 105

WALLOPS STATION

FISCAL YEAR 1975 ESTIMATES

LOCATION PLAN



RPM 106

MAIN BASE
WALLOPS STATION, VA.

RPM 107

RADAR SITES
WALLOPS (MAINLAND), VA.

RPM 108

LAUNCHING AREA
WALLOPS ISLAND, VA.

RPM 109

RESEARCH AND PROGRAM MANAGEMENT

FISCAL YEAR 1975 ESTIMATES

AMES RESEARCH CENTER

MISSION

The programs at the Ames Research Center are directed at research and development in the fields of aeronautics, space science, life science, and spacecraft technology, as well as at application to national needs of the new science and technology growing out of the aerospace program. Specifically, the Center's major program responsibilities are concentrated in these areas: Aeronautics, Space Shuttle, Life Sciences, Planetary and Earth Science, Astronomy, Applications, and the Pioneer Project.

The aeronautical research program at Ames is the largest research and development effort at the Center. To provide a guide for pursuing our experimental research, emphasis is placed on theoretical analyses as a basis for the prediction and understanding of fluid flows. The emphasis will lead to a much stronger role for the computer in the design of future aeronautical vehicles. For instance, efforts are under way to exploit the great potential for using computational fluid dynamics in the future to replace certain types of more costly and time-consuming wind tunnel experiments. The ILLIAC IV computer located at Ames will provide greatly expanded numerical computation capability for exploitation of this potential. In addition to the more basic research areas, the Center is also a major contributor to V/STOL technology. VTOL and STOL aircraft systems are important to the future of both civil and military aviation. Success in these applications will depend upon efficient flight and upon the ability to land and take off quickly and precisely from small areas with safety and regularity under all weather conditions. Research investigations are being carried out on specific concepts to achieve these broad objectives. This research involves systematic analytical studies and wind tunnel investigations to define and evaluate concepts, simulation studies of the flight characteristics of the concepts using flight simulators, and finally, verification with flight vehicles of the technological advances indicated in the research program. The current flight test program using a C-8 Buffalo aircraft modified to include a high-lift, augmentor wing is one such example.

Military aircraft development programs historically have been supported through investigations in the Center's wind tunnels and simulators, many of which have unique test capabilities. This activity will be continued at a high level because it is vital to specific aircraft programs, and because it affords insight into problems requiring further research for application to the design of future aircraft.

The Space Shuttle program is being supported with a number of investigations at Ames. Past research at the Center has contributed significantly to the solution of the problem of the survival of spacecraft subjected to very high aerodynamic heating during reentry into the earth's atmosphere. The heat protection systems for a relatively highly maneuverable and reusable craft such as the Space Shuttle present a very different problem from that of previous manned spacecraft which followed essentially a ballistic trajectory and were designed on the basis of surviving a single mission. Thermal protection systems research is one area of space shuttle support being carried out at Ames. Other areas involve studies of the aerodynamic performance, stability and control of booster and orbiter vehicles, vehicle response to be expected, and the guidance, control, and piloting problems to be encountered in landing such vehicles. Studies are also being made to help provide for the design of the life support systems, to better understand space vehicle environmental effects on human performance, and to determine the effects of long-term exposure to weightlessness on the physiology of humans.

Research in the life sciences is generally conducted in three major areas: (1) basic research in the physiological and behavioral sciences concerned with obtaining an understanding of the effects of aeronautical and space flight stresses on man; (2) research in long-term advanced life support systems and in the human factors aspects of the relationships between man and the machine which transports and supports him in a hostile environment; and (3) studies in exobiology oriented towards the prediction, detection, and study of extraterrestrial life forms.

Research in space science includes studies of solar and astro physics, planetary environments, and geophysics. The studies pertain to magnetic fields and plasmas in space, the composition and structure of planets, and planetary and stellar atmospheres. The work is both theoretical and experimental using laboratory equipment, sounding rockets, and experiments carried on satellites and space probes. Experiments are also conducted on specifically outfitted aircraft which serve as high altitude airborne laboratories to provide, for example, a platform for an infrared telescope for astronomical observations that would otherwise be degraded at surface locations by the filtering effects of the atmosphere. Researchers throughout the scientific community participate in studies conducted from the airborne laboratories.

Programs are being conducted to apply the aerospace technology developed to problems of the earth and its resources. These include Earth Resources Survey Aircraft used to map the resources of selected areas and to assess damage from man caused and natural disasters, laboratory experiments to understand the dynamics of the atmosphere, and computational studies of the effects of man's activities on regional air quality.

Ames has flight project management responsibility for the Pioneer missions, which to date include the Pioneer 6 through 9 series heliocentric orbiting spacecraft and the Pioneer 10 and 11 Jupiter flyby spacecraft. Pioneer provides

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scientific observations of phenomena in interplanetary space from unmanned spacecraft. Four Pioneer spacecraft, series 6 through 9, are currently in separate orbits about the sun near the earth's orbit, and all regularly provide information on solar radiation. One of these is in its eighth year of operation. Pioneer 10 launched in March 1972 encountered the planet Jupiter on December 3, 1973, and became the first spacecraft to explore the solar system beyond Mars, the first to enter and traverse the Asteroid Belt, the first to encounter the planet Jupiter, and the first man-made object to be placed on a trajectory to escape the solar system. Pioneer 11 launched in April of 1973, will encounter Jupiter in December of 1974. Detailed analysis of Pioneer 10 data will influence judgments on final course corrections that will allow Pioneer 11 to investigate other regions of the Jovian environment and to possibly make a swing-by of the planet Saturn before escaping from the solar system. In addition to having flight project management responsibility, Ames conducts systematic studies and develops advanced technology relating to Pioneer-class spacecraft for follow-on planetary missions such as Saturn/Uranus probes. Design studies have been completed for the proposed Pioneer Venus project, which will use a Pioneer-class spacecraft to conduct scientific exploration of the planet Venus and its environment. The spacecraft system will consist of a basic Bus with the additional subsystems needed to carry out both multiprobe atmospheric entry and orbiter missions at Venus in the 1978 time period.

In carrying out it's mission, Ames works closely with the aerospace and educational communities and with other Government agencies. A number of cooperative, joint programs are currently in progress with the Army, Air Force, Navy, FAA, State, and local agencies.

DESCRIPTION

The Ames Research Center was established in 1940 and is located at the southern end of San Francisco Bay on land contiguous to the U. S. Naval Air Station, Moffett Field, California. Its physical plant comprises many specialized facilities for aerospace research in the physical sciences as well as the space sciences and life sciences, all of which are included in the mission of the Center. These include wind tunnels, flight simulators, aircraft, entry-heating simulators, and laboratories equipped to study solar and geophysical phenomena, life synthesis, life detection, and life environmental factors. The Ames Research Center occupies about 365 acres of land. Certain other facilities, such as the utilities and airfield runways, are used jointly by NASA and the Department of the Navy. Also housed at the Ames Research Center is the U. S. Army Air Mobility Research and Development Laboratory. Personnel from this laboratory work closely with Ames personnel on research of mutual interest. The capital investment at the Ames Research Center, including fixed assets in progress and contractor-held facilities at various locations as of June 30, 1973 was $304,771,000.

SUMMARY OF RESOURCES REQUIREMENTS

FUNDS

Functions	1973	1974	1975	Change in 1975
Personnel.....	$35,890,000	$38,149,000	$39,497,000	$+1,348,000
Travel.....	761,000	896,000	899,000	+3,000
Facilities services.....	3,654,000	4,706,000	5,247,000	+541,000
Technical services.....	604,000	642,000	675,000	+33,000
Administrative support....	1,456,000	1,557,000	1,638,000	+81,000
Total, fund requirements	$42,365,000	$45,950,000	$47,956,000	$+2,006,000

Personnel - The increase is due to the full year effect of the October 1, 1973 pay raise. This increase is partially offset by a decrease in the cost of nonpermanent positions.

Travel - The increase is related to the expansion of the cooperative training program.

Facilities Services - The increase is due to the full year effect of increased electricity rates established in FY 1974 by the Bureau of Reclamation and the Pacific Gas and Electric Company, and cost increases for the same level of services and supplies planned for in 1974.

Technical Services - Increase is due primarily to cost escalation for the same level of services as in FY 1974.

Administrative Support - The increase is related to announced Federal Telecommunications Service and commercial rate increases in communications, and increased costs due to wage escalation in support service contracts.

PERSONNEL

	1973	1974	1975	Change in 1975
I. PERSONNEL.....	$35,890,000	$38,149,000	$39,497,000	$+1,348,000

Basis of Fund Requirements

	1973	1974	1975
A. Compensation and Benefits:			
1. Compensation:			
a. Permanent positions....	$32,073,000	$33,902,000	$35,189,000
b. Nonpermanent positions.	507,000	662,000	605,000
c. Reimbursable details...	84,000	100,000	101,000
d. Overtime and other compensation.....	298,000	321,000	323,000
Subtotal, Compensation.....	$32,962,000	$34,985,000	$36,218,000
2. Benefits.....	2,746,000	2,906,000	3,021,000
Subtotal, Compensation and Benefits.....	$35,708,000	$37,891,000	$39,239,000
B. Supporting Costs:			
1. Transfer of personnel.....	$43,000	$98,000	$98,000
2. Personnel training.....	139,000	160,000	160,000
Subtotal, supporting Costs.	$182,000	$258,000	$258,000
Total, Personnel and Related Costs.....	$35,890,000	$38,149,000	$39,497,000
1. Compensation.....	$32,962,000	$35,985,000	$36,218,000
a. Permanent positions....	$32,073,000	$33,902,000	$35,189,000

The funds shown above support 1,700 permanent positions in FY 1974 and FY 1975, a reduction of 30 positions from FY 1973.

Distribution of Permanent Positions by Program

	1973	1974	1975
Direct Positions			
Manned Space Flight			
Space flight operations	118	116	116
Apollo	9	4	4
Space Sciences			
Physics and astronomy	90	99	99
Lunar and planetary exploration	171	163	163
Applications			
Space applications	47	47	47
Aeronautics and Space Technology			
Aeronautical research and technology	653	637	637
Space and nuclear research and technology	222	218	218
Technology Utilization	7	7	7
Subtotal, direct positions	1,317	1,291	1,291
Indirect Positions			
Director and staff	33	32	32
Administrative support	260	260	260
Research and development support	120	117	117
Subtotal, indirect positions	413	409	409
Total, permanent positions	1,730	1,700	1,700
Other than permanent positions	228	281	266
Total	1,958	1,981	1,966

Basis of Cost for Permanent Positions

The cost for permanent positions of FY 1975 will be $35,189,000, an increase of $1,287,000 over the cost in FY 1974. This increase is projected as follows:

Distribution of Permanent Positions by Program

	1973	1974	1975
Direct Positions			
Manned Space Flight			
Space flight operations	118	116	116
Apollo	9	4	4
Space Sciences			
Physics and astronomy	90	99	99
Lunar and planetary exploration	171	163	163
Applications			
Space applications	47	47	47
Aeronautics and Space Technology			
Aeronautical research and technology	653	637	637
Space and nuclear research and technology	222	218	218
Technology Utilization	7	7	7
Subtotal, direct positions	1,317	1,291	1,291
Indirect Positions			
Director and staff	33	32	32
Administrative support	260	260	260
Research and development support	120	117	117
Subtotal, indirect positions	413	409	409
Total, permanent positions	1,730	1,700	1,700
Other than permanent positions	225	231	220
Total	1,955	1,931	1,920

Basis of Cost for Permanent Positions

The cost for permanent positions of FY 1975 will be $35,189,000, an increase of $1,287,000 over the cost in FY 1974. This increase is projected as follows:

Cost of permanent positions in 1974.....		$33,902,000
Cost increases in 1975.....		+1,883,000
Within grade advances and career development:		
Full year effect of 1974 actions.....	$729,000	
Partial year effect of 1975 actions.....	587,000	
Extra day.....	136,000	
Full year effect of 1974 pay raise.....	431,000	
Cost decreases in 1975.....		-596,000
Abolished positions:		
Full year effect of 1974 actions.....	-496,000	
Turnover savings.....	-100,000	
Cost of permanent positions in 1975.....		$35,189,000

Other Compensation Costs

	1973	1974	1975
b. Nonpermanent Positions.....	$507,000	$662,000	$605,000

The FY 1975 plan includes 266 temporary positions required for a variety of programs.

There are 8 regular temporary positions in FY 1975 which are filled at various times during the year to provide assistance to various research and administrative activities or shop activities where a requirement for a given skill for a job of limited duration is to be filled. This is a reduction of 15 positions and accounts for the majority of the reduced cost for nonpermanent positions.

In FY 1974 and FY 1975 Ames will fill 13 cooperative training positions for an average of 13 manyears.

During the summer months Ames hires 75 college students and high school and college faculty members to provide these individuals with exposure to NASA programs and Government operations. Throughout the school year there are 50 employees who participate in the President's stay in school program which enables disadvantaged youth to work at unskilled jobs at Ames. During the summer months the number of students engaged in this program increases to 170.

c. Reimbursable Details.....	$84,000	$100,000	$101,000

The services of 7 military officers with training in specialized scientific disciplines are utilized at Ames where such assignments are of mutual benefit to NASA and the military agency.

d. Overtime and Other Compensation.....	$298,000	$321,000	$323,000

Cost of permanent positions in 1974		$33,902,000
Cost increases in 1975		+1,883,000
Within grade advances and career development:		
Full year effect of 1974 actions	$729,000	
Partial year effect of 1975 actions	587,000	
Extra day	136,000	
Full year effect of 1974 pay raise	431,000	
Cost decreases in 1975		-596,000
Abolished positions:		
Full year effect of 1974 actions	-496,000	
Turnover savings	-100,000	
Cost of permanent positions in 1975		$35,189,000

Other Compensation Costs

	1973	1974	1975
b. Nonpermanent Positions	$507,000	$662,000	$605,000

The FY 1975 plan includes 276 temporary positions required for a variety of programs.

There are 8 regular temporary positions in FY 1975 which are filled at various times during the year to provide assistance to various research and administrative activities or shop activities where a requirement for a given skill for a job of limited duration is to be filled. This is a reduction of 15 positions and accounts for the majority of the reduced cost for nonpermanent positions.

In FY 1974 and FY 1975 Ames will fill 13 cooperative training positions for an average of 13 manyears.

During the summer months Ames hires 75 college students and high school and college faculty members to provide these individuals with exposure to NASA programs and Government operations. Throughout the school year there are 50 employees who participate in the President's stay in school program which enables disadvantaged youth to work at unskilled jobs at Ames. During the summer months the number of students engaged in this program increases to 180.

c. Reimbursable Details	$84,000	$100,000	$101,000

The services of 7 military officers with training in specialized scientific disciplines are utilized at Ames where such assignments are of mutual benefit to NASA and the military agency.

d. Overtime and Other Compensation	$298,000	$321,000	$323,000

Overtime and other compensation is divided into $252,000 for overtime and $71,000 for night differential. Approximately half of each category is used for off-shift operation of major wind tunnel facilities such as the Unitary Plan Wind Tunnel System, the 40- by 80-Foot Wind Tunnel, the 14-Foot Transonic Wind Tunnel, and the 6- by 6-Foot Supersonic Wind Tunnel. Use of these tunnels during these periods not only increases the number of productive hours but makes possible substantial savings because of available reduced rates for "off peak" electric power. The remainder of night differential provides for off-shift maintenance and shop work. The remainder of overtime is utilized for emergency maintenance and for some administrative work such as year end closing of fiscal records.

	1973	1974	1975
2. Benefits	$2,746,000	$2,906,000	$3,021,000

The increases in benefits costs in both FY 1974 and FY 1975 are the result of pay raises granted during calendar year 1973. The following table indicates the cost of personnel benefits by the major categories:

Category of Cost			
Contribution to the Civil Service Retirement Fund	$2,243,000	$2,373,000	$2,475,000
Contribution for employee life insurance	116,000	129,000	129,000
Contribution for employee health insurance	337,000	336,000	336,000
FICA	20,000	51,000	64,000
Incentive awards	17,000	17,000	17,000
Severance pay	13,000	---	---
Total	$2,746,000	$2,906,000	$3,021,000

B. Supporting Costs	$182,000	$258,000	$258,000
1. Transfer of personnel	$43,000	$98,000	$98,000

The increase in cost from FY 1973 to FY 1974 and FY 1975 results from recent experience in increased transfers and reimbursement levels.

2. Personnel training	$139,000	$160,000	$160,000

The increased costs in FY 1974 and FY 1975 are to provide for one test pilot in each of those years to attend the Navy Test Pilot School. It is necessary for all of Ames pilots to have specific test pilot training which enables them to better report and analyze behavior of the aircraft being tested.

TRAVEL

	1973	1974	1975	Change in 1975
II. TRAVEL.....	$761,000	$896,000	$899,000	$+3,000

Basis of Fund Requirements

Summary of Travel by Major Category

	1973	1974	1975
A. Program Travel.....	$544,000	$630,000	$630,000
B. Administrative Travel.....	113,000	141,000	144,000
C. Meetings and Technical Seminars	104,000	125,000	125,000
Total, Travel.....	$761,000	$896,000	$899,000

A. Program Travel..... $544,000 $630,000 $630,000

Because of the complexity of the programs and associated experiments and the distribution of contractor and subcontractor effort throughout the entire United States, coordination and management of activities require frequent examination by personnel responsible for the programs. The 3 most significant examples of these activities are the Pioneer program, the STOLAND program, and the Solar Pointing Aerobee Rocket Control System. The increase in FY 1974 and FY 1975 is needed to provide improved monitoring of research contracts and grants, and to provide for 15 scheduled launches of the Solar Pointing Aerobee Rocket Control System. Experiment support to other launches, and the post launch activities during the Pioneer Jupiter encounter will be at a high level in FY 1975.

B. Administrative Travel..... $113,000 $141,000 $144,000

The increasing emphasis on newly evolving management techniques being applied Agency-wide will require an increased level in FY 1974 and FY 1975 for coordination by Center personnel with Headquarters and other Centers for effective implementation of these systems.

The upgrading of personnel and their skills requires a viable training program. The expanded cooperative training program requires additional funds, and in most cases required training is only available at off-site locations.

c. Meetings and Technical Seminars $104,000 $125,000 $125,000

Authorization to attend meetings is granted only after assurance that attendance will be in the best interest of NASA. The geographical distance from NASA Headquarters increases the relative cost for this participation. The need to expose more of our professionals to the work being done by others and the requirement to distribute the results of our research has resulted in a conscious effort to increase this Center's participation in professional society meetings and symposia. The estimate provides for continuation of a more responsive level of activity for this category of travel.

FACILITIES SERVICES

	1973	1974	1975	Change in 1975
III. FACILITIES SERVICES	$3,654,000	$4,706,000	$5,247,000	$+541,000

Basis of Fund Requirements

Summary of Facilities Services

	1973	1974	1975
A. Maintenance and Related Services			
1. Maintenance, repair, and alteration of buildings and grounds.....	$148,000	$160,000	$170,000
2. Custodial services.....	476,000	846,000	895,000
3. Maintenance of equipment....	35,000	51,000	55,000
Subtotal.....	$659,000	$1,057,000	$1,120,000
B. Operation of Facilities			
1. Utilities.....	$2,851,000	$3,470,000	$3,935,000
2. Supplies and equipment.....	144,000	179,000	192,000
Subtotal.....	$2,995,000	$3,649,000	$4,127,000
Total, Facilities Services.....	$3,654,000	$4,706,000	$5,247,000
A. Maintenance and Related Services	$659,000	$1,057,000	$1,120,000
1. Maintenance, repair, and alteration of buildings and grounds.....	$148,000	$160,000	$170,000

The year-around requirement for landscaping care requires six manyears of effort. Building maintenance and repair expenditures chargeable to this appropriation are restricted to seven institutional buildings which contain no special purpose equipment other than normal heating and ventilating systems.

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	1973	1974	1975
2. Custodial services.....	$476,000	$846,000	$895,000

Ames has 1,350,000 square feet of office, laboratory, and shop area under care with each building area meeting a specified level of cleaning dependent upon use. Bid price on refuse handling is based on 51 stops for a total of 130 cubic yards daily. Fire protection for 60 buildings and 15 aircraft is provided by NAS Moffett Field at a cost negotiated on a basis of building size and numbers of aircraft relative to the Naval installation. Bid price on security service is based on providing 27 manyears of 24 hour duty. The large increase from FY 1973 to FY 1974 and FY 1975 is required to provide 12 months of funding. During FY 1973 the shortage of funds necessitated funding these contracts only through June 30, rather than providing funding for a full twelve month period.

3. Maintenance of equipment....	$35,000	$51,000	$55,000

To reduce the short range cost of equipment the Center provides on-call repair only. The increases shown in FY 1974 and FY 1975 are estimates of increased labor costs.

C. Operation of Facilities.....	$2,995,000	$3,649,000	$4,127,000
1. Utilities.....	$2,851,000	$3,470,000	$3,935,000

Ninety percent of the utility cost is expended in providing electric power. Over 85% of the electric power is consumed in the operation of high power demand research facilities such as the Unitary Plan Wind Tunnel System, the 40- by 80-Foot Wind Tunnel, the 3.5-Foot Hypersonic Wind Tunnel, the 14-Foot Transonic Wind Tunnel and in the operation of simulators and smaller wind tunnels. Close control over the integrated demand load is maintained to assure that the Center is obtaining the most advantageous rate.

The large increase in electrical power rates is caused partially by planned increases in demand by greater use of the supersonic legs of the Unitary Wind Tunnels for testing of the space shuttle, but the greater portion is to cover planned increase in rates by the Bureau of Reclamation in FY 1974. The increase in FY 1975 reflects the full year effect of this increase. The increase in natural gas costs is to pay for planned rate increases by the area utility supplier. It does not provide for increased use of facilities. Water is obtained through the NAS Moffett Field water system for which the Navy is reimbursed.

2. Supplies and equipment.....	$144,000	$179,000	$192,000

The increase from FY 1974 to FY 1975 includes equipment for a one time installation of security access control equipment for improved security surrounding the flight apron and hangar.

TECHNICAL SERVICES

	1973	1974	1975	Change in 1975
IV. TECHNICAL SERVICES....	$604,000	$642,000	$675,000	$+33,000

Basis of Fund Requirements

Summary of Technical Services

	1973	1974	1975
A. Automatic Data Processing			
1. Programming and operations services.....	$258,000	$370,000	$385,000
Subtotal.....	$258,000	$370,000	$385,000
B. Engineering Services.....	$6,000	---	---
C. Scientific and Technical Information and Education Programs			
1. Educational/Information programs.....	$340,000	$272,000	$290,000
Total, Technical Services.....	$604,000	$642,000	$675,000
A. Automatic Data Processing.....	$258,000	$370,000	$385,000

The FY 1975 estimate for ADP services reflects the requirement for continuation of programming and maintenance services at approximately the same level as the current year.

B. Engineering Services.....	$6,000	---	---

Engineering services provide for building and equipment design studies and other related engineering services. No funds are requested for FY 1975 because no building alterations are planned.

C. Scientific and Technical Information and Educational Programs.....	$340,000	$272,000	$290,000
1. Educational/Information programs.....	$340,000	$272,000	$290,000

Exhibit costs in FY 1975 reflect continuation of current requirements and provision is included in the estimate for increases in labor and material costs.

ADMINISTRATIVE SUPPORT

	1973	1974	1975	Change in 1975
V. ADMINISTRATIVE SUPPORT.	$1,456,000	$1,557,000	$1,638,000	$ +81,000

Basis of Fund Requirements

Summary of Administrative Support

	1973	1974	1975
A. Communications			
1. Leased lines and long distance tolls.....	$221,000	$281,000	$303,000
2. Local telephone service.....	347,000	365,000	365,000
3. Other communications.....	21,000	37,000	34,000
Subtotal.....	$589,000	$683,000	$702,000
B. Administrative Printing.....	$63,000	$70,000	$70,000
C. Supplies, Materials and Equipment			
1. Supplies and materials.....	$137,000	$150,000	$160,000
2. Equipment.....	24,000	40,000	40,000
Subtotal.....	$161,000	$190,000	$200,000
D. Transportation			
1. Center operations.....	$43,000	$45,000	$45,000
2. Common carrier.....	24,000	30,000	35,000
Subtotal.....	$67,000	$75,000	$80,000
E. Administrative Support Services			
1. Installation support services.....	$442,000	$397,000	$436,000
2. Environmental health and occupational medicine.....	134,000	142,000	150,000
Subtotal.....	$576,000	$539,000	$586,000
Total, Administrative Support Services.....	$1,456,000	$1,557,000	$1,638,000

	1973	1974	1975
A. Communications.....	$589,000	$683,000	$702,000

The estimate for FY 1975 provides for continuation of services which involve 25 FTS lines and 2,326 installed telephone instruments and reflects estimated rate increases.

B. Administrative Printing.....	$63,000	$70,000	$70,000

Requirements for printing services in FY 1975 are estimated to continue at the same level as the current year, and the funds requested cover the services performed by the Government Printing Office, other agencies and commercial firms.

C. Supplies, Materials and Equipment.....	$161,000	$190,000	$200,000

The increase of 18 percent from FY 1973 to FY 1974 is the result of inflated costs for these materials plus a redefinition of supplies considered to be administrative support. This was done to simplify the procedure for ordering and distributing supplies. The FY 1975 estimate reflects the same level of supplies as for FY 1974.

D. Transportation.....	$67,000	$75,000	$80,000

Sixty-four motor pool vehicles are leased from GSA and are used for the delivery of supplies and materials and internal mail within the Center, security patrols, off-site pickup of special supplies and for local transportation of personnel. Increase in FY 1975 reflects increased GSA rates.

E. Administrative Support Services	$576,000	$539,000	$586,000
1. Installation support services.....	$442,000	$397,000	$436,000

Installation support services include 21 manyears for the operation of the Center's supply and warehousing facilities, and 11 manyears for the distribution of internal mail and special messenger service. Increased pay rates for these support services will increase the cost in FY 1975 despite the fact that there is no increase in the level of these services.

2. Environmental health and occupational medicine.....	$134,000	$142,000	$150,000

These services at Ames include emergency treatment for industrial accidents, on-site treatment for minor injuries, monitoring industrial hygenic practices and providing health examinations for employees. The increases in FY 1974 and FY 1975 are due to renegotiation of the contract providing these services.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

ORGANIZATION AND STAFFING CHART

AMES RESEARCH CENTER

CENTER TOTAL

	74	75
EXCEPTED	21	21
GS - 16	12	12
GS - 15	131	131
GS - 14	204	204
ALL OTHER GS	1072	1072
WAGE GRADE	260	260
TOTAL PERMANENT	1700	1700

DIRECTOR

	74	75
EXCEPTED	4	4
GS - 16	–	–
GS - 15	2	2
GS - 14	1	1
ALL OTHER GS	6	6
WAGE GRADE	–	–
TOTAL PERMANENT	13	13

PUBLIC AFFAIRS OFFICE

	74	75
EXCEPTED	–	–
GS - 16	–	–
GS - 15	–	–
GS - 14	1	1
ALL OTHER GS	6	6
WAGE GRADE	–	–
TOTAL PERMANENT	7	7

PATENT COUNSEL

	74	75
EXCEPTED	–	–
GS - 16	–	–
GS - 15	1	1
GS - 14	1	1
ALL OTHER GS	1	1
WAGE GRADE	–	–
TOTAL PERMANENT	3	3

HEALTH AND SAFETY OFFICE

	74	75
EXCEPTED	–	–
GS - 16	–	–
GS - 15	–	–
GS - 14	1	1
ALL OTHER GS	3	3
WAGE GRADE	–	–
TOTAL PERMANENT	4	4

CHIEF COUNSEL

	74	75
EXCEPTED	–	–
GS - 16	–	–
GS - 15	1	1
GS - 14	1	1
ALL OTHER GS	1	1
WAGE GRADE	–	–
TOTAL PERMANENT	3	3

EQUAL OPPORTUNITY PROGRAMS OFFICE

	74	75
EXCEPTED	–	–
GS - 16	–	–
GS - 15	–	–
GS - 14	–	–
ALL OTHER GS	5	5
WAGE GRADE	–	–
TOTAL PERMANENT	5	5

DIRECTOR OF AERONAUTICS & FLIGHT SYSTEMS

	74	75
EXCEPTED	1	1
GS - 16	1	1
GS - 15	–	–
GS - 14	1	1
ALL OTHER GS	3	3
WAGE GRADE	–	–
TOTAL PERMANENT	6	6

DIRECTOR OF ASTRONAUTICS

	74	75
EXCEPTED	2	2
GS - 16	–	–
GS - 15	1	1
GS - 14	–	–
ALL OTHER GS	2	2
WAGE GRADE	–	–
TOTAL PERMANENT	5	5

DIRECTOR OF LIFE SCIENCES

	74	75
EXCEPTED	2	2
GS - 16	–	–
GS - 15	–	–
GS - 14	2	2
ALL OTHER GS	4	4
WAGE GRADE	–	–
TOTAL PERMANENT	8	8

DIRECTOR OF DEVELOPMENT

	74	75
EXCEPTED	1	1
GS - 16	1	1
GS - 15	2	2
GS - 14	1	1
ALL OTHER GS	5	5
WAGE GRADE	–	–
TOTAL PERMANENT	10	10

DIRECTOR OF RESEARCH SUPPORT

	74	75
EXCEPTED	2	2
GS - 16	–	–
GS - 15	2	2
GS - 14	–	–
ALL OTHER GS	3	3
WAGE GRADE	–	–
TOTAL PERMANENT	7	7

DIRECTOR OF ADMINISTRATION

	74	75
EXCEPTED	1	1
GS - 16	1	1
GS - 15	1	1
GS - 14	–	–
ALL OTHER GS	4	4
WAGE GRADE	–	–
TOTAL PERMANENT	7	7

AERONAUTICS DIVISION

	74	75
EXCEPTED	1	1
GS - 16	–	–
GS - 15	11	11
GS - 14	18	18
ALL OTHER GS	83	83
WAGE GRADE	25	25
TOTAL PERMANENT	138	138

FLIGHT SYSTEMS RESEARCH DIVISION

	74	75
EXCEPTED	–	–
GS - 16	3	3
GS - 15	19	19
GS - 14	26	26
ALL OTHER GS	78	78
WAGE GRADE	5	5
TOTAL PERMANENT	131	131

SIMULATION SCIENCES DIVISION

	74	75
EXCEPTED	–	–
GS - 16	1	1
GS - 15	4	4
GS - 14	8	8
ALL OTHER GS	31	31
WAGE GRADE	–	–
TOTAL PERMANENT	44	44

V/STOL PROJECT OFFICE

	74	75
EXCEPTED	–	–
GS - 16	1	1
GS - 15	3	3
GS - 14	4	4
ALL OTHER GS	15	15
WAGE GRADE	–	–
TOTAL PERMANENT	23	23

QUIET PROPULSIVE-LIFT AIRCRAFT TECHNOLOGY OFFICE

	74	75
EXCEPTED	–	–
GS - 16	1	1
GS - 15	3	3
GS - 14	3	3
ALL OTHER GS	4	4
WAGE GRADE	–	–
TOTAL PERMANENT	11	11

SPACE SCIENCE DIVISION

	74	75
EXCEPTED	1	1
GS - 16	–	–
GS - 15	17	17
GS - 14	19	19
ALL OTHER GS	69	69
WAGE GRADE	–	–
TOTAL PERMANENT	106	106

THERMO- AND GAS-DYNAMICS DIVISION

	74	75
EXCEPTED	1	1
GS - 16	–	–
GS - 15	17	17
GS - 14	24	24
ALL OTHER GS	93	93
WAGE GRADE	7	7
TOTAL PERMANENT	142	142

CHEMICAL RESEARCH PROJECTS OFFICE

	74	75
EXCEPTED	–	–
GS - 16	–	–
GS - 15	1	1
GS - 14	2	2
ALL OTHER GS	17	17
WAGE GRADE	–	–
TOTAL PERMANENT	20	20

APPLICATIONS AIRCRAFT SUPPORT PROGRAM OFFICE

	74	75
EXCEPTED	–	–
GS - 16	–	–
GS - 15	1	1
GS - 14	4	4
ALL OTHER GS	8	8
WAGE GRADE	–	–
TOTAL PERMANENT	13	13

BIOMEDICAL RESEARCH DIVISION

	74	75
EXCEPTED	1	1
GS - 16	–	–
GS - 15	5	5
GS - 14	6	6
ALL OTHER GS	22	22
WAGE GRADE	3	3
TOTAL PERMANENT	37	37

BIOTECHNOLOGY DIVISION

	74	75
EXCEPTED	–	–
GS - 16	1	1
GS - 15	3	3
GS - 14	12	12
ALL OTHER GS	32	32
WAGE GRADE	–	–
TOTAL PERMANENT	48	48

PLANETARY BIOLOGY DIVISION

	74	75
EXCEPTED	–	–
GS - 16	1	1
GS - 15	3	3
GS - 14	2	2
ALL OTHER GS	36	36
WAGE GRADE	–	–
TOTAL PERMANENT	42	42

FLIGHT EXPERIMENTS OFFICE

	74	75
EXCEPTED	–	–
GS - 16	–	–
GS - 15	1	1
GS - 14	–	–
ALL OTHER GS	4	4
WAGE GRADE	–	–
TOTAL PERMANENT	5	5

PROJECT PIONEER

	74	75
EXCEPTED	1	1
GS - 16	–	–
GS - 15	5	5
GS - 14	13	13
ALL OTHER GS	25	25
WAGE GRADE	–	–
TOTAL PERMANENT	44	44

FLIGHT PROJECT DEVELOPMENT DIVISION

	74	75
EXCEPTED	1	1
GS - 16	–	–
GS - 15	6	6
GS - 14	14	14
ALL OTHER GS	41	41
WAGE GRADE	–	–
TOTAL PERMANENT	62	62

RELIABILITY AND QUALITY ASSURANCE OFFICE

	74	75
EXCEPTED	–	–
GS - 16	–	–
GS - 15	1	1
GS - 14	–	–
ALL OTHER GS	4	4
WAGE GRADE	–	–
TOTAL PERMANENT	5	5

COMPUTATION DIVISION

	74	75
EXCEPTED	1	1
GS - 16	–	–
GS - 15	2	2
GS - 14	5	5
ALL OTHER GS	56	56
WAGE GRADE	–	–
TOTAL PERMANENT	64	64

INSTITUTE FOR ADVANCED COMPUTATION

	74	75
EXCEPTED	1	1
GS - 16	–	–
GS - 15	3	3
GS - 14	1	1
ALL OTHER GS	9	9
WAGE GRADE	–	–
TOTAL PERMANENT	14	14

RESEARCH FACILITIES & INSTRUMENTATION DIVISION

	74	75
EXCEPTED	–	–
GS - 16	1	1
GS - 15	5	5
GS - 14	13	13
ALL OTHER GS	121	121
WAGE GRADE	48	48
TOTAL PERMANENT	188	188

TECHNICAL SERVICES DIVISION

	74	75
EXCEPTED	–	–
GS - 16	–	–
GS - 15	1	1
GS - 14	–	–
ALL OTHER GS	71	71
WAGE GRADE	160	160
TOTAL PERMANENT	232	232

FINANCIAL MANAGEMENT DIVISION

	74	75
EXCEPTED	–	–
GS - 16	–	–
GS - 15	–	–
GS - 14	1	1
ALL OTHER GS	39	39
WAGE GRADE	–	–
TOTAL PERMANENT	40	40

PERSONNEL DIVISION

	74	75
EXCEPTED	–	–
GS - 16	–	–
GS - 15	1	1
GS - 14	1	1
ALL OTHER GS	31	31
WAGE GRADE	–	–
TOTAL PERMANENT	33	33

PROCUREMENT DIVISION

	74	75
EXCEPTED	–	–
GS - 16	–	–
GS - 15	1	1
GS - 14	6	6
ALL OTHER GS	43	43
WAGE GRADE	–	–
TOTAL PERMANENT	50	50

SERVICES & SUPPLY DIVISION

	74	75
EXCEPTED	–	–
GS - 16	–	–
GS - 15	–	–
GS - 14	1	1
ALL OTHER GS	29	29
WAGE GRADE	7	7
TOTAL PERMANENT	37	37

TECHNICAL INFORMATION DIVISION

	74	75
EXCEPTED	–	–
GS - 16	–	–
GS - 15	–	–
GS - 14	1	1
ALL OTHER GS	30	30
WAGE GRADE	5	5
TOTAL PERMANENT	36	36

RESOURCES MANAGEMENT OFFICE

	74	75
EXCEPTED	–	–
GS - 16	–	–
GS - 15	1	1
GS - 14	–	–
ALL OTHER GS	7	7
WAGE GRADE	–	–
TOTAL PERMANENT	8	8

MANAGEMENT ANALYSIS OFFICE

	74	75
EXCEPTED	–	–
GS - 16	–	–
GS - 15	–	–
GS - 14	–	–
ALL OTHER GS	3	3
WAGE GRADE	–	–
TOTAL PERMANENT	3	3

TECHNOLOGY UTILIZATION OFFICE

	74	75
EXCEPTED	–	–
GS - 16	–	–
GS - 15	–	–
GS - 14	2	2
ALL OTHER GS	2	2
WAGE GRADE	–	–
TOTAL PERMANENT	4	4

SYSTEMS STUDIES DIVISION

	74	75
EXCEPTED	–	–
GS - 16	–	–
GS - 15	7	7
GS - 14	9	9
ALL OTHER GS	26	26
WAGE GRADE	–	–
TOTAL PERMANENT	42	42

RPM 124

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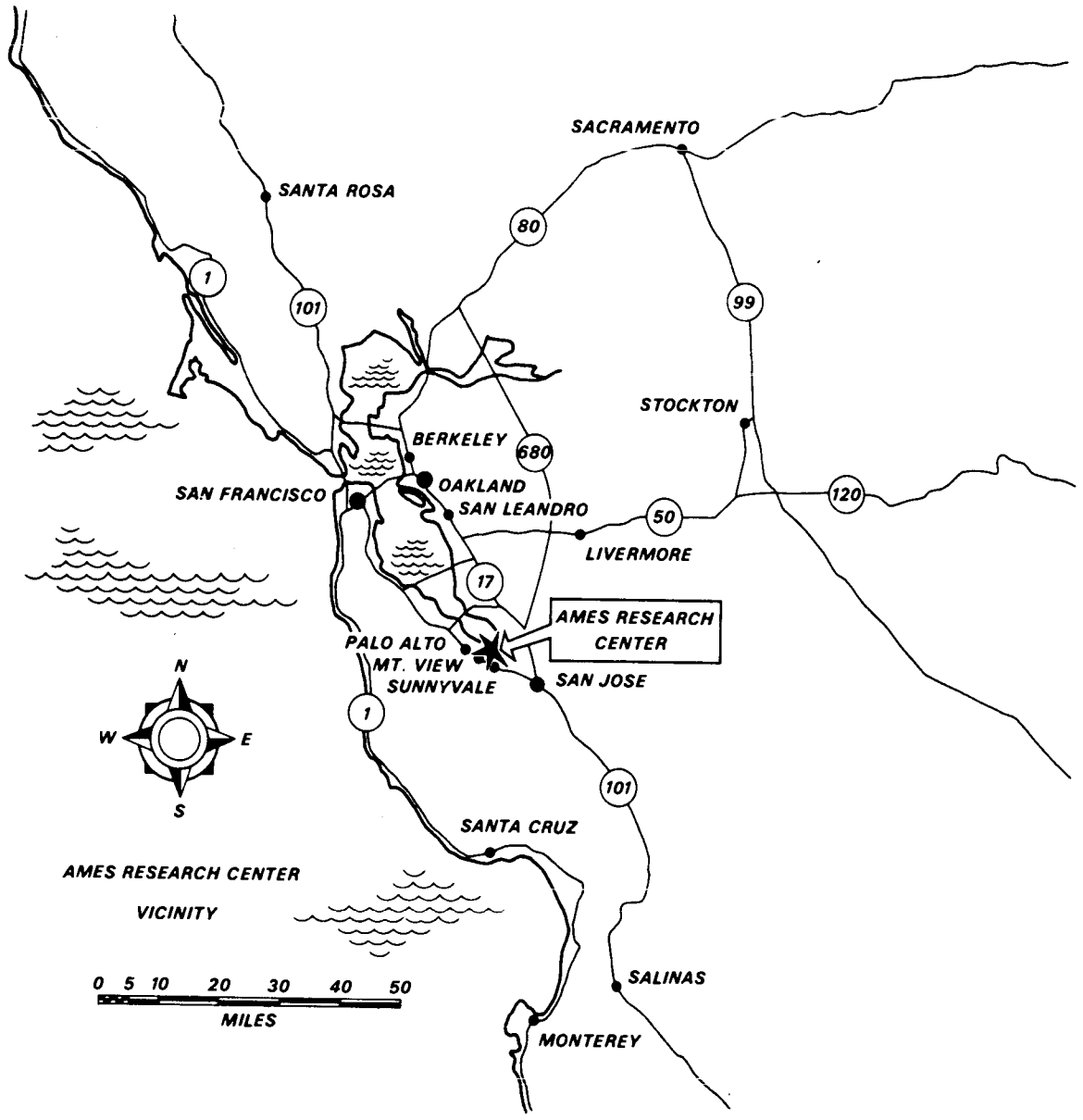
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STOCKTON
BERKELEY
680
OAKLAND
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LIVERMORE
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AMES RESEARCH CENTER
PALO ALTO
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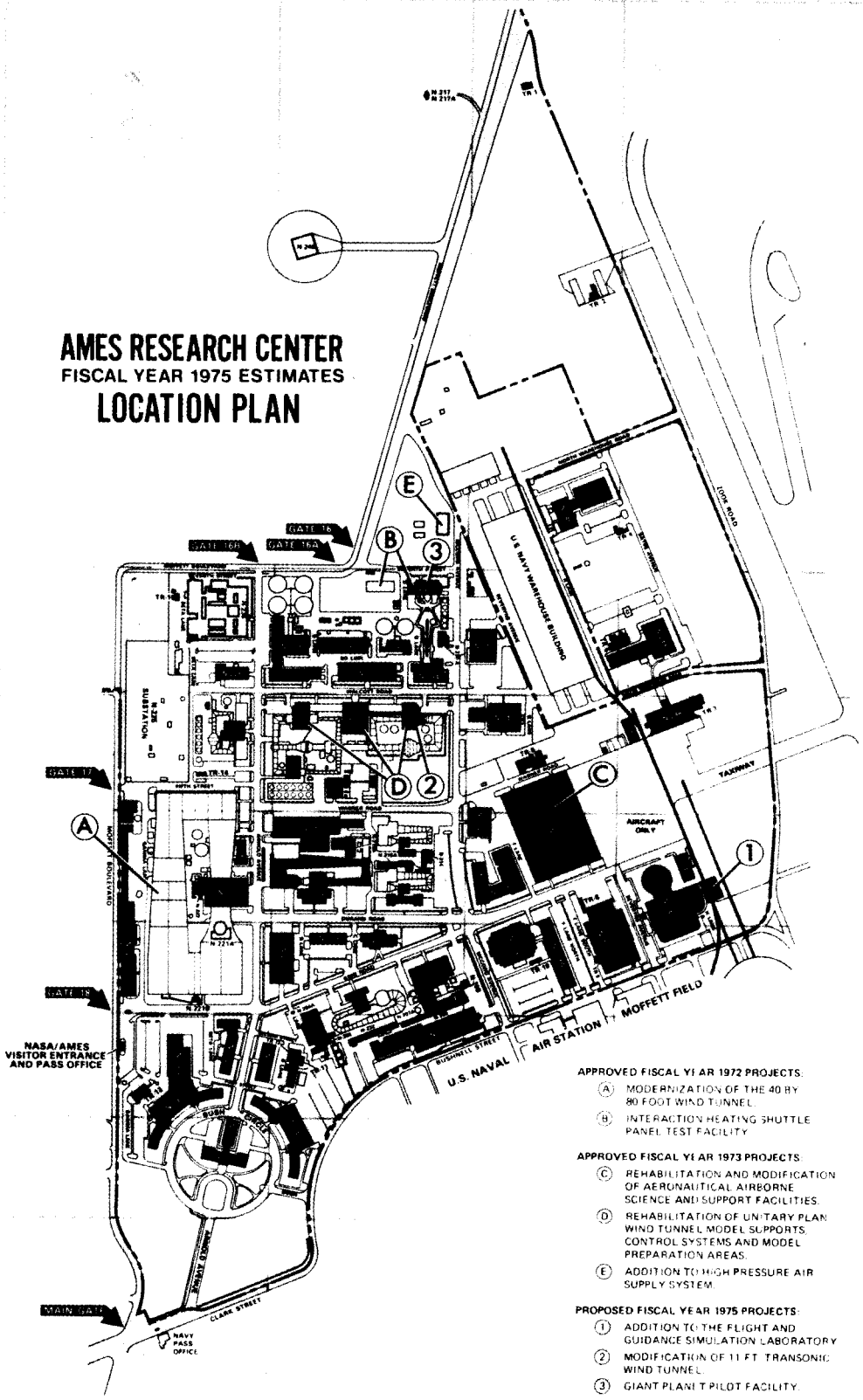
AMES RESEARCH CENTER
FISCAL YEAR 1975 ESTIMATES
LOCATION PLAN



LEGEND

*N 200	ADMINISTRATION BUILDING	B 1
*N 201	AUDITORIUM	B 1
*N 202	MAIN LIBRARY	C 1
*N 202A	SYSTEMS STUDIES BLDG	C 1
*N 203	PHOTOTECHNOLOGY LABORATORY	C 2
N 204	SPACE TECHNOLOGY BUILDING	C 2
N 204A	SPACE TECHNOLOGY BLDG. ANNEX	C 2
N 205	PILOT MODEL OF 3.5 FOOT W.T.	C 3
N 206	12 FOOT PRESSURE W.T.	D 2
N 206A	12 FOOT PRESSURE W.T. AUXILIARIES BUILDING	C 2
N 207	HQ. ARMY AIR MOBILITY R&D LAB	D 2
N 207A	HYP. SHOCK TUBE LABORATORY	D 2
N 208	UNDERGROUND BALLISTIC RANGE	D 2
N 209	PRESSURIZED BALLISTIC RANGE	D 3
N 210	FLIGHT SIMULATION LABORATORY	D 4
*N 211	FLIGHT SUPPORT FACILITY	E 3
N 212	MODEL DEVELOPMENT BUILDING	E 3
N 213	RESEARCH SUPPORT BUILDING	E 3
N 214	PAINT SHOP	E 2
N 215	ARMY AIR MOBILITY R&D LAB. AMES DIV. AND 7 BY 10 FOOT W.T. NO. 1	E 2
N 216	7 BY 10 FOOT W.T. NO. 2 AAMROL	E 2
N 216A	COMPRESSOR BUILDING	E 2
N 216B	ARMY MODEL ASSEMBLY BUILDING	E 2
N 217	MAGNETIC STANDARDS LABORATORY	H 1
N 217A	MAGNETIC TEST FACILITY (25 FT. COIL)	H 2
N 218	14 FOOT TRANSONIC W.T.	E 2
N 218A	ELECTRICAL EQUIPMENT BUILDING	E 2
N 219	ELECTRICAL SERVICES BUILDING	D 3
N 220	TECHNICAL SERVICES BUILDING	D 2
N 221	80 BY 80 FOOT W.T.	E 1
N 221A	20G CENTRIFUGE	D 1
N 221B	HEIGHT CONTROL SIMULATOR	D 1
N 222	2 BY 2 FOOT TRANSONIC W.T.	E 1
N 223	CHEMICAL RESEARCH PROJECTS FACILITY	D 1
N 224	POLYMER DEVELOPMENT FACILITY	E 1
N 225	SUBSTATION	E 1
N 226	6 BY 6 FOOT SUPERSONIC W.T.	E 1
N 227	UNITARY PLAN W.T. BUILDING	E 2
N 227A	11 FOOT TRANSONIC W.T.	E 2
N 227B	9 BY 7 FOOT SUPERSONIC W.T.	E 2
N 227C	9 BY 7 FOOT SUPERSONIC W.T.	E 2
N 227D	UNITARY PLAN W.T. AUXILIARIES BUILDING	E 2
N 228	42 INCH SHOCK TUNNEL	E 1
N 229	EXPERIMENTAL FLUID DYNAMICS FACILITY (3.5 FT. W.T.)	E 2
N 229A	3.5 FOOT HYPERSONIC W.T. AUXILIARIES BUILDING	E 2
*N 230	PHYSICAL SCIENCES RESEARCH LABORATORY	E 2
N 231	FLUID DYNAMICS LABORATORY	E 2
N 232	PILOT MODEL OF HYPERVELOCITY FREE FLIGHT FACILITY	E 3
*N 233	CENTRAL COMPUTER FACILITY	E 1
N 233A	INSTITUTE FOR ADVANCED COMPUTATION	E 1
N 234	THERMAL PROTECTION LABORATORY	E 2
N 234A	THERMAL PROT. LAB. BOILER	E 2
N 235	CAFETERIA BUILDING	E 2
N 236	BIOSCIENCE LABORATORY	E 1
N 237	HYPERVELOCITY FREE FLIGHT FACILITY	H 2
N 238	ARC JET LABORATORY	H 2
*N 239	LIFE SCIENCES RESEARCH LAB	H 3
N 239A	LIFE SCIENCES HIGH BAY	H 3
N 240	MATERIALS SCIENCE LABORATORY	H 3
*N 241	ADMINISTRATIVE MANAGEMENT BUILDING	H 2
N 242	SYSTEMS DEVELOPMENT FACILITY	H 3
*N 243	FLIGHT AND GUIDANCE SIMULATION LABORATORY	H 4
N 243A	SIMULATION EQUIPMENT BUILDING	H 4
*N 244	FLIGHT PROJECTS FACILITY	H 4
N 245	SPACE SCIENCES RESEARCH LABORATORY	H 3
N 246	MODEL CONSTR FACILITY	E 2
N 247	40 BY 80 FOOT W.T. OFFICES	E 1
N 248	AIRCRAFT SERVICING FACILITY	F 4
N 248A	GROUND SUPPORT EQUIPMENT BLDG	F 4
N 249	STATIC TEST STAND	H 2
TR 1	ELECTRO OPTICAL TRAILER AREA	H 3
TR 2	VISTOL FLYER AND NOISE TRAILERS	H 4
TR 3	SPACE TECHNOLOGY TRAILER	H 3
TR 4	ASSE (PROJECT TRAILERS)	H 3
TR 5	FLIGHT PROJECT TRAILERS	G 4
TR 6	FLIGHT SUPPORT TRAILERS	F 3
TR 7	AIRBORNE SCIENCE AIRCRAFT TRAILERS	F 4
TR 8	AIRCRAFT TEST VAN	E 3
TR 9	AIRCRAFT TEST CONTROL TRAILER	E 3
TR 10	LIFE SCIENCES TRAILERS	C 3
TR 11	ADMINISTRATIVE SUPPORT TRAILERS	C 2
TR 12	PUBLIC AFFAIRS TRAILER	C 2
TR 13	COMPUTATION SUPPORT TRAILERS	C 1
TR 14	SUPPLY SUPPORT TRAILERS	C 1
TR 15	ANIMAL TRAILER DOCK	C 1

*FALLOUT SHELTERS

APPROVED FISCAL YEAR 1972 PROJECTS:

- (A) MODERNIZATION OF THE 40 BY 80 FOOT WIND TUNNEL.
- (B) INTERACTION HEATING SHUTTLE PANEL TEST FACILITY.

APPROVED FISCAL YEAR 1973 PROJECTS:

- (C) REHABILITATION AND MODIFICATION OF AERONAUTICAL AIRBORNE SCIENCE AND SUPPORT FACILITIES.
- (D) REHABILITATION OF UNITARY PLAN WIND TUNNEL MODEL SUPPORTS, CONTROL SYSTEMS AND MODEL PREPARATION AREAS.
- (E) ADDITION TO HIGH PRESSURE AIR SUPPLY SYSTEM.

PROPOSED FISCAL YEAR 1975 PROJECTS:

- (1) ADDITION TO THE FLIGHT AND GUIDANCE SIMULATION LABORATORY.
- (2) MODIFICATION OF 11 FT. TRANSONIC WIND TUNNEL.
- (3) GIANT PLANET PILOT FACILITY.

RPM 127

RESEARCH AND PROGRAM MANAGEMENT

FISCAL YEAR 1975 ESTIMATES

FLIGHT RESEARCH CENTER

MISSION

The Flight Research Center, established in 1947, conducts aeronautical and space related research using a variety of aerospace vehicles. The work includes effort on problems of take-off, landing, low-speed flight, supersonic and hypersonic flight, and re-entry to verify predicted characteristics and to identify unexpected problems in actual flight.

The current and projected programs at this Center include: aeronautical projects concerning general aviation, STOL research, subsonic and supersonic cruise research; space vehicle systems projects in which the flight behavior of advanced re-entry vehicles such as the X-24B is studied; and electronic systems projects such as digital fly-by-wire control in advanced flight missions, and improvements on systems and sensors used in bio-medical monitoring, tracking, and data acquisition.

Most important of the facilities and special equipment for conducting programs at the Flight Research Center are the aircraft. They range from general aviation aircraft for handling qualities investigations to supersonic aircraft, such as the YF-12, used for various research investigations having application to both civil and military aviation. Special purpose vehicles such as the X-24B, variable stability aircraft, or airborne simulators, are contractor procured or developed in-house. Specialized laboratory facilities are available to complement the flight activities with proper preliminary research and testing. Simulation equipment is used to guide and assist in the performance of productive flight activities. A two-station test range for radar tracking and data acquisition is operated to support the flight activity.

DESCRIPTION

The Flight Research Center, Edwards, California, is 65 air miles northeast of Los Angeles. The Center is located at the north end of Edwards Air Force Base on land occupied under Air Force permit. Utilities are provided by the Air Force on a reimbursable basis. The Center is adjacent to Rogers Dry Lake, a 55-square mile area with a complex of runways varying in length from 5 to 11 miles.

The physical plant consists of an office-laboratory building with adjoining shops, a flight maintenance hangar and a calibration hangar, and a high temperature loads calibration facility. Auxiliary buildings include warehouses, an auxiliary power systems building, communications buildings, and an aircraft

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maintenance dock. The main station of the two-station radar range operated by the Center is located on the third floor of the office-laboratory building. The total capital investment of the Flight Research Center, including fixed assets in progress, and contractor-held facilities at various locations, as of June 30, 1973, was $64,981,000.

SUMMARY OF RESOURCES REQUIREMENTS

FUNDS

Functions	1973	1974	1975	Change in 1975
Personnel.....	$9,695,000	$10,202,000	$10,454,000	$+252,000
Travel.....	203,000	235,000	235,000	---
Facilities Services.....	1,264,000	1,240,000	1,364,000	+124,000
Technical Services.....	90,000	84,000	91,000	+7,000
Administrative Support...	341,000	333,000	348,000	+15,000
Total, fund requirements	$11,593,000	$12,094,000	$12,492,000	$+398,000

Personnel - The increase is due to the full year's cost of the 1973 pay raise, within grade advances of GS employees and a small number of promotions.

Travel - The travel funding remains constant with a slight decrease in the estimated number of trips due to the five percent increase in airline fares in December 1973.

Facilities Services - The increase results from wage and price escalations in support services contracts, higher utility rates, and the addition of several new facilities.

Technical Services - The nominal increase reflects higher costs for contract photographic and film processing services.

Administrative Support - The increase is based on price escalations in supplies, materials and fuel purchases.

PERSONNEL

	1973	1974	1975	Change in 1975
I. PERSONNEL.....	$9,695,000	$10,202,000	$10,454,000	$+252,000

Basis of Fund Requirements

	1973	1974	1975
A. Compensation and Benefits:			
1. Compensation:			
a. Permanent positions.....	$8,490,000	$8,853,000	$9,109,000
b. Nonpermanent positions...	246,000	275,000	241,000
c. Reimbursable details.....	78,000	132,000	153,000
d. Overtime and other compensation.....	85,000	93,000	94,000
Subtotal, Compensation.....	$8,899,000	$9,353,000	$9,597,000
2. Benefits.....	$757,000	$799,000	$807,000
Subtotal, Compensation and Benefits.....	$9,656,000	$10,152,000	$10,404,000
B. Supporting Costs:			
1. Transfer of personnel.....	$9,000	$10,000	$10,000
2. Personnel training.....	30,000	40,000	40,000
Subtotal, Supporting Costs...	$39,000	$50,000	$50,000
Total, Personnel and Related Costs.....	$ 9,695,000	$10,202,000	$10,454,000
1. Compensation.....	$8,899,000	$9,353,000	$9,597,000
a. Permanent positions.....	$8,490,000	$8,853,000	$9,109,000

The number of permanent personnel remains the same from the end of FY 1973 through FY 1975. The ratio between direct and indirect personnel changes slightly for FY 1974 and FY 1975 due to the establishment of the Directorate of Center Development.

Distribution of Permanent Positions by Program

	1973	1974	1975
Direct Positions			
Manned Space Flight			
Space flight operations	7	7	9
Aeronautics and Space Technology			
Aeronautical research and technology	314	316	318
Space and nuclear research and technology	43	39	35
Tracking and Data Acquisition	27	27	27
Technology Utilization	1	1	1
Subtotal, direct positions	392	390	390
Indirect Positions			
Director and staff	15	18	18
Administrative support	76	75	75
Subtotal, indirect positions	91	93	93
Total, permanent positions	483	483	483
Other than permanent positions	72	98	93
Total positions	555	581	576

Basis of Cost for Permanent Positions

In 1975 the cost of permanent positions will be $9,109,000. This results as follows:

Cost of permanent positions in 1974		$8,853,000
Cost increases in 1975		+393,000
Within grade advances and career development:		
Full year effect of 1974 actions	$167,000	
Partial year effect of 1975 actions	79,000	
Extra day	33,000	
Full year effect of October 1973 pay raise	114,000	

Distribution of Permanent Positions by Program

	1973	1974	1975
Direct Positions			
Manned Space Flight			
Space flight operations	7	7	9
Aeronautics and Space Technology			
Aeronautical research and technology	314	316	318
Space and nuclear research and technology	43	39	35
Tracking and Data Acquisition	27	27	27
Technology Utilization	1	1	1
Subtotal, direct positions	392	390	390
Indirect Positions			
Director and staff	15	18	18
Administrative support	76	75	75
Subtotal, indirect positions	91	93	93
Total, permanent positions	483	483	483
Other than permanent positions	72	98	94
Total positions	555	581	577

Basis of Cost for Permanent Positions

In 1975 the cost of permanent positions will be $9,109,000. This results as follows:

Cost of permanent positions in 1974		$8,853,000
Cost increases in 1975		+393,000
Within grade advances and career development:		
Full year effect of 1974 actions	$167,000	
Partial year effect of 1975 actions	79,000	
Extra day	33,000	
Full year effect of October 1973 pay raise	114,000	

Cost decreases in 1975		-137,000
Turnover effect of 1974 and 1975 actions	137,000	
Cost of permanent positions in 1975		$9,109,000

Other Compensation Costs

	1973	1974	1975
b. Nonpermanent positions	$246,000	$275,000	$241,000

The 1974 and 1975 plans include 72 and 93 nonpermanent positions respectively at the end of each year. These positions are required for a variety of programs, a portion of which provides for summer employment. FRC has programmed for 40 participants in the cooperative student program for 1974 and 1975. This reflects an increase of 14 co-op students. The cost increase in 1974 is due to the 1974 pay raise, and the decrease in 1975 is due to changing hiring levels between the various types of nonpermanent positions.

c. Reimbursable Details	$78,000	$132,000	$153,000

The services of a small group of military officers are utilized in FRC's programs where such assignments are of mutual benefit. Currently FRC plans include 11 such detailees.

d. Overtime and Other Compensation	$85,000	$93,000	$94,000

This is restricted to emergency repairs and that work requiring other than normal duty time. The cost increases in 1974 and 1975 are attributable to the pay raises granted during calendar year 1973.

2. Benefits	$757,000	$799,000	$807,000
Category of Cost			
Contribution to the Civil Service Retirement Fund	$602,000	$631,000	$649,000
Contribution for employee life insurance	31,000	32,000	33,000
Contribution for employee health insurance	103,000	103,000	101,000
FICA	6,000	8,000	9,000
Incentive awards	3,000	10,000	10,000
Other personnel benefits	7,000	5,000	5,000
Severance pay	5,000	10,000	---
Total	$757,000	$799,000	$807,000

Cost decreases in 1975		-137,000
Turnover effect of 1974 and 1975 actions	137,000	
Cost of permanent positions in 1975		$9,109,000

Other Compensation Costs

	1973	1974	1975
b. Nonpermanent positions	$246,000	$275,000	$241,000

The 1974 and 1975 plans include 98 and 93 nonpermanent positions respectively at the end of each year. These positions are required for a variety of programs, a portion of which provides for summer employment. FRC has programmed for 40 participants in the cooperative student program for 1974 and 1975. This reflects an increase of 26 co-op students. The cost increase in 1974 is due to the 1974 pay raise, and the decrease in 1975 is due to changing hiring levels between the various types of nonpermanent positions.

c. Reimbursable Details	$78,000	$132,000	$153,000

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FICA	6,000	8,000	9,000
Incentive awards	3,000	10,000	10,000
Other personnel benefits	7,000	5,000	5,000
Severance pay	5,000	10,000	---
Total	$757,000	$799,000	$807,000

	1973	1974	1975
B. Supporting Costs.....	$39,000	$50,000	$50,000
1. Transfer of personnel.....	$9,000	$10,000	$10,000

A nominal number of transfers are expected to replace personnel who retire or resign.

2. Personnel training.....	$30,000	$40,000	$40,000

Training will be conducted at the same level in 1975 as is planned for 1974.

TRAVEL

	1973	1974	1975	Change in 1975
II. TRAVEL.....	$203,000	$235,000	$235,000	---

Basis of Fund Requirements

Summary of Travel by Major Category

	1973	1974	1975
A. Program Travel.....	$84,000	$103,000	$103,000
B. Administrative Traval.....	24,000	26,000	26,000
C. Meetings and Technical Seminars.	95,000	106,000	106,000
Total, Travel.....	$203,000	$235,000	$235,000
A. Program Travel.....	$84,000	$103,000	$103,000

The major portion of the travel will be support of the aeronautics program. The increased costs from 1973 are due to the higher level of flight testing for experimental programs. The number of trips and travel funds estimated are listed below for the categories of both program support and flight mission support:

	No. of Trips	Amount
Aeronautics:		
Research and Technology.....	25	$8,000
Vehicle Configurations.....	35	15,000
Flight Experiment Programs.....	130	40,000
STOL.....	10	4,000
Advanced Supersonic Technology.....	20	8,000
Aeronautical Studies.....	20	10,000

	No. of Trips	Amount
Space:		
Lifting Body	30	14,000
General Support	20	3,000
Network Operations	10	1,000
Total	300	$103,000

	1973	1974	1975
B. Administrative Travel	$24,000	$26,000	$26,000

The levels shown reflect the minimum requirement consistent with Center needs. The number of trips and estimated costs are listed below by category:

	No. of Trips	Amount
Training	62	$14,000
Cooperative Students	28	6,000
Permanent Change of Station and Initial Duty Station.	9	5,000
Other Administrative	5	1,000
Total	104	$26,000

	1973	1974	1975
C. Meetings and Technical Seminars.	$95,000	$106,000	$106,000

The estimated costs will continue at the same level in 1975. The number of trips and related funding is listed below by category:

	No. of Trips	Amount
NASA Meetings at Headquarters and other Centers	285	$69,000
Management Councils and Panels	84	22,000
Joint Program Meetings with other Agencies	50	11,000
Technical Committees and Panels	64	14,000
Functional Meetings	70	16,000
Other Seminars	17	6,000
Meetings Sponsored by Other Agencies	38	$11,000
Department of Defense	30	9,000
Technical Seminars	8	2,000

	No. of Trips	Amount
Meetings Sponsored by Non-Government Activities	175	$26,000
Industrial Meetings	111	13,000
American Institute of Aeronautics and Astronautics	18	4,000
Society of Experimental Test Pilots	33	1,000
Advisory Groups for Aerospace R. & D	4	4,000
Others	9	4,000
Total	498	$106,000

FACILITIES SERVICES

	1973	1974	1975	Change in 1975
III. FACILITIES SERVICES	$1,264,000	$1,240,000	$1,364,000	$+124,000

Basis of Fund Requirements

Summary of Facilities Services

	1973	1974	1975
A. Maintenance and Related Services			
1. Maintenance, repair, and alteration of buildings and grounds	$645,000	$613,000	$681,000
2. Custodial services	339,000	320,000	320,000
3. Maintenance of equipment	108,000	90,000	90,000
Subtotal	$1,092,000	$1,023,000	$1,091,000
B. Operation of Facilities			
1. Utilities	$128,000	$174,000	$228,000
2. Supplies and equipment	44,000	43,000	45,000
Subtotal	$172,000	$217,000	$273,000
Total, Facilities Services	$1,264,000	$1,240,000	$1,364,000
A. Maintenance and Related Services	$1,092,000	$1,023,000	$1,091,000
1. Maintenance, repair, and alteration of buildings and grounds	$645,000	$613,000	$681,000

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	1973	1974	1975

The estimate represents costs to repair and maintain permanent structures, utility plants and systems, 219 acres of improved and unimproved grounds, and other real property items. The funding in 1975 supports 42 manyears of effort and the increase results from higher contractual costs and for maintenance of additional facilities to be operational in FY 1975.

2. Custodial services.....	$339,000	$320,000	$320,000

The higher 1973 costs represent the extension of the security guard contract pending the advertisement and award of a new contract.

The estimate for janitorial services is $183,000 and will provide 13 manyears of effort to clean 207,000 square feet of floor space.

The estimate for adequate security protection services will support 19 manyears of effort. Security coverage includes 11 guard posts, five of which are manned on a 24 hour basis. The remaining posts are manned on an 8 hour basis or less depending on requirements.

3. Maintenance of equipment....	$108,000	$90,000	$90,000

The estimate is based on maintaining approximately 300 pieces of office, shop and laboratory equipment through on-call contracts. The reduction from 1973 resulted from conversion from maintenance contractors to call contracts.

B. Operation of Facilities.....	$172,000	$217,000	$273,000
1. Utilities.....	$128,000	$174,000	$228,000

The estimates provide level funding for water and natural gas. The estimate reflects an increase in natural gas rates with a corresponding decrease in consumption. A substantial increase in power usage will result from four new facilities in full use by 1975 and by increased usage by the aeronautical programs supported by the High Temperature Loads Calibration Facility. The conservation of power in other laboratories and offices will partially offset the increase. Known increased rate changes received in calendar years 1973 and 1974 are included in the estimate.

2. Supplies and equipment.....	$44,000	$43,000	$45,000

The supplies and equipment required consist of air conditioning, heating, and plumbing materials, hand tools, brushes, sealers, and hardware items. The decrease in FY 1974 and increase in FY 1975 are commensurate with the estimate for maintenance of the facilities.

TECHNICAL SERVICES

	1973	1974	1975	Change in 1975
IV. TECHNICAL SERVICES...	$90,000	$84,000	$91,000	$ +7,000

Basis of Fund Requirements

Summary of Technical Services

	1973	1974	1975
A. Automatic Data Processing			
1. Equipment.....	$3,000	$3,000	$3,000
2. Programming and operations services.....	16,000	16,000	16,000
Subtotal.....	$19,000	$19,000	$19,000
B. Engineering Services.....	$10,000	$10,000	$10,000
C. Scientific and Technical Information and Educational Programs			
1. Operation of NASA technical libraries.....	$12,000	$12,000	$12,000
2. Educational/informational programs.....	32,000	28,000	33,000
3. Scientific and technical information.....	17,000	15,000	17,000
Subtotal.....	$61,000	$55,000	$62,000
Total, Technical Services.....	$90,000	$84,000	$91,000
A. Automatic Data Processing.....	$19,000	$19,000	$19,000

A key punch contractor support of $16,000 is estimated at the current rate of $.11 per card. Lease of programmed typewriters is estimated at $3,000.

B. Engineering Services.....	$10,000	$10,000	$10,000

Engineering services are required primarily for drafting and design work which exceeds in-house capability, engineering consulting services, and civil engineering facility design approvals.

C. Scientific and Technical Information and Educational Programs	$61,000	$55,000	$62,000
1. Operation of NASA technical libraries.....	$12,000	$12,000	$12,000

Funding in this area is required to procure scientific and technical books and periodicals in support of research programs; technical and administrative publications for the benefit of FRC personnel to maintain a current knowledge of the latest techniques and applications of engineering data and management practices; various other publications of scientific value, and approximately 300 subscriptions for periodicals. The library was converted to a contractor operation in FY 1974.

2. Educational/informational programs.....	$32,000	$28,000	$33,000

The variations in cost result from brochure publications which are printed in alternate years. It is estimated that 150 calls will be made upon the support photographic contracts. Half of the cost is distributed to this category.

3. Scientific and technical information.....	$17,000	$15,000	$17,000

The majority of the funds will be used to procure photographic services which exceed our in-house capability. Services will include process of 16mm. film contract timed prints, color optical masters and various other processing and printing of still and motion picture technical film.

The reduction in 1974 was due to a reduced level of effort during the transition from in-house to contractor operation of the photo laboratory. The 1975 estimate shows the return to a constant level of effort.

ADMINISTRATIVE SUPPORT

	1973	1974	1975	Change in 1975
V. ADMINISTRATIVE SUPPORT	$341,000	$333,000	$348,000	$+15,000

Basis of Fund Requirements

Summary of Administrative Support

	1973	1974	1975
A. Communications			
1. Leased lines and long distance tolls.....	$54,000	$58,000	$58,000
2. Local telephone service.....	56,000	61,000	62,000
3. Other communications.....	6,000	3,000	3,000
Subtotal.....	$116,000	$122,000	$123,000
B. Administrative Printing.....	$19,000	$20,000	$20,000

	1973	1974	1975
C. Supplies, Materials and Equipment			
1. Supplies and materials.....	$63,000	$57,000	$65,000
2. Equipment.....	39,000	30,000	31,000
Subtotal.....	$102,000	$87,000	$96,000
D. Transportation			
1. Center operations.....	$76,000	$74,000	$79,000
2. Common carrier.....	19,000	20,000	20,000
Subtotal.....	$95,000	$94,000	$99,000
E. Administrative Support Services			
1. Occupational medicine and environmental health.....	$9,000	$10,000	$10,000
Subtotal.....	$9,000	$10,000	$10,000
Total, Administrative Support Services.....	$341,000	$333,000	$348,000
A. Communications.....	$116,000	$122,000	$123,000

Funding is required to support three Federal Telecommunications Systems circuits. The cost of FTS services and long distance tolls are estimated at $58,000. For local telephone service $62,000 is required for 400 telephones and terminal equipment. The remaining $3,000 included for communications is for rental and lease of equipment for our teletype/crypto system. The increases reflect announced higher rates for telephone services.

B. Administrative Printing.....	$19,000	$20,000	$20,000
C. Supplies, Materials and Equipment	$102,000	$87,000	$96,000

Equipment purchases planned for FY 1974 were deferred due to budgetary restraints. The FY 1975 estimate reflects the higher costs of materials and equipment.

D. Transportation.....	$95,000	$94,000	$99,000

The decrease in FY 1974 reflects lower vehicle usage resulting in reduced maintenance costs. The increase in FY 1975 reflects price escalations.

E. Administrative Support Services	$9,000	$10,000	$10,000

The estimate for FY 1975 reflects the cost of physical examinations for the Center's pilots, which is a continuing requirement.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

ORGANIZATION AND STAFFING CHART

FLIGHT RESEARCH CENTER

STAFFING SUMMARY	CY	BY
Excepted	6	6
GS-16	5	5
GS-15	17	18
GS-14	38	37
All Other GS	415	415
Wage Board	2	2
Total Permanent	483	483

OFFICE OF THE DIRECTOR	CY	BY
Excepted	3	3
GS-16	1	1
GS-15	5	5
GS-14	2	2
All Other GS	25	25
Wage Board	-	-
Total Permanent	36	36

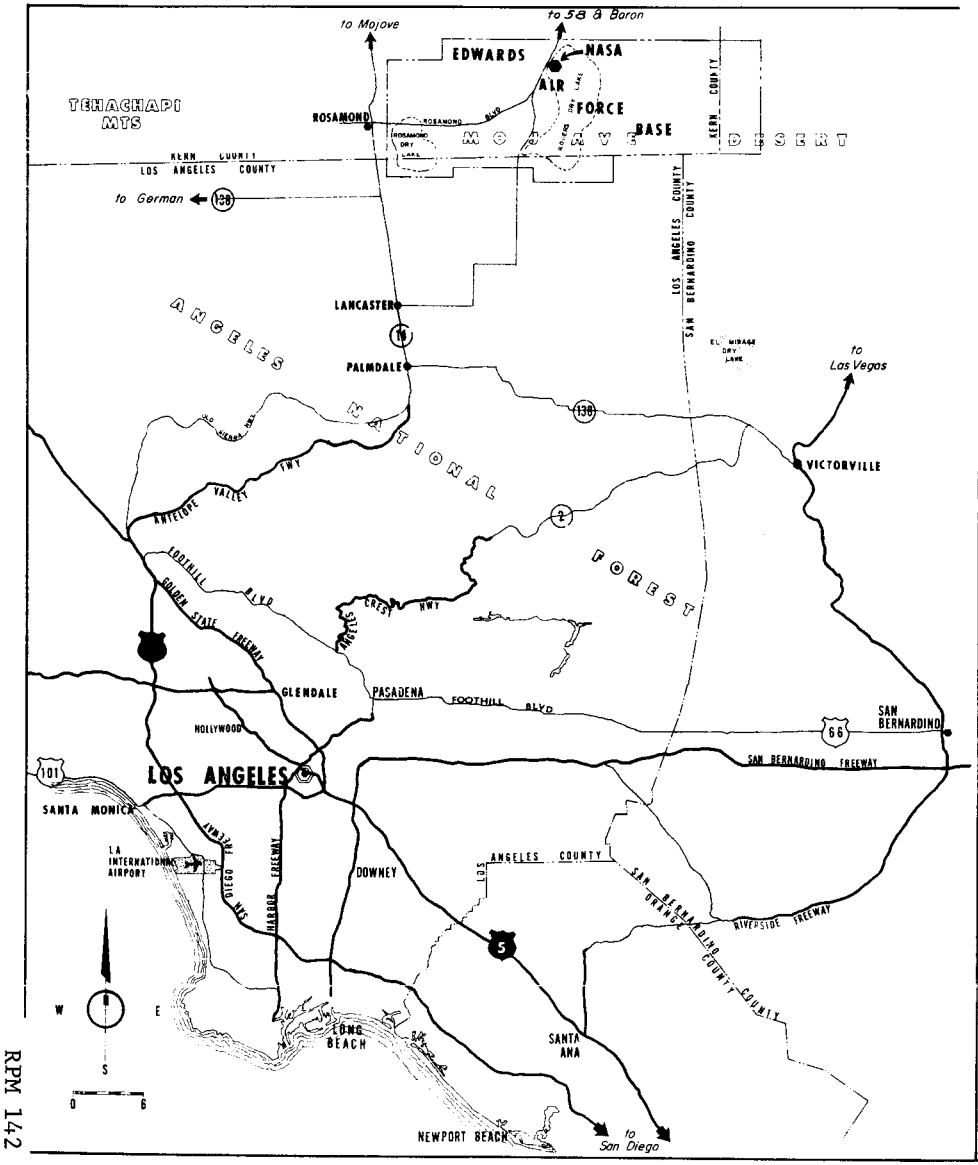
RESEARCH DIVISION	CY	BY
Excepted	1	1
GS-16	2	2
GS-15	5	6
GS-14	20	19
All Other GS	70	70
Wage Board	-	-
Total Permanent	98	98

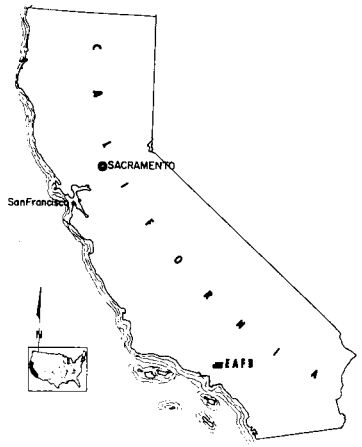
OPERATIONS DIRECTORATE	CY	BY
Excepted	2	2
GS-16	1	1
GS-15	5	5
GS-14	5	5
All Other GS	141	141
Wage Board	-	-
Total Permanent	154	154

DATA SYSTEMS DIVISION	CY	BY
Excepted	-	-
GS-16	1	1
GS-15	1	1
GS-14	7	7
All Other GS	121	121
Wage Board	-	-
Total Permanent	130	130

ADMINISTRATIVE DIRECTORATE	CY	BY
Excepted	-	-
GS-16	-	-
GS-15	1	1
GS-14	4	4
All Other GS	58	58
Wage Board	2	2
Total Permanent	65	65

FLIGHT RESEARCH CENTER
FISCAL YEAR 1975 ESTIMATES
VICINITY MAP



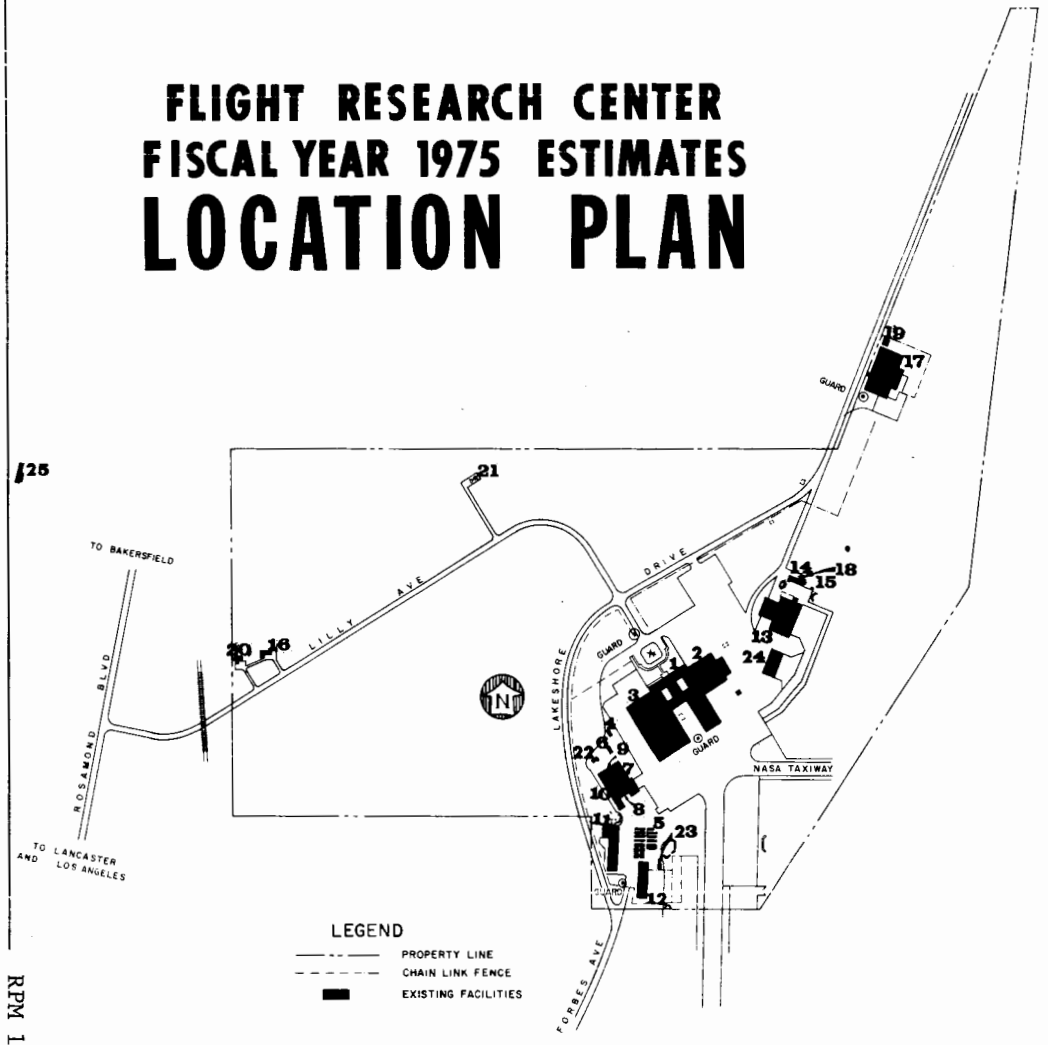


KEY PLAN

RPM 142

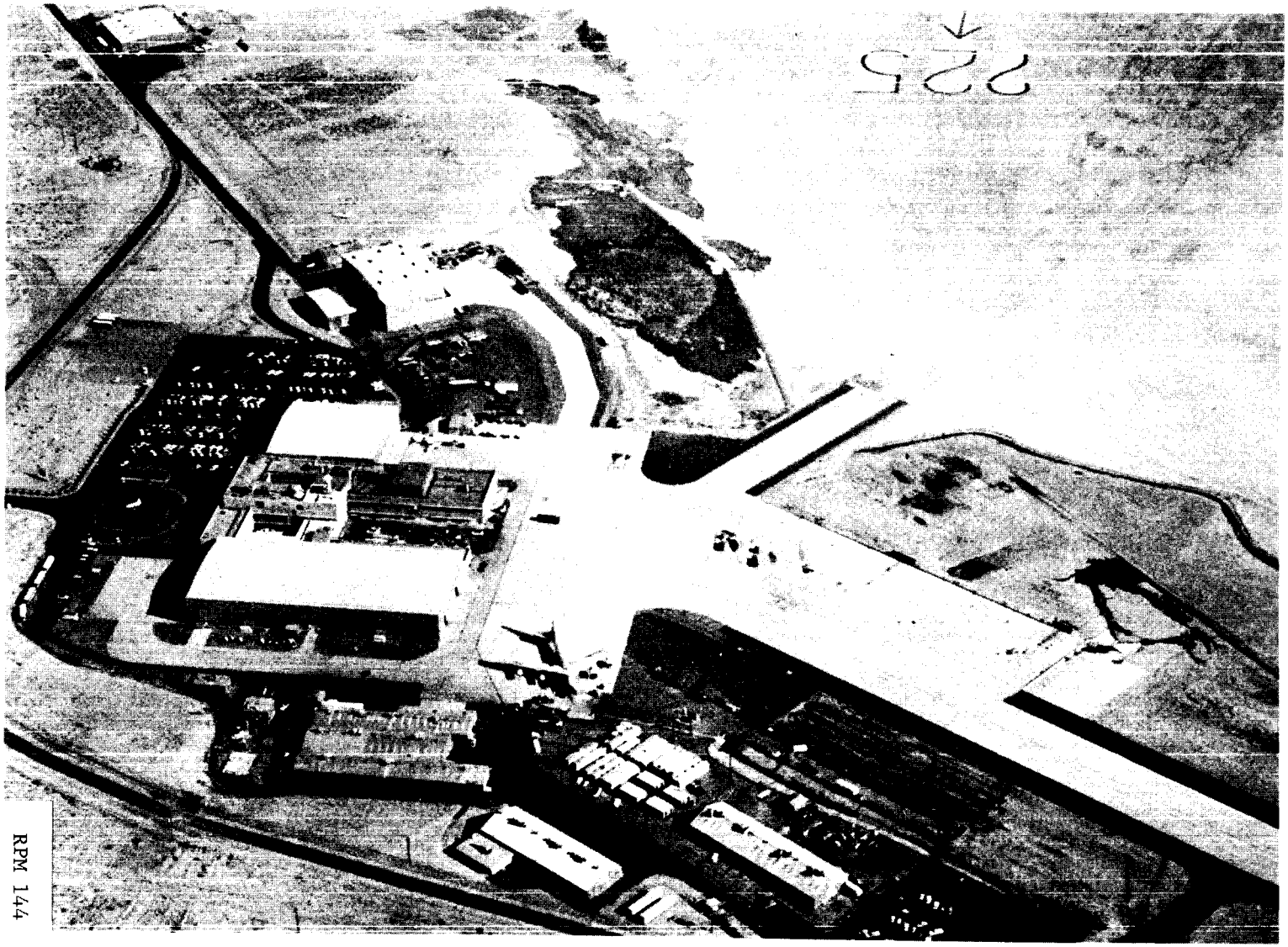
MF-D-013

FLIGHT RESEARCH CENTER
FISCAL YEAR 1975 ESTIMATES
LOCATION PLAN



1 LABORATORY BUILDING (4800)
2 AIRCRAFT CONSTRUCTION AND MODIFICATION HANGAR (4801)
3 MAIN HANGAR (4802)
4 AIRCRAFT TIRE REPAIR SHOP (4803)
5 TRAILER PARK AND MODULAR BUILDINGS
6 BOILER HOUSE (4805)
7 SHOPS (AGE, MODEL, BATTERY, GARAGE)(4806)
8 STORAGE BUILDING (4807A)
9 PHYSIOLOGY STRESS LAB. (4807B)
10 WAREHOUSE Nº 2 (4808)
11 WAREHOUSE Nº 3 (4809)
12 WAREHOUSE Nº 4 (4810)
13 HIGH TEMPERATURE LOADS CALIBRATION FACILITY (4820)
14 PAINT SPRAY BUILDING (4821)
15 PAINT STORAGE BUILDING (4822)
16 COMMUNICATIONS BUILDING (4824)
17 MAINTENANCE DOCK (4826)
18 FIBERGLASS SPRAY BOOTH (4830)
19 WAREHOUSE Nº 5 (4831)
20 RADAR BUILDING (4870)
21 100 FT. TOWER, BORESIGHT TARGET ASSEMBLY AND EQUIPMENT (4887)
22 CENTRAL STANDBY ELECTRICAL POWER FACILITY (4889)
23 STORAGE BUILDING (4804)
24 AIRCRAFT SERVICING DOCK (4823)
25 FPS-16 RADAR FACILITY (4982)

FLIGHT RESEARCH CENTER
FISCAL YEAR 1975 ESTIMATES



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RESEARCH AND PROGRAM MANAGEMENT

FISCAL YEAR 1975 ESTIMATES

LANGLEY RESEARCH CENTER

MISSION

The Langley Research Center is responsible for complex research programs in aeronautics, space science, electronics, and structures, all of which help insure United States leadership in aeronautics and space exploration. Major projects include management of the Viking project; development of several aeronautical and space vehicle concepts; consultation and research aid to many Governmental agencies, industry, and universities; and release of research results to scientific and technical communities.

A substantial percentage of the Center's research work is development of advanced concepts and technology for future aircraft, with particular emphasis on environmental effects, performance, range, safety, and economy. Examples of this research are projects involving the supercritical wing, composite structural materials, and automatic flight control systems. Work continues in the development of technology for helicopters and avionic systems for reliable operations in terminal areas of the future.

Vigorous efforts continue to improve supersonic flight capabilities for both transport and military aircraft. Configurations under study attempt to maximize the favorable interference effects of aerodynamics and propulsion. The advanced research program is also aimed at the technology required for aircraft performance in the hypersonic speed range.

The Center works with the general aviation industry to help solve problems concerning aircraft design, to generate and consolidate data and techniques for new designs and load requirements, and to develop new devices to improve flight operations. Simplified, low-cost electronic systems that will aid stability, navigation, and collision warning are also being developed.

Materials and structural systems are being evolved to work efficiently in critical environments; practical methods of cooling high-heat areas of aircraft surfaces are being studied; and the technology of hypersonic ramjet engines is being developed.

Other aeronautical research focuses on critical problems of aircraft engine noise, alleviation of trailing vortices, increased traction and control of landing gear, and improved physical comfort in aircraft.

Langley has complete responsibility for NASA's Viking, a spacecraft that will orbit and land on Mars in 1976. Viking will permit a detailed study of Martian geophysics, atmospheric characteristics, surface properties and, most significantly, experiments that will indicate if life forms are present on the planet. The Center was selected to manage the Viking project because of the Center's experience and contributions to advanced technology in the fields of atmospheric entry heat shielding, space vehicle recovery systems, rocket propulsion, intrumentation, and electronics.

Unmanned spacecraft programs are supported by the development of experiments and sensors, communications, and data handling systems. These programs include the remote sensing of water and air pollution, survey of earth resources, and the application of space technology to measure various physical phenomena ranging from ocean wave heights to upper atmospheric composition.

Scout launch vehicle operations and improvements in national and international satellite experiments are long-time Langley responsibilities.

A ground-based research program is the investigation of effects on space vehicles such as heat, vacuum, noise, and meteoroids; the development and use of advanced composite and polymeric materials to structures and thermal control systems; and improved technology for antenna and power amplifiers, batteries, high-capacity computer memories, logic circuits, and other advanced microelectronic devices.

DESCRIPTION

The Langley Research Center, Hampton, Virginia, is located approximately 100 air miles south of Washington, D.C. The Center occupies 772 acres of Government-owned land, divided into two areas by the runway facilities of Langley Air Force Base. The West Area consists of 749 acres, 430 owned by NASA and 318 under permit from the Air Force. The East Area comprises 23 acres under Air Force permit. Runways, some utilities, and certain other facilities are used jointly by NASA and the Air Force. In addition, there are 110 acres of NASA-owned land located in the City of Newport News, Virginia, 3,277 acres under permit from the Air Force, and 9 acres under lease. The total acreage presently owned, under permit, or leased, is 4,168. The total capital investment, including fixed assets in progress, and contractor-held facilities at various locations as of June 30, 1973, was $445,589,000.

SUMMARY OF RESOURCES REQUIREMENTS

FUNDS

	1973	1974	1975	Change in 1975
Personnel.....	$67,234,000	$70,298,000	$72,601,000	$+2,303,000
Travel.....	1,832,000	1,900,000	1,910,000	+10,000
Facilities Services....	5,715,000	5,704,000	5,895,000	+191,000
Technical Services.....	1,148,000	1,301,000	1,208,000	-93,000
Administrative Support.	2,668,000	3,186,000	3,375,000	+189,000
Total, fund requirements.....	$78,597,000	$82,389,000	$84,989,000	$+2,600,000

Personnel - The increase in personnel costs reflects the full year impact of the October 1973 pay raise and the normal impact of promotions and within-grade advances. There will also be increased training costs associated with a revitalized apprentice program and higher tuition costs for regular training programs.

Travel - The increased travel costs in FY 1975 are the result of the full year effect of transportation contract increases effective in FY 1974.

Facilities Services - The increase in this function is attributable to several factors. The sharply rising price of fossil fuel is having a substantial impact on the total cost of energy despite a cutback in consumption. Spiraling labor costs for support services to maintain the facilities are another major factor.

Technical Services - The decrease is due to the completion of the equipment acquisition and major software systems development for the Langley business computer in FY 1974.

Administrative Support - The increase results from a rate increase in communications, the expansion of the environmental health program and a one-time cost to consolidate warehousing operations into a central complex.

PERSONNEL

	1973	1974	1975	Change in 1975
I. PERSONNEL.....	$67,234,000	$70,298,000	$72,601,000	$+2,303,000

Basis of Fund Requirements

	1973	1974	1975
A. Compensation and Benefits:			
1. Compensation:			
a. Permanent positions....	$60,322,000	$62,788,000	$64,770,000
b. Nonpermanent positions.	622,000	772,000	976,000
c. Overtime and other compensation.....	471,000	538,000	546,000
Subtotal, Compensation.....	$61,415,000	$64,098,000	$66,292,000
2. Benefits.....	$5,388,000	$5,710,000	$5,794,000
Subtotal, Compensation and Benefits.....	$66,803,000	$69,808,000	$72,086,000
B. Supporting Costs:			
1. Transfer of personnel.....	$28,000	$40,000	$40,000
2. Personnel training.....	403,000	450,000	475,000
Subtotal, Supporting Costs.	$431,000	$490,000	$515,000
Total, Personnel and Related Costs.....	$67,234,000	$70,298,000	$72,601,000
1. Compensation.....	$61,415,000	$64,098,000	$66,292,000
a. Permanent Positions.....	$60,322,000	$62,788,000	$64,770,000

The funds shown above will support 3,371 permanent positions in FY 1974 and FY 1975.

Distribution of Permanent Positions by Program

	1973	1974	1975
Direct Positions			
Manned Space Flight			
Space flight operations	56	64	62
Apollo	2	---	---
Space Science			
Physics and astronomy	72	85	55
Lunar and planetary exploration	252	275	277
Launch vehicle procurement	51	54	54
Applications	117	202	227
Technology Utilization	9	11	14
Aeronautics and Space Technology			
Aeronautical research and technology	1,164	1,408	1,439
Space and nuclear research and technology	463	518	489
Tracking and Data Acquisition	20	13	13
Subtotal, direct positions	2,206	2,630	2,630
Indirect Positions			
Director and staff	13	10	10
Administrative support	536	418	418
Research and development support	656	313	313
Subtotal, indirect positions	1,205	741	741
Total, permanent positions	3,411	3,371	3,371
Other than permanent positions	233	308	312
Total	3,644	3,679	3,683

Distribution of Permanent Positions by Program

	1973	1974	1975
Direct Positions			
Manned Space Flight			
Space flight operations	56	64	62
Apollo	2	---	---
Space Science			
Physics and astronomy	72	85	55
Lunar and planetary exploration	252	275	277
Launch vehicle procurement	51	54	54
Applications	117	202	227
Technology Utilization	9	11	14
Aeronautics and Space Technology			
Aeronautical research and technology	1,164	1,408	1,439
Space and nuclear research and technology	463	518	489
Tracking and Data Acquisition	20	13	13
Subtotal, direct positions	2,206	2,630	2,630
Indirect Positions			
Director and staff	13	10	10
Administrative support	536	418	418
Research and development support	656	313	313
Subtotal, indirect positions	1,205	741	741
Total, permanent positions	3,411	3,371	3,371
Other than permanent positions	233	308	305
Total	3,644	3,679	3,676

In 1975 the cost of permanent positions will be $64,770,000, an increase of $1,982,000 from 1974. This increase results as follows:

Cost of permanent positions in 1974.....		$62,788,000
Cost increases in 1975.....		+2,585,000
Within-grade advances and career development:		
Full year effect of 1974 actions.....	$+648,000	
Partial year effect of 1975 actions.....	+777,000	
Extra data in 1975.....	+249,000	
Full year effect of October 1973 pay raise..	+911,000	
Cost decreases in 1975.....		-603,000
Abolished positions:		
Full year effect of 1974 actions.....	-423,000	
Partial year effect of 1975 actions.....	-80,000	
Turnover savings.....	-100,000	
Cost of permanent positions in 1975.....		$64,770,000

	1973	1974	1975
b. Nonpermanent positions.....	$622,000	$772,000	$976,000

The increase shown in 1975 reflects the full year cost of those nonpermanent programs that reach full strength during FY 1974. The FY 1974 and FY 1975 plans include 308 and 312 nonpermanent positions respectively.

The Langley summer employment program utilizes 210 positions, of which 135 are used to hire college students during the summer to provide them with exposure to NASA programs and Government operations. The remaining 75 positions are used for participation in the Presidents Youth Opportunity campaign. In the latter program approximately 40 of these positions continue during the school year.

Work-study cooperative training programs account for 85 of the positions. The program is an excellent source for recruiting individuals where requirements exist for highly specialized training.

The remaining 17 positions are used to employ individuals of varying skills to meet temporary requirements, usually for less than 6 months.

c. Overtime and Other Compensation..	$471,000	$538,000	$546,000

Increases in FY 1974 and FY 1975 estimates are due to the October 1973 pay raise and to support Viking as it approaches the 1975 launch date.

In 1975 the cost of permanent positions will be $64,770,000, an increase of $1,982,000 from 1974. This increase results as follows:

Cost of permanent positions in 1974.....		$62,788,000
Cost increases in 1975.....		+2,585,000
Within-grade advances and career development:		
Full year effect of 1974 actions.....	$+648,000	
Partial year effect of 1975 actions.....	+777,000	
Extra data in 1975.....	+249,000	
Full year effect of October 1973 pay raise..	+911,000	
Cost decreases in 1975.....		-603,000
Abolished positions:		
Full year effect of 1974 actions.....	-423,000	
Partial year effect of 1975 actions.....	-80,000	
Turnover savings.....	-100,000	
Cost of permanent positions in 1975.....		$64,770,000

	1973	1974	1975
b. Nonpermanent positions.....	$622,000	$772,000	$976,000

The increase shown in 1975 reflects the full year cost of those nonpermanent programs that reach full strength during FY 1974. The FY 1974 and FY 1975 plans include 308 and 305 nonpermanent positions respectively.

The Langley summer employment program utilizes 210 positions, of which 135 are used to hire college students during the summer to provide them with exposure to NASA programs and Government operations. The remaining 100 positions are used for participation in the Presidents Youth Opportunity campaign. In the latter program approximately 40 of these positions continue during the school year.

Work-study cooperative training programs account for 85 of the positions. The program is an excellent source for recruiting individuals where requirements exist for highly specialized training.

The remaining 17 positions are used to employ individuals of varying skills to meet temporary requirements, usually for less than 6 months.

c. Overtime and Other Compensation..	$471,000	$538,000	$546,000

Increases in FY 1974 and FY 1975 estimates are due to the October 1973 pay raise and to support Viking as it approaches the 1975 launch date.

	1973	1974	1975
2. Benefits.....	$5,388,000	$5,710,000	$5,794,000

The following table distributes these costs by major categories:

Category of Cost			
Contribution to the Civil Service Retirement Fund....	$4,222,000	$4,534,000	$4,664,000
Contribution for employee life insurance.....	227,000	262,000	273,000
Contribution for employee health insurance.....	673,000	700,000	714,000
Contribution to FICA.....	11,000	13,000	13,000
Incentive awards.....	25,000	35,000	35,000
Other personnel benefits.....	78,000	95,000	95,000
Severance pay.....	152,000	71,000	---
Total.....	$5,388,000	$5,710,000	$5,794,000

B. Supporting Costs.....	$431,000	$490,000	$515,000
1. Transfer of personnel.....	$28,000	$40,000	$40,000

During FY 1975 it is planned that the requirements for replacement personnel entitled to transfer benefits will remain at the same level as FY 1974.

2. Personnel training.....	$403,000	$450,000	$475,000

Part of the increase from FY 1974 reflects the changing emphasis in the Langley training program to upgrade the skills and potential of the nonprofessional work force. The remainder is due to higher tuition and contract fees in the conduct of this program.

TRAVEL

	1973	1974	1975	Change in 1975
II. TRAVEL.....	$1,832,000	$1,900,000	$1,910,000	$+10,000

Basis of Fund Requirements

Summary of Travel by Major Category

	1973	1974	1975
A. Program Travel.....	$1,409,000	$1,389,000	$1,389,000
B. Administrative Travel.....	271,000	340,000	350,000
C. Meetings and Technical Seminars..	152,000	171,000	171,000
Total, Travel.....	$1,832,000	$1,900,000	$1,910,000
A. Program Travel.....	$1,409,000	$1,389,000	$1,389,000

The Viking program, for which Langley has project management responsibility, will be the first United States mission to land on Mars. The landings are scheduled for 1976. This project involves Lander Systems Development and Systems Integration; Orbiter System Development by Jet Propulsion Laboratory in Pasadena, California; Launch Vehicle System Development by Lewis Research Center, Cleveland, Ohio; and a large number of scientists and major subcontractors at a wide number of geographical locations. Critical design reviews and hardware fabrication activities will be peaking in 1974 and 1975. Preflight planning activities at the Kennedy Space Center launch site and the Jet Propulsion Laboratory Space Flight Operations Facility will be increasing in frequency in 1975 as the launch date draws closer. Langley travel requirements for Viking will grow from $780,000 in 1973 to $900,000 in 1974 and 1975 to support hardware development, preflight, launch and mission support.

The ongoing Langley-managed Scout launch vehicle project will require a level for program management travel of $103,000 in 1975.

The Air Density/Hawkeye Neutral Point Explorer space flight project will require $25,000 in 1974 to support the initial design and hardware development.

Langley's current programs (exclusive of Viking, Scout and Air/Density Hawkeye) involve about 1,000 significant (over $10,000) contracts and grants with a dollar value of over $100 million placed in over 40 states. Over 200 of these contracts and grants, with a value of more than $12 million, were with more than 50 academic institutions. Travel to monitor these contracts, which represent a substantial investment, will be approximately $130,000 in 1975, an increase over 1974.

Major ongoing or newly emerging aeronautics projects, and general aeronautics research programs, will require increasing travel in accordance with the increasing Agency Aeronautics R&T funding levels in 1975 and will expend a majority of the remaining travel funds in this category.

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	1973	1974	1975
B. Administrative Travel.....	$271,000	$340,000	$350,000

An increase in the cost of the local transportation contract and higher GSA rates for rental of motor vehicles account for the increase from FY 1973 to FY 1974. The increase in FY 1975 reflects the full year effect of the transportation contract.

C. Meetings and Technical Seminars..	$152,000	$171,000	$171,000

The level of attendance at meetings and technical seminars will decrease in FY 1975 as a result of increased costs per trip. Participation in other than Government sponsored meetings and technical seminars is becoming ever more important and is being limited mainly by the availability of travel funds.

FACILITIES SERVICES

	1973	1974	1975	Change in 1975
III. FACILITIES SERVICES	$5,715,000	$5,704,000	$5,895,000	$191,000

Basis of Fund Requirements

Summary of Facilities Services

	1973	1974	1975
A. Maintenance and Related Services			
1. Maintenance, repair, and alterations of buildings and grounds.....	$1,233,000	$949,000	$994,000
2. Custodial services.....	1,227,000	1,238,000	1,242,000
3. Maintenance of equipment.....	75,000	75,000	80,000
Subtotal.....	$2,535,000	$2,262,000	$2,316,000
B. Operation of Facilities			
1. Utilities.....	$1,934,000	$2,192,000	$2,326,000
2. Supplies and equipment.....	1,246,000	1,250,000	1,253,000
Subtotal.....	$3,180,000	$3,442,000	$3,579,000
Total, Facilities Services.....	$5,715,000	$5,704,000	$5,895,000

	1973	1974	1975
1. Maintenance, repair, and alteration of buildings and grounds.....	$1,233,000	$949,000	$994,000

The increase in FY 1975 reflects the impact of rising wages in the construction trades on the cost of local maintenance contracts. The average rise in construction trade wages in the locality has been approximately 18 percent over the past 24 months.

2. Custodial services.....	$1,227,000	$1,238,000	$1,242,000

The slight increase in FY 1975 is due to minor wage adjustments in the janitorial services contract which was renewed in FY 1974.

3. Maintenance of equipment...	$75,000	$75,000	$80,000

The increase in FY 1975 reflects the higher cost of maintaining the more complex and automated equipment being utilized in facility operations.

D. Operation of Facilities.....	$3,180,000	$3,442,000	$3,579,000
1. Utilities.....	$1,934,000	$2,192,000	$2,326,000

The increase in FY 1975 reflects the full year effect of rate increases and provision of automatic pass—through for higher fossil fuel prices paid by the electric utility. Environmental standards are requiring the use of high cost, low sulphur fuels as they become available. A reduction in consumption of electricity does not provide sufficient savings to offset the sharply rising cost.

2. Supplies and equipment.....	$1,246,000	$1,250,000	$1,253,000

The FY 1975 estimate reflects a rise in the cost of fuel oil over the FY 1974 cost. Part of the rise in cost will be absorbed through decreased consumption. The price of heating oil for the Center has risen $.07 a gallon within the past six months.

TECHNICAL SERVICES

	1973	1974	1975	Change in 1975
IV. TECHNICAL SERVICES.	$1,148,000	$1,301,000	$1,208,000	$-93,000

Basis of Fund Requirements

Summary of Technical Services

	1973	1974	1975
A. Automatic Data Processing			
1. Equipment.....	$171,000	$100,000	$74,000
2. Programming and operation services.....	876,000	1,050,000	978,000
Subtotal.....	$1,047,000	$1,150,000	$1,052,000
B. Scientific and Technical Information and Educational Programs			
1. Educational/information programs.....	$101,000	$151,000	$156,000
Total, Technical Services.....	$1,148,000	$1,301,000	$1,208,000
A. Automatic Data Processing.....	$1,047,000	$1,150,000	$1,052,000
1. Equipment.....	$171,000	$100,000	$74,000

The decrease in FY 1975 reflects essential completion of installation in FY 1974 of the new Langley business computer. The amount shown reflects the annual maintenance costs and provision for purchase of minor peripheral equipment.

2. Programming and operation services.....	$876,000	$1,050,000	$978,000

The decrease in FY 1975 reflects completion in FY 1974 of the major systems programming effort for the business computer. These costs will continue to decrease somewhat in future years as other programming tasks are completed.

B. Scientific and Technical Information and Educational Programs	$101,000	$151,000	$156,000

The increase in FY 1975 is due to increased costs in the support services contract to operate the Visitor's Center for Langley at the same saffing level as in FY 1974.

ADMINISTRATIVE SUPPORT

	1973	1974	1975	Change in 1975
V. ADMINISTRATIVE SUPPORT.....	$2,668,000	$3,186,000	$3,375,000	$+189,000

Basis of Fund Requirements

Summary of Administrative Support

	1973	1974	1975
A. Communications			
1. Leased lines and long distance tolls.....	$296,000	$366,000	$400,000
2. Local telephone service.....	620,000	747,000	760,000
3. Other communications.....	3,000	8,000	8,000
Subtotal.....	$919,000	$1,121,000	$1,168,000
B. Administrative Printing.....	$40,000	$40,000	$41,000
C. Supplies, Materials, and Equipment.....	$487,000	$520,000	$555,000
D. Transportation			
1. Center operations.....	$147,000	$248,000	$270,000
2. Common carrier.....	224,000	242,000	254,000
Subtotal.....	$371,000	$490,000	$524,000
E. Administrative Support Services			
1. Installation support services.....	$806,000	$815,000	$887,000
2. Occupational medicine and environmemtal health.....	45,000	200,000	200,000
Subtotal.....	$851,000	$1,015,000	$1,087,000
Total, Administrative Support...	$2,668,000	$3,186,000	$3,375,000

	1973	1974	1975
A. Communications.....	$919,000	$1,121,000	$1,168,000

The increase in FY 1975 is related to annualization of the rate changes implemented in FY 1974 and FTS rates already known for FY 1975. There is no significant change in levels of service from FY 1974.

B. Administrative Printing.....	$40,000	$40,000	$41,000

The level of administrative printing is not expected to change during FY 1975.

C. Supplies, Materials, and Equipment.....	$487,000	$520,000	$555,000

The price trends for supplies and equipment during the past year has resulted in an increase in FY 1975 to support the same level of consumption as in prior years.

D. Transportation.....	$371,000	$490,000	$524,000
1. Center operations.....	$147,000	$248,000	$270,000

The increases in FY 1974 and FY 1975 reflect a major effort to increase the efficiency of the NASA 1 Aircraft in transporting employees on official travel. The NASA 1 annual flight time has been increased from 600 hours to 1,200 hours. The amount shown for FY 1975 provides for the full year cost to support this aircraft. The level of support for other center operations remains constant.

2. Common carrier.....	$224,000	$242,000	$254,000

The increase in FY 1975 reflects adjusted contract costs and provides for increased rates due to rising fuel costs.

E. Administrative Support Services.	$851,000	$1,015,000	$1,087,000
1. Installation support services.....	$806,000	$815,000	$887,000

The increase in FY 1975 is required to relocate and consolidate scattered warehousing into a centralized location. The level of support in this area remains the same as for FY 1974.

	1973	1974	1975
2. Occupational medicine and environmental health.....	$45,000	$200,000	$200,000

The dramatic increase in FY 1974 and FY 1975 is the result of planned management action to bring the occupational health industrial programs into conformance with Agency goals and directives. The primary change is the expansion of the physical examination program to cover all Langley employees on at least a triennial basis.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Organizational and Staffing Chart
Langley Research Center

January 8, 1974

OFFICE OF DIRECTOR

	74	75
Excepted	4	4
GS-15	2	2
Other GS	4	4
Total	10	10

DIRECTOR FOR CENTER DEVELOPMENT AND EXTERNAL AFFAIRS

	74	75
Excepted	1	1
GS-16	1	-
GS-15	2	2
GS-14	1	1
Other GS	20	21
Total	25	25

OFFICE OF SCIENTIFIC AND TECHNICAL INFORMATION PROGRAMS

	74	75
GS-15	1	1
Other GS	58	59
Wage Grade	14	13
Total	73	73

DIRECTOR FOR AERONAUTICS

	74	75
Excepted	1	1
GS-16	1	1
GS-15	2	2
Other GS	2	2
Total	6	6

AERONAUTICAL SYSTEMS OFFICE

	74	75
Excepted	1	1
GS-16	1	1
GS-15	7	7
GS-14	4	5
Other GS	6	5
Total	19	19

RESEARCH AIRCRAFT FLIGHT DIVISION

	74	75
GS-15	5	5
GS-14	13	13
Other GS	52	51
Wage Grade	3	3
Total	73	73

HIGH-SPEED AIRCRAFT DIVISION

	74	75
Excepted	1	1
GS-16	2	1
GS-15	17	17
GS-14	15	15
Other GS	92	93
Total	127	127

HYPERSONIC VEHICLES DIVISION

	74	75
Excepted	1	1
GS-16	1	1
GS-15	9	9
GS-14	11	11
Other GS	65	65
Total	87	87

LOW-SPEED AIRCRAFT DIVISION

	74	75
Excepted	1	1
GS-15	11	11
GS-14	9	9
Other GS	46	46
Total	67	67

DIRECTOR FOR SPACE

	74	75
Excepted	1	1
GS-15	7	7
GS-14	5	5
Other GS	6	6
Total	19	19

ENVIRONMENTAL AND SPACE SCIENCES DIVISION

	74	75
Excepted	1	1
GS-15	9	9
GS-14	11	12
Other GS	44	43
Total	65	65

SPACE SYSTEMS DIVISION

	74	75
GS-15	8	8
GS-14	11	11
Other GS	65	65
Total	84	84

SCOUT PROJECT OFFICE

	74	75
GS-15	4	4
GS-14	8	8
Other GS	25	25
Total	37	37

SPACE APPLICATIONS AND TECHNOLOGY DIVISION

	74	75
Excepted	1	1
GS-15	8	8
GS-14	17	17
Other GS	58	58
Total	84	84

DIRECTOR FOR SYSTEMS ENGINEERING AND OPERATIONS

	74	75
Excepted	1	1
GS-15	4	4
GS-14	4	4
Other GS	9	9
Total	18	18

FABRICATION DIVISION

	74	75
GS-15	1	1
GS-14	3	3
Other GS	408	408
Wage Grade	2	2
Total	414	414

SYSTEMS ENGINEERING DIVISION

	74	75
GS-15	8	8
GS-14	18	18
Other GS	150	150
Total	176	176

RESEARCH FACILITIES ENGINEERING DIVISION

	74	75
GS-15	8	8
GS-14	13	13
Other GS	62	62
Total	83	83

OPERATIONS SUPPORT DIVISION

	74	75
GS-15	1	1
GS-14	2	2
Other GS	453	454
Wage Grade	16	15
Total	472	472

PLANT ENGINEERING DIVISION

	74	75
GS-15	1	1
GS-14	4	5
Other GS	92	93
Wage Grade	18	16
Total	115	115

DIRECTOR FOR ADMINISTRATION

	74	75
Excepted	2	2
GS-15	4	4
GS-14	3	3
Other GS	9	9
Total	18	18

FINANCIAL MANAGEMENT DIVISION

	74	75
GS-15	1	1
GS-14	1	1
Other GS	58	58
Total	60	60

BUSINESS DATA SYSTEMS DIVISION

	74	75
Excepted	1	1
Other GS	21	21
Total	22	22

PERSONNEL DIVISION

	74	75
GS-15	1	1
GS-14	3	4
Other GS	43	42
Total	47	47

MANAGEMENT SUPPORT DIVISION

	74	75
GS-15	1	1
Other GS	73	73
Total	74	74

PROCUREMENT DIVISION

	74	75
Excepted	1	1
GS-14	5	5
Other	69	69
Total	75	75

PROGRAMS AND RESOURCES DIVISION

	74	75
GS-15	1	1
Other	16	16
Total	17	17

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Organizational and Staffing Chart
Langley Research Center

STAFFING SUMMARY

	74	75
Excepted	32	32
GS-16	16	13
GS-15	191	195
GS-14	303	310
Other GS	2776	2772
Wage Grade	53	49
Total	3371	3371

OFFICE OF DIRECTOR

	74	75
Excepted	4	4
GS-15	2	2
Other GS	4	4
Total	10	10

VIKING PROJECT OFFICE

	74	75
Excepted	3	3
GS-16	2	1
GS-15	15	15
GS-14	31	32
Other GS	95	95
Total	146	146

DIRECTOR FOR ELECTRONICS

	74	75
Excepted	2	2
GS-15	3	3
GS-14	1	1
Other GS	5	5
Total	11	11

ANALYSIS AND COMPUTATION DIVISION

	74	75
Excepted	1	1
GS-16	1	1
GS-15	6	6
GS-14	11	11
Other GS	111	111
Total	130	130

INSTRUMENT RESEARCH DIVISION

	74	75
Excepted	1	1
GS-15	4	4
GS-14	15	15
Other GS	150	150
Total	170	170

FLIGHT DYNAMICS AND CONTROL DIVISION

	74	75
Excepted	1	1
GS-16	2	2
GS-15	7	5
GS-14	11	12
Other GS	54	52
Total	75	75

FLIGHT INSTRUMENTATION DIVISION

	74	75
Excepted	1	1
GS-15	9	9
GS-14	31	31
Other GS	169	169
Total	210	210

DIRECTOR FOR STRUCTURES

	74	75
Excepted	2	2
GS-14	1	1
Other GS	2	2
Total	5	5

ACOUSTICS AND NOISE REDUCTION DIVISION

	74	75
Excepted	1	1
GS-16	1	1
GS-15	5	5
GS-14	9	10
Other GS	50	48
Total	66	66

STRUCTURES AND DYNAMICS DIVISION

	74	75
Excepted	1	1
GS-16	2	2
GS-15	12	12
GS-14	27	27
Other GS	82	82
Total	124	124

MATERIALS DIVISION

	74	75
Excepted	1	1
GS-16	2	2
GS-15	7	8
GS-14	5	5
Other GS	52	51
Total	67	67

DIRECTOR FOR AERONAUTICS

	74	75
Excepted	1	1
GS-16	1	1
GS-15	2	2
Other GS	2	2
Total	6	6

AERONAUTICAL SYSTEMS OFFICE

	74	75
Excepted	1	1
GS-16	1	1
GS-15	7	7
GS-14	4	5
Other GS	6	5
Total	19	19

RESEARCH AIRCRAFT FLIGHT DIVISION

	74	75
GS-15	5	5
GS-14	13	13
Other GS	52	51
Wage Grade	3	3
Total	73	73

HIGH-SPEED AIRCRAFT DIVISION

	74	75
Excepted	1	1
GS-16	2	1
GS-15	17	17
GS-14	15	15
Other GS	92	93
Total	127	127

HYPERSONIC VEHICLES DIVISION

	74	75
Excepted	1	1
GS-16	1	1
GS-15	9	9
GS-14	11	11
Other GS	65	65
Total	87	87

LOW-SPEED AIRCRAFT DIVISION

	74	75
Excepted	1	1
GS-15	11	11
GS-14	9	9
Other GS	46	46
Total	67	67

DIRECTOR FOR SPACE

	74	75
Excepted	1	1
GS-15	7	7
GS-14	5	5
Other GS	6	6
Total	19	19

ENVIRONMENTAL AND SPACE SCIENCES DIVISION

	74	75
Excepted	1	1
GS-15	9	9
GS-14	11	12
Other GS	44	43
Total	65	65

SPACE SYSTEMS DIVISION

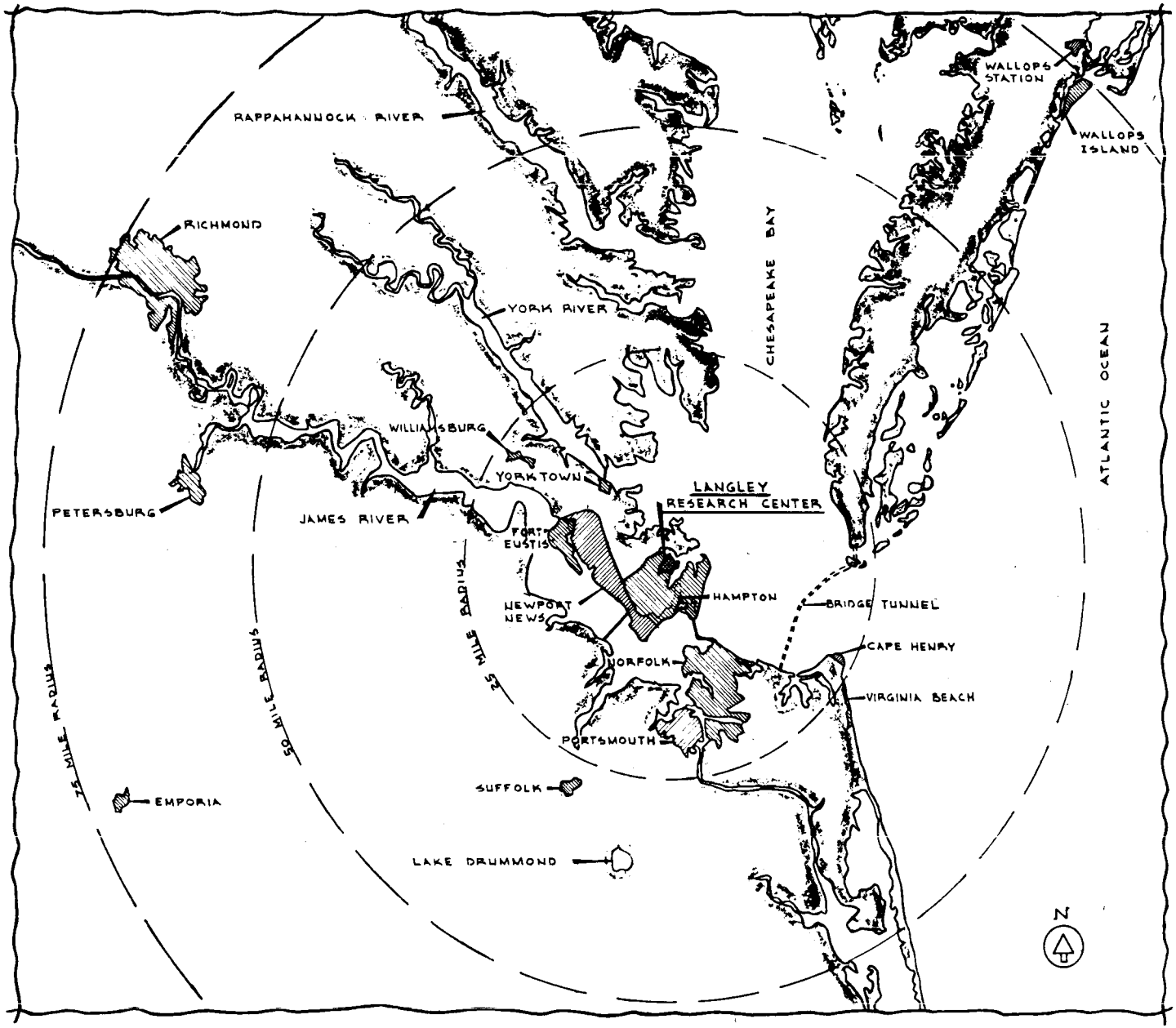
	74	75
GS-15	8	8
GS-14	11	11
Other GS	65	65
Total	84	84

SCOUT PROJECT OFFICE

	74	75
GS-15	4	4
GS-14	8	8
Other GS	25	25
Total	37	37

SPACE APPLICATIONS AND TECHNOLOGY DIVISION

	74	75
Excepted	1	1
GS-15	8	8
GS-14	17	17
Other GS	58	58
Total	84	84



LANGLEY RESEARCH CENTER AND VICINITY

1" = 8 MILES

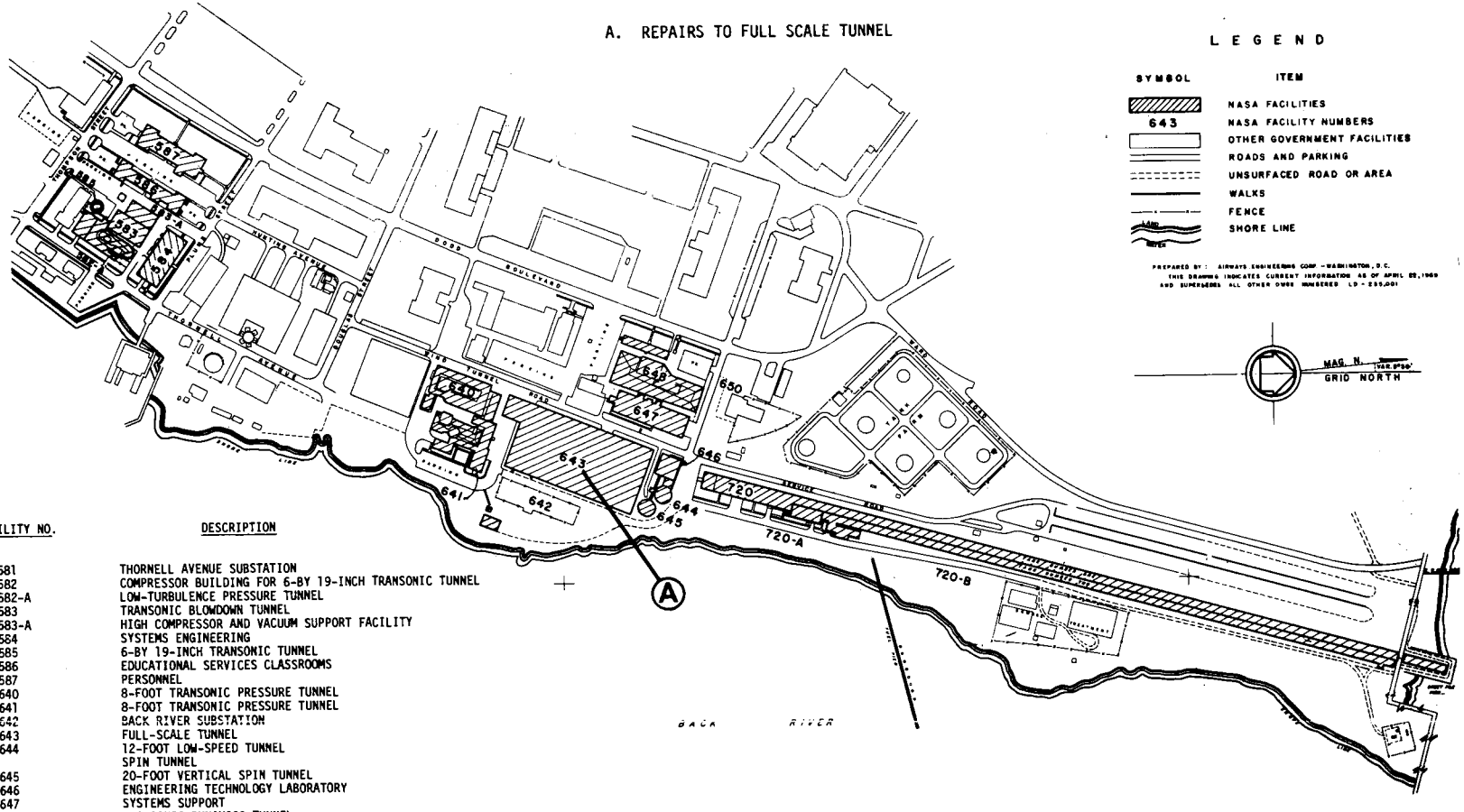
LANGLEY RESEARCH CENTER

FISCAL YEAR 1975 ESTIMATES

LOCATION PLAN

FACILITIES AUTHORIZED AND/OR UNDER CONSTRUCTION

A. REPAIRS TO FULL SCALE TUNNEL



FACILITY NO.	DESCRIPTION
581	THORNELL AVENUE SUBSTATION
582	COMPRESSOR BUILDING FOR 6-BY 19-INCH TRANSONIC TUNNEL
582-A	LOW-TURBULENCE PRESSURE TUNNEL
583	TRANSONIC BLOWDOWN TUNNEL
583-A	HIGH COMPRESSOR AND VACUUM SUPPORT FACILITY
584	SYSTEMS ENGINEERING
585	6-BY 19-INCH TRANSONIC TUNNEL
586	EDUCATIONAL SERVICES CLASSROOMS
587	PERSONNEL
640	8-FOOT TRANSONIC PRESSURE TUNNEL
641	8-FOOT TRANSONIC PRESSURE TUNNEL
642	BACK RIVER SUBSTATION
643	FULL-SCALE TUNNEL
644	12-FOOT LOW-SPEED TUNNEL SPIN TUNNEL
645	20-FOOT VERTICAL SPIN TUNNEL
646	ENGINEERING TECHNOLOGY LABORATORY
647	SYSTEMS SUPPORT
648	TRANSONIC DYNAMICS TUNNEL FLUTTER AND AEROELASTICITY
650	MATHIS ROAD SUBSTATION
720	NAVAL SHIP R & D CENTER BUILDING
720-A	DYNAMIC MODEL SHOP
720-B	IMPACTING STRUCTURES FACILITY

EAST AREA

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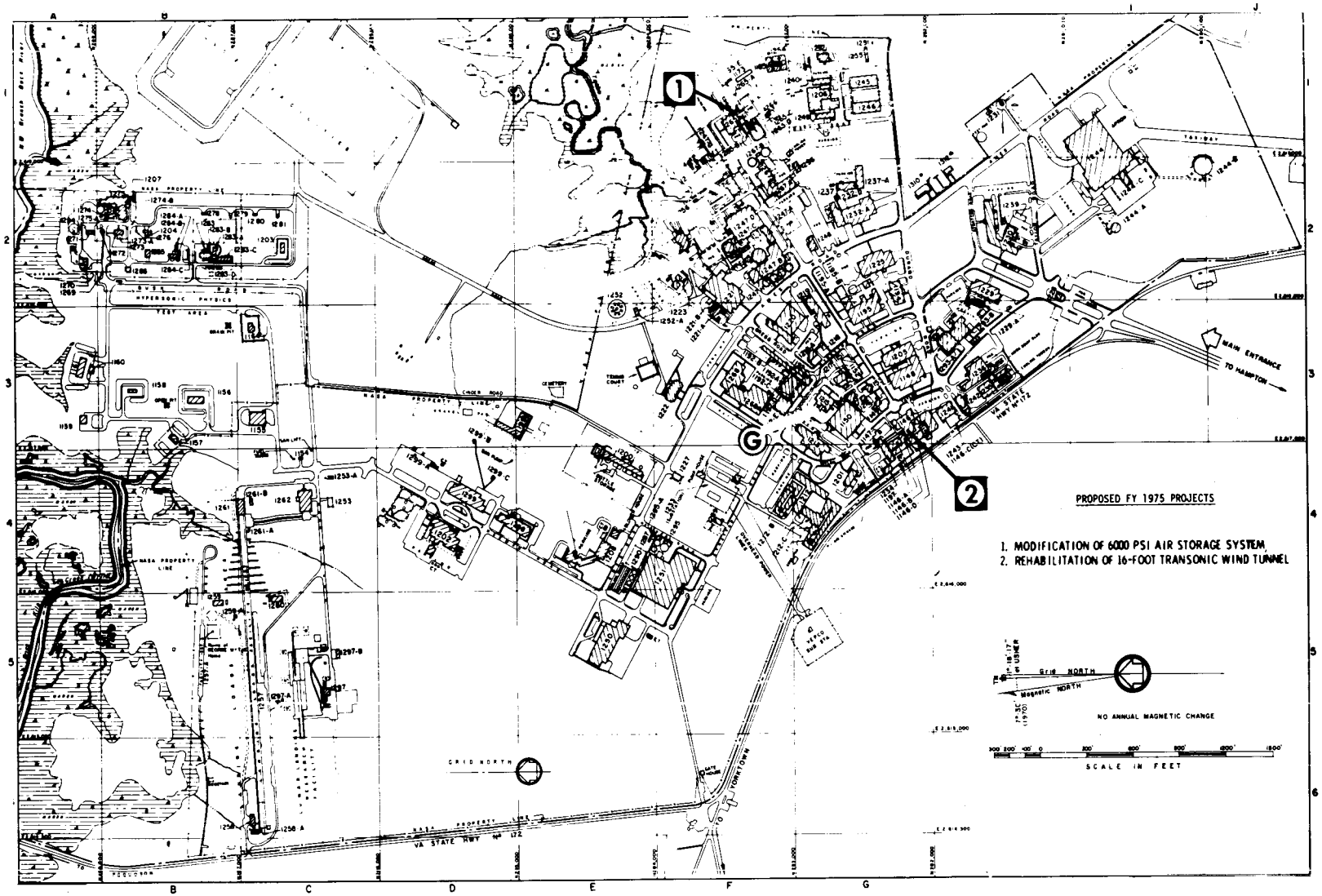
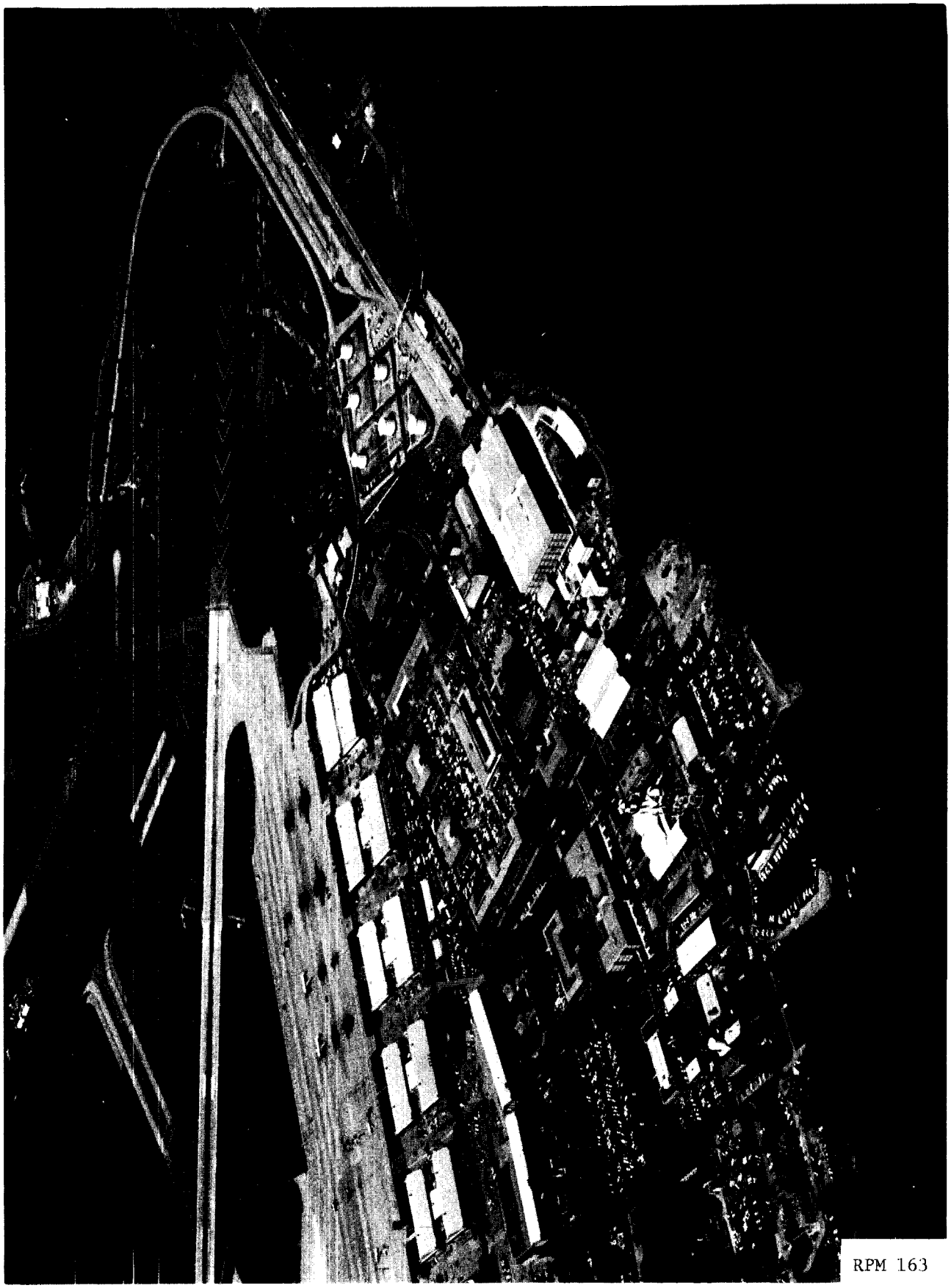
LANGLEY RESEARCH CENTER

FISCAL YEAR 1975 ESTIMATES

LOCATION PLAN



WEST AREA



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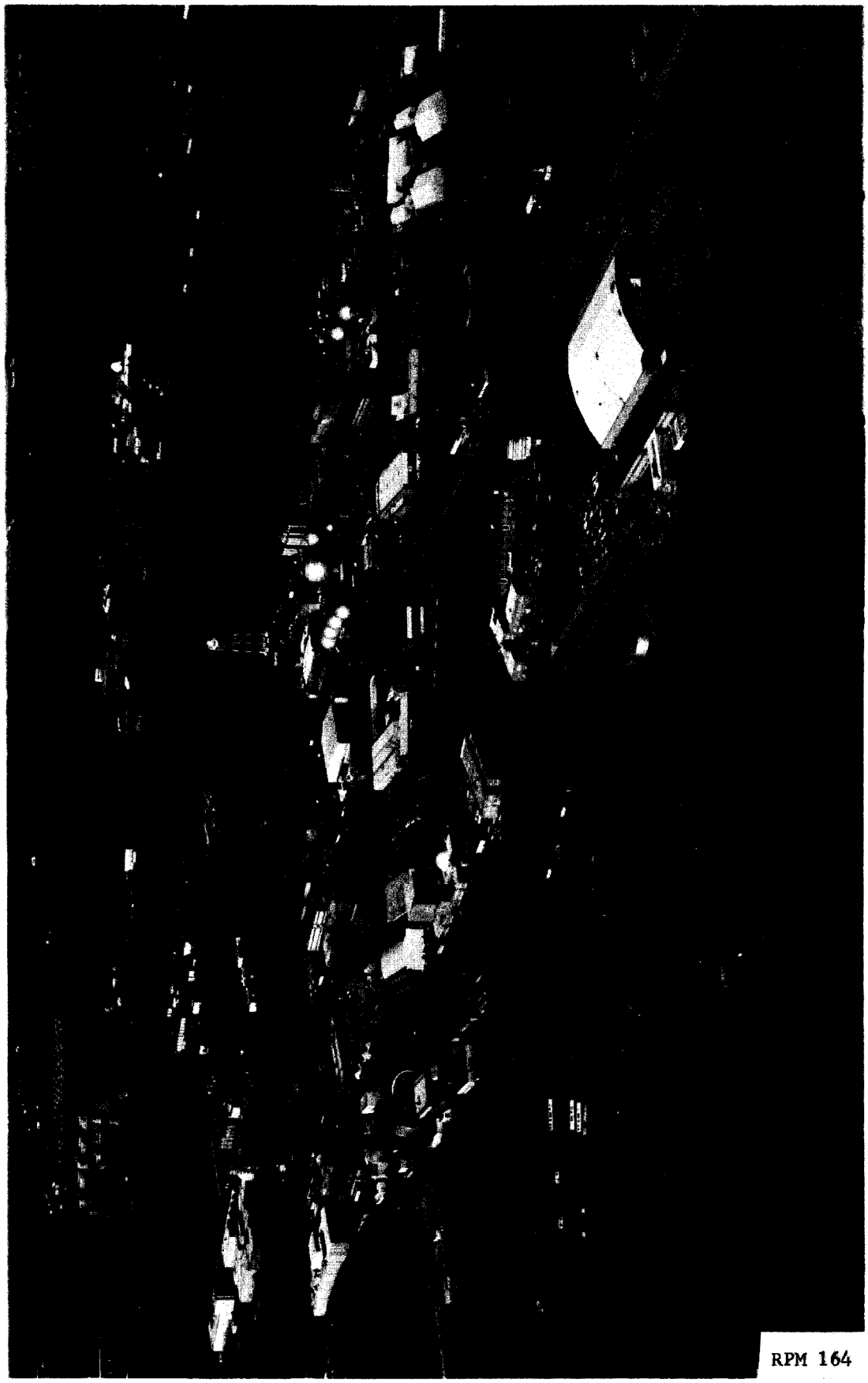

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LEWIS RESEARCH CENTER

MISSION

The Lewis Research Center's principal mission is research and technology in the areas of propulsion and power generation. The entire spectrum of R&D activities is undertaken in these fields from the fundamental understanding of physical concepts to the development of components and systems. Most of the critical areas which limit performance are thoroughly investigated as part of the in-house research effort at this Center. These in-house programs are augmented by contractual programs with industry and universities under Lewis Research Center direction.

Lewis is also responsible for the administrative, technical, and operational management of the Atlas/Centaur and Titan/Centaur launch vehicles. The Centaur is a high energy upper stage launch vehicle, particularly suited for earth orbital, synchronous and planetary missions in support of NASA and non-NASA programs. An improved Centaur stage, featuring an integrated electronics system was recently introduced into the Atlas/Centaur program and has increased Centaur reliability and mission flexibility. The integration of the improved Centaur with the Titan III booster and the development of a 14 foot diameter shroud, designed to meet the requirements of the Viking mission, is nearing completion. This activity will culminate in an engineering flight test (proof flight) in early 1974 at which time Titan/Centaur will become an operational vehicle in the NASA family.

In aeronautical propulsion, Lewis research supports many specific technology efforts. Examples are: Advanced Supersonic Technology, Low-Cost Small Engine Technology; Subsonic/Sonic CTOL Transport Propulsion; and vertical-lift fans, externally blown flaps, and augmentor wing concepts for VTOL aircraft. The engine technology for these applications requires new engine configurations for which the operating parameters and optimum geometry must be established. A major element of the in-house program is a determination of the capabilities and limitations of full-scale engines over their complete range of operation. Experimental tests of this nature are conducted in the Propulsion Systems Laboratory.

High performance engines increase the urgency of finding means to reduce aircraft noise. Lewis is conducting in-house research to identify noise sources and to develop prototype noise reducing components, particularly for current turbojet engine installations and VTOL or short-haul systems. The Quiet Fan Test Stand continues to provide valuable experimental data

on fan noise. In addition, noise reduction technology for operating jet engines is being explored through experimental work in our Vertical Lift Engine Test Facility. In the contract phase of this work, an integrated series of studies in basic noise research was started in FY 1973 and will be continued in FY 1974. A substantial contract effort to modify the J8D jet engine and implement noise reduction technology for current commercial aircraft operations will reach its peak of activity in FY 1974. Initial contracts will also be assigned in FY 1974 to define and begin development of a quiet clean short-haul experimental engine.

Aircraft engines for future subsonic and supersonic aircraft will incorporate high compressor pressure ratios and high turbine inlet temperatures. A substantial part of the aeronautics research effort at Lewis is directed toward solving the problems imposed by these two factors. Among these research efforts are: compressor casing treatment to increase compressor off-design performance; cooled turbine blades; high-speed bearings, seals, and lubricants for operation at high temperature; engine inlets; engine exhaust nozzles; combustor configurations; and engine controls.

The problems of high flight Mach number aircraft engines are also being investigated. This research spans the problems of inlets, combustion, nozzles, and engine systems.

A flight test program is being conducted with an F-106 airplane to determine the interaction of engine inlets and exhaust nozzles with wings and fuselage at transonic speeds. These flight tests complement wind tunnel tests which have limited capability in simulating the engine-airframe interactions at transonic speeds.

An experimental flight program will be carried out utilizing the YF-12 aircraft in cooperation with the Flight Research Center. Flight tests will determine static performance and dynamic characteristics of the inlet and the dynamic interaction between the propulsion system and the airframe.

Advanced integration propulsion control systems for use on subsonic/supersonic aircraft are under active analysis and development. Propulsion control techniques are being developed to increase compatibility of engine/inlet propulsion interactions with airframe and aircraft end-use requirements.

Research and development programs are providing the essential technology groundwork for an advanced, high-performance, reusable H_2-O_2 upper stage space propulsion system (Tug) destined to play a key role in NASA near-earth space missions. Engine size and weight constraints, together with payload and service demands, will require propulsion that can operate for a total life of up to 10 hours and hundreds of cycles at chamber pressures and heat flux rates far beyond the current operating regime. This work is furnishing needed technology pertaining to cooling and combustion, materials

and thermal fatigue, high-speed long-life turbomachinery, ACS thrusters, integrated auxiliary propulsion systems, cryogenic storage, inspection, validation and refurbishment techniques, reduced gravity propellant handling techniques, and safety. In-depth analytical studies are also being conducted to identify future launch vehicle requirements and to determine the feasibility of integrating various candidate upper stage vehicles with the space shuttle orbiter.

Lewis is conducting major programs in advancing the technology of electric thrusters of the electron bombardment type. Both primary and auxiliary thrusters are being developed. The overall program is directed at applying the knowledge gained from ion thruster research programs to the design, fabrication, and testing of new thruster components, integration of promising new components into thrusters sized for widest possible applications and evaluating thruster performance. Components are being tested in a system configuration to optimize their performance and life and to verify durability. The primary electric thruster program is developing qualified mercury electron bombardment thrusters for high efficiency applications; for instance, synchronous satellite raising mission and 0.1 to 3 a.u. interplanetary missions. Interactions of multi-thruster clusters are also being investigated. Pertinent information from experimental and analytical studies and demonstrated components are integrated into specific thruster system designs. Vectorable mercury electron bombardment thrusters for low-powered, long-life missions (e.g., north-south station keeping and attitude control of 5 to 10-year geosynchronous satellites) are also under development. Endurance tests of thrusters systems are performed in cyclic modes which duplicate typical mission profiles.

Power generation technology encompasses a variety of approaches for generating electricity including photovoltaic, electrochemical, static, and dynamic systems. The conversion system of broadest application in the space program has been solar cells. A major concern of solar cell systems, however, is their high cost, and Lewis is investigating methods for significantly reducing the cost of such systems without materially affecting their performance. An alternative approach, also being pursued, is an increase in solar cell efficiency which will have the dual advantages of lowering required deployment area as well as cost. Battery program objectives are to provide batteries superior in power density, reliability, and life time to present Ni-Cd types. The Aa-Zn battery with an improved organic separator shows every indication of meeting these objectives.

Longer range studies, utilizing solid electrolytes to achieve very high energy-density batteries, are also being investigated. In the area of fuel cell research, Lewis is studying life-limiting characteristics of H-O cells in order to provide longer lived, lighter weight systems and to provide support for the space shuttle power system.

Of principal emphasis at Lewis has been the development of dynamic systems, such as Brayton, and a greater understanding of the technology associated with such systems. Recently, a 2-15 KWe Brayton engine, developed under Lewis

cognizance, completed 10,000 hours of operation. A recent refinement in the Brayton engine control system has been made to permit one-button start-stop operation. This modified engine has completed over 4,500 hours of unattended operation while being subjected to 27 planned one-button start-stop cycles. As part of a continuing Brayton technology program, we are investigating a lower power range of 0.5 to 1.5 KW (mini-Brayton) for application with the AEC's MHW isotope heat source. It will achieve about 5 times the power as the MHW-thermoelectric system for the same isotope inventory in space. Unit electrical cost may thus be greatly reduced.

The performance of propulsion and power generations systems, launch vehicles, spacecraft, and practically all hardware is paced by physical limitations of available materials. The Center has maintained a substantial materials research effort aimed at raising these limitations and improving component and system performance. The goals of materials R&D are to achieve weight savings, permit higher operating temperatures, increase life and reliability, and lower cost. Materials being investigated include composites, titanium alloys, superalloys of nickel and cobalt base, refractory metals, dispersion strengthened metals, and ceramics. We are also investigating various fabrication methods to produce unique structure and properties in these materials as well as manufacturing technology in certain critical problem areas. Specific near term objectives have been defined that, when achieved, will have large benefits in aircraft propulsion and space systems. A particularly important area is fracture mechanics and life prediction for high temperature components.

In the field of ecology, Lewis research on combustion and high-temperature resistant materials for thermal reactors will help to reduce the amount of smoke and noxious pollutants in automobile and aircraft engine exhausts. Lewis scientists are cooperating with local, state and national agencies in their efforts to reduce air and water pollution, and to evolve more energy efficient propulsion systems. Specific efforts are underway in direct support of and requested by EPA, OCR, DOT; i.e., those mission agencies engaged in ground power and transportation.

The Communications Technology Satellite (CTS) is a joint effort of the United States and Canadian Governments to advance the technology of high frequency communications satellites and associated ground-based stations. Lewis is responsible for development of the transmitter and power tube, and is the lead Center for coordinating the launch and mission support. A ground station is being assembled at Lewis to support the satellite transmitter tests. Lewis is also completing fabrication of a Space Plasma High-voltage Interaction Experiments (SPHINX) spacecraft to evaluate high voltage solar-power systems in the space environment. The launch is scheduled for early 1974.

The NASA Aerospace Safety Research and Data Institute is located at the Lewis Research Center. Members of the staff conduct research to supply safety technology, maintain a safety data bank, respond to requests for information,

and provide consultation for NASA and the technical community. Staff expertize is backed by a safety library and is further supported by a computerized bank of citations and abstracts built from literature on oxygen, hydrogen, fire, and explosion. Computer files on the mechanics of structural failure, fragmentation hazards, and safety information sources are also being established.

DESCRIPTION

The Lewis Research Center occupies two sites in north central Ohio. The older one was established in 1941 on 200 acres adjacent to the Cleveland-Hopkins International Airport. The original area has been expanded to 366 acres including 14 acres leased to the City of Cleveland. Here there are over 90 buildings, including two large supersonic wind tunnels, a V/STOL tunnel, fan noise and jet noise rigs, two zero gravity research facilities (free drop shafts, one of which is an underground evacuated shaft 477 feet deep in which zero gravity durations of about 10 seconds are obtained), a large Propulsion Systems Laboratory in which full-scale engines are operated under simulated high-altitude conditions, three rocket laboratories, five materials research buildings, eighteen major space simulation facilities ranging from four to thirty feet in diameter, a 50-foot diameter Space Power Chamber 120 feet long in which altitudes up to 100,000 feet are simulated, an Energy Conversion Laboratory, an Instrument Research Laboratory, a High Energy Fuels Laboratory, a Chemistry Laboratory, an Engine Research Building containing 64 test cells and covering nearly four acres, four office buildings, machine shops and other service buildings.

The Plum Book Station, established in 1956, is located south of Sandusky, Ohio, about fifty miles west of Cleveland, on land formerly occupied by the Plum Brook Ordnance Works. It occupies 8,045 acres of which 7,999 are owned by the Government and 46 are in easements. There are over 200 buildings, 55 built by NASA and the rest by the former tenants. The major facilities include a Reactor Facility, an Altitude Rocket Test Facility, a Cryogenic Propellant Tank Facility, a Spacecraft Dynamics Research Facility, a Rocket Systems Hydraulic Laboratory, a Flourine Pump Laboratory, a Spacecraft Propulsion Research Facility, a Space Power Facility, and a Hypersonic Tunnel Facility.

Consistent with NASA's announced plan to reduce or terminate long-range research and technology efforts that are not expected to be needed until sometime in the distant future, the Plum Brook Station Reactor Facility was placed in standby condition at the end of FY 1973. The remainder of the Plum Brook Station will be placed in a standby condition by the end of FY 1974.

The total capital investment of the Lewis Research Center including fixed assets in progress, and contractor-held facilities at various locations, as of June 30, 1973 was $426,870,000, of which $52,764,000 represents facilities held by contractors at various locations.

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SUMMARY OF RESOURCES REQUIREMENTS

FUNDS

Functions	1973	1974	1975	Change in 1975
Personnel.....	$73,103,000	$70,263,000	$69,598,000	$-665,000
Travel.....	1,078,000	1,042,000	1,065,000	+ 23,000
Facilities Services.....	6,123,000	6,632,000	6,400,000	-232,000
Technical Services.....	1,058,000	409,000	432,000	+ 23,000
Administrative Support.....	957,000	1,035,000	943,000	- 92,000
Total, fund requirements	$82,319,000	$79,381,000	$78,438,000	$-943,000

Personnel - The decrease is due to the reduction in permanent personnel with the placing of the Plum Brook Station in standby condition. This reduction is partially offset by the full year's effect of General Schedule and Wage Grade pay increases and promotions given in FY 1974.

Travel - The increase in FY 1975 is required to support FY 1975 Centaur launches and in support of the Viking and subsequent missions.

Facilities Services - The decrease of Facilities Services requirement in FY 1975 reflects the placing of Plum Brook in standby condition. This decrease was partially offset by increased costs of utilities due to rate increases in both electricity and gas.

Technical Services - The increase is due to minor variations within the subfunctions but is primarily a cost of living increase in order to maintain the FY 1974 level.

Administrative Support - The decrease in FY 1975 is due to the reduction in communications costs no longer required at the Plum Brook Station. This reduction was offset by a cost of living increase necessary to maintain the FY 1974 level at Lewis-Cleveland.

PERSONNEL

	1973	1974	1975	Change in 1975
I. PERSONNEL.....	$73,103,000	$70,263,000	$69,598,000	$-665,000

Basis of Fund Requirements

	1973	1974	1975
A. Compensation and Benefits:			
1. Compensation:			
a. Permanent positions....	$65,999,000	$62,086,000	$61,755,000
b. Nonpermanent positions.	254,000	536,000	571,000
c. Overtime and other compensation.....	674,000	881,000	930,000
Subtotal, Compensation.....	$66,927,000	$63,503,000	$63,256,000
2. Benefits.....	$5,956,000	$6,475,000	$6,094,000
Subtotal, Compensation and Benefits.....	$72,883,000	$69,978,000	$69,350,000
B. Supporting Costs:			
1. Transfer of personnel.....	$32,000	$115,000	$68,000
2. Personnel training.....	188,000	170,000	180,000
Subtotal, Supporting Costs	$220,000	$285,000	$248,000
Total, Personnel and Related Costs.....	$73,103,000	$70,263,000	$69,598,000
1. Compensation.....	$66,927,000	$63,503,000	$63,256,000
a. Permanent positions.....	$65,999,000	$62,086,000	$61,755,000

Distribution of Permanent Positions by Program

	1973	1974	1975
Direct Positions			
Manned Space Flight			
Space flight operations	8	8	8
Space Sciences			
Lunar and planetary exploration	1	1	---
Launch vehicle procurement	370	229	230
Applications			
Space applications	62	104	100
Aeronautics and Space Technology			
Aeronautical research and technology	1,378	1,376	1,376
Space and nuclear research and technology	777	736	740
Technology Utilization	6	6	6
Subtotal, direct positions	2,602	2,460	2,460
Indirect Positions			
Director and staff	16	14	14
Administrative support	317	317	317
Research and development support	415	281	281
Subtotal, indirect positions	748	612	612
Total, permanent positions	3,350	3,072	3,072
Other than permanent positions	184	216	205
Total positions	3,534	3,288	3,277

Basis of Cost for Permanent Positions

Cost of permanent positions in 1974		$62,086,000
Cost increase in 1975		+2,144,000
Within grade advances and career development:		
Full year effect of 1974 actions	$750,000	
Partial year effect of 1975 actions	375,000	
Full year effect of October 1973 pay raise	780,000	
Extra day	239,000	

Distribution of Permanent Positions by Program

	1973	1974	1975
Direct Positions			
Manned Space Flight			
Space flight operations	8	8	8
Space Sciences			
Lunar and planetary exploration	1	1	---
Launch vehicle procurement	370	229	230
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Space applications	62	104	100
Aeronautics and Space Technology			
Aeronautical research and technology	1,378	1,376	1,376
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Technology Utilization	6	6	6
Subtotal, direct positions	2,602	2,460	2,460
Indirect Positions			
Director and staff	16	14	14
Administrative support	317	317	317
Research and development support	415	281	281
Subtotal, indirect positions	748	612	612
Total, permanent positions	3,350	3,072	3,072
Other than permanent positions	181	216	205
Total positions	3,531	3,288	3,277

Basis of Cost for Permanent Positions

Cost of permanent positions in 1974		$62,086,000
Cost increase in 1975		+2,144,000
Within grade advances and career development:		
Full year effect of 1974 actions	$750,000	
Partial year effect of 1975 actions	375,000	
Full year effect of October 1973 pay raise	780,000	
Extra day	239,000	

Cost decreases in 1975		-2,475,000
Full year effect of 1974 actions	2,355,000	
Turnover savings	120,000	
Cost of permanent positions in 1975		$61,755,000

Other Compensation Costs

	1973	1974	1975
b. Nonpermanent positions	$254,000	$536,000	$571,000

The FY 1973 nonpermanent program at Lewis was maintained at a reduced level in order to help absorb the cost of the FY 1973 pay raise. The estimates for FY 1974 and FY 1975 provide for 40 positions for college and high school teachers, and 100 positions for disadvantaged youth in the summer employment program.

Commencing in the second half of FY 1974 the cooperative training program will be expanded from 10 to 40 positions. The current college cooperative plan will be increased and a new technical cooperative plan will be initiated. The objective of this expanded program is to provide more opportunity for the disadvantaged and other minorities to compete for placement in the Lewis permanent work force.

The number of positions to replace temporary absences or to meet short time requirements will be reduced from 36 in FY 1974 to 25 in FY 1975. This action was taken to partially offset the increased cost of the cooperative training program.

c. Overtime and other compensation	$674,000	$881,000	$930,000

Lewis operates major wind tunnel facilities which require a significant amount of the electrical capacity of the Cleveland electric utility. To obtain a significant electricity rate reduction, these Lewis facilities are operated during off-peak demand times for electricity, in the evening and early morning. The savings in electrical power costs more than offset the increased personnel costs required for second and third shift operation.

In order to absorb a portion of the 1973 pay increase, overtime was drastically reduced in FY 1973. Increases in FY 1974 and FY 1975 reflect a return to normal requirements in FY 1974 and also include salary increase effects for overtime.

	1973	1974	1975
2. Benefits.....	$5,956,000	$6,475,000	$6,094,000

The following table indicates the costs of personnel benefits by major category:

Category of Cost			
Contribution to the Civil Service Retirement Fund.....	$4,588,000	$4,346,000	$4,323,000
Contribution for employee life insurance.....	229,000	217,000	217,000
Contribution for employee health insurance.....	790,000	719,000	715,000
FICA.....	9,000	31,000	33,000
Incentive awards.....	15,000	30,000	35,000
Other personnel benefits.....	23,000	2,000	2,000
Severance pay.....	302,000	1,130,000	769,000
Total.....	$5,956,000	$6,475,000	$6,094,000

B. Supporting Costs.....	$220,000	$285,000	$248,000
1. Transfer of Personnel.....	$32,000	$115,000	$68,000

Increased requirements in FY 1974 are due to the closing of Plum Brook and the transfer of key personnel to Cleveland. The FY 1975 level assumes the return to a normal hiring and transfer pattern.

2. Personnel Training.....	$188,000	$170,000	$180,000

The Lewis training program will remain relatively stable in FY 1975, with a slight increase in costs due to rising tuition costs. The following table indicates the Lewis training program:

Type of Training	Number of Enrollments 1973	1974	1975
Medical, scientific, engineering, legal and related skills.....	898	950	950
Technical.....	712	700	700
Administration, management, and supervision.....	595	550	550
Other.....	191	300	300
Total enrollments.....	2,396	2,500	2,500

	1973	1974	1975
2. Benefits.....	$5,956,000	$6,475,000	$6,094,000

The following table indicates the costs of personnel benefits by major category:

Category of Cost			
Contribution to the Civil Service Retirement Fund.....	$4,588,000	$4,346,000	$4,323,000
Contribution for employee life insurance.....	229,000	217,000	217,000
Contribution for employee health insurance.....	790,000	719,000	715,000
FICA.....	9,000	31,000	33,000
Incentive awards.....	15,000	30,000	35,000
Other personnel benefits.....	23,000	2,000	2,000
Severance pay.....	302,000	1,130,000	769,000
Total.....	$5,956,000	$6,475,000	$6,094,000
B. Supporting Costs.....	$220,000	$285,000	$248,000
1. Transfer of Personnel.....	$32,000	$178,000	$68,000

Increased requirements in FY 1974 are due to the closing of Plum Brook and the transfer of key personnel to Cleveland. The FY 1975 level assumes the return to a normal hiring and transfer pattern.

2. Personnel Training.....	$188,000	$107,000	$180,000

The number of enrollments in Lewis training programs is expected to decline due to a smaller complement. Despite the decline in enrollments, the cost is expected to rise as a result of increasing tuition costs. The following table indicates the Lewis training program:

	Number of Enrollments		
Type of Training	1973	1974	1975
Medical, scientific, engineering, legal and related skills.....	898	850	800
Technical.....	712	500	500
Administration, management, and supervision.....	595	600	550
Other.....	191	250	275
Total enrollments.....	2,396	2,200	2,125

TRAVEL

	1973	1974	1975	Change in 1975
II. TRAVEL.....	$1,078,000	$1,042,000	$1,065,000	$+23,000

Basis of Fund Requirements

Summary of Travel by Major Category

	1973	1974	1975
A. Program Travel.....	$814,000	$762,000	$770,000
B. Administrative Travel.....	68,000	77,000	90,000
C. Meetings and Technical Seminars.	196,000	203,000	205,000
Total, Travel.....	$1,078,000	$1,042,000	$1,065,000
A. Program Travel.....	$814,000	$762,000	$770,000

For NASA missions, Lewis is responsible for Centaur launches of medium weight spacecraft on high energy missions, particularly planetary and synchronous orbits; for increases in the Centaur reliability and mission flexibility by introduction of an updated improved Centaur stage; for providing additional vehicle performance capability in support of Viking; and for subsequent missions by integration of the Titan III booster with the Centaur stage. The amount of travel required for this purpose is directly related to both the number and complexity of the launches. The estimate for FY 1975 is in consonance with the launch schedule for 1975.

B. Administrative Travel.....	$68,000	$77,000	$90,000

An increase in administrative travel is anticipated in FY 1975 due to the increase of involvement of the Lewis personnel in establishing criteria and programs in support of new energy conversion programs within NASA and other agencies.

C. Meetings and Technical Seminars	$196,000	$203,000	$205,000

The increase in travel dollars in FY 1975 reflect primarily increased carrier costs and will be needed to maintain the same general level of effort.

FACILITIES SERVICES

	1973	1974	1975	Change in 1975
III. FACILITIES SERVICES	$6,123,000	$6,632,000	$6,400,000	$-232,000

Basis of Fund Requirements

Summary of Facilities Services

	1973	1974	1975
A. Maintenance and Related Services			
1. Maintenance, repair, and alteration of buildings and grounds.....	$430,000	$657,000	$523,000
2. Custodial services.....	1,407,000	1,617,000	1,617,000
3. Maintenance of equipment.....	99,000	68,000	105,000
Subtotal.....	$1,936,000	$2,342,000	$2,245,000
B. Operation of Facilities			
1. Utilities.....	$3,560,000	$3,670,000	$3,520,000
2. Supplies and equipment.....	627,000	620,000	635,000
Subtotal.....	$4,187,000	$4,290,000	$4,155,000
Total, Facilities services.....	$6,123,000	$6,632,000	$6,400,000
A. Maintenance and Related Services	$1,936,000	$2,342,000	$2,245,000
1. Maintenance, repair, and alteration of buildings and grounds.....	$430,000	$657,000	$523,000

The FY 1975 funding reflects a normal level of maintenance.

2. Custodial services.....	$1,407,000	$1,617,000	$1,617,000

The reduced custodial funding level in FY 1973 resulted from the use of available FY 1972 authority to forward fund costodial service contracts. This opportunity will not exist in either FY 1974 or FY 1975, so a full 12 months funding is required.

3. Maintenance of equipment....	$99,000	$68,000	$105,000

The FY 1975 level of maintenance reflects a return to normal maintenance of standard equipment. Maintenance of such equipment was held to a minimal level in FY 1974 due to limited funding in this area.

	1973	1974	1975
B. Operation of Facilities.....	$4,187,000	$4,290,000	$4,155,000
1. Utilities.....	$3,560,000	$3,670,000	$3,520,000

The level of cost is related to the types of facilities operated, the time they are operated, and the unit cost rates for each utility consumed. The major cost is electricity at approximately $2,800,000 per year. Major wind tunnels account for most of this cost. Operating these tunnels on second and third shifts at off-peak demand results in significant savings, as do other energy conservation practices recently instituted at Lewis. The standby status of Plum Brook Station is reflected in a reduction of utilities, while initial operation of the PSL Engine Test Facility in FY 1974 will result in a net minor increase in utility requirements for the FY 1975 period.

2. Supplies and equipment.....	$627,000	$620,000	$635,000

The level of supplies and equipment drops in FY 1974 due to reduced activity at Plum Brook Station, offset by increased requirements for the Propulsion Systems Laboratory. The FY 1975 increase reflects full use of the laboratory.

	1973	1974	1975	Change in 1975
IV. TECHNICAL SERVICES...	$1,058,000	$409,000	$432,000	$+23,000

Basis of Fund Requirements

Summary of Technical Services

	1973	1974	1975
A. Automatic Data Processing			
1. Equipment.....	$747,000	$206,000	$236,000
2. Programming and operations services.....	9,000	18,000	20,000
Subtotal.....	$756,000	$224,000	$256,000
B. Engineering Services.....	$234,000	$133,000	$122,000

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	1973	1974	1975
C. Scientific and Technical Informational and Educational Programs			
1. Educational/informational programs.....	$53,000	$37,000	$37,000
2. Scientific and technical information.....	15,000	15,000	17,000
Subtotal.....	$68,000	$52,000	$54,000
Total, Technical Services.....	$1,058,000	$409,000	$432,000
A. Automatic Data Processing.....	$756,000	$224,000	$256,000

The estimate for FY 1975 provides for the approved procurement of an additional core for the business computer and a slight increase in programming and operations cost.

B. Engineering Services.....	$234,000	$133,000	$122,000

Engineering services costs vary widely from year to year. It is Lewis' estimate that these services in FY 1975 will be maintained at a minimum level.

C. Scientific and Technical Information and Education Programs..	$68,000	$52,000	$54,000
1. Educational/information programs.....	$53,000	$37,000	$37,000

The estimate provides a continuation in FY 1975 of in-house filmed productions at the FY 1974 level.

2. Scientific and technical information.....	$15,000	$15,000	$17,000
Subtotal.....	$68,000	$52,000	$54,000
Total, Technical Services....	$1,058,000	$409,000	$432,000

ADMINISTRATIVE SUPPORT

	1973	1974	1974	Change in 1975
V. ADMINISTRATIVE SUPPORT	$957,000	$1,035,000	$943,000	$-92,000

Basis of Fund Requirements

Summary of Administrative Support

		1973	1974	1975
A.	Communications			
	1. Leased lines and long distance calls.....	$333,000	$384,000	$309,000
	2. Local telephone service.....	170,000	202,000	160,000
	3. Other communications.....	31,000	35,000	35,000
	Subtotal.....	$534,000	$621,000	$504,000
B.	Administrative Printing.....	$77,000	$78,000	$78,000
C.	Supplies, Materials, and Equipment	$134,000	$139,000	$148,000
D.	Transportation			
	1. Center operations.....	$32,000	$10,000	$10,000
	2. Common carrier.....	125,000	109,000	115,000
	Subtotal.....	$157,000	$119,000	$125,000
E.	Administrative Support Services			
	1. Installation support services.	$5,000	$6,000	$6,000
	2. Occupational medicine and environmental health.....	$50,000	$72,000	$82,000
	Subtotal.....	$55,000	$78,000	$88,000
	Total, Administrative Support.....	$957,000	$1,035,000	$943,000

A. Communications..... $534,000 $621,000 $504,000

The estimate for FY 1975 requirements reflects the 20 percent rate increase granted the telephone utility servicing Lewis in FY 1974, offset by the reduction in services for the Plum Brook Station which has been placed in a standby status.

B. Administrative Printing..... $77,000 $78,000 $78,000

The FY 1975 estimate reflects costs of maintaining the current level of effort.

C. Supplies, Materials and Equipment $134,000 $139,000 $148,000

The FY 1975 increase is requested to offset the sharply rising costs of materials and equipment.

	1973	1974	1975
D. Transportion.....	$157,000	$119,000	$125,000

The FY 1975 increase of $6,000 reflects the estimate necessary to maintain the FY 1974 level of effort.

E. Administrative Support Services	$55,000	$78,000	$88,000
1. Installation support services	$5,000	$6,000	$6,000

The FY 1975 estimate reflects the cost of maintaining support at the FY 1974 level.

2. Occupational medicine and environmental health.....	$50,000	$72,000	$82,000

The increase in FY 1975 is due to increased effort in support of in-house environmental health programs.

National Aeronautics and Space Administration
Organization and Staffing Chart
LEWIS RESEARCH CENTER
Cleveland, Ohio

STAFFING SUMMARY

	74	75
EXCEPTED	21	21
GS-16	17	16
GS-15	135	138
GS-14	291	302
OTHER GS	1667	1654
WB	941	941
TOTAL PERMANENT	3072	3072

DIRECTOR'S OFFICE

	73	74
EXCEPTED	3	3
OTHER GS	3	3
TOTAL	6	6

DEPUTY DIRECTOR TECHNOLOGY

DEPUTY DIRECTOR MANAGEMENT

OFFICE OF CHIEF SCIENTIST

	74	75
GS-15	1	1
OTHER GS	1	1
TOTAL	2	2

DIRECTOR OF AEROSPACE SAFETY AND DATA INSTITUTE

	74	75
GS-15	3	3
GS-14	2	2
OTHER GS	9	9
TOTAL	14	14

OFFICE OF RELIABILITY AND QUALITY ASSURANCE

	74	75
GS-16	1	1
GS-15	1	1
GS-14	10	11
OTHER GS	17	16
TOTAL	29	29

PLUM BROOK

	74	75
GS-15	1	1
GS-14	1	1
OTHER GS	2	2
TOTAL	4	4

TECHNOLOGY UTILIZATION AND PUBLIC AFFAIRS

	74	75
EXCEPTED	1	1
GS-15	1	1
GS-14	2	2
OTHER GS	16	16
TOTAL	20	20

OFFICES

	74	75
GS-15	5	5
GS-14	5	5
OTHER GS	38	38
TOTAL	48	48

DIRECTOR OF AERONAUTICS

	74	75
EXCEPTED	1	1
OTHER GS	1	1
TOTAL	2	2

AIRBREATHING ENGINES DIVISION

	74	75
GS-16	1	1
GS-15	11	11
GS-14	23	24
OTHER GS	85	84
TOTAL	120	120

WIND TUNNEL AND FLIGHT DIVISION

	74	75
EXCEPTED	1	1
GS-16	2	2
GS-15	10	10
GS-14	16	17
OTHER GS	72	71
TOTAL	101	101

V/STOL AND NOISE DIVISION

	74	75
EXCEPTED	1	1
GS-16	3	2
GS-15	13	13
GS-14	23	24
OTHER GS	67	67
TOTAL	107	107

FLUID SYSTEMS COMPONENTS DIVISION

	74	75
GS-16	2	2
GS-15	13	13
GS-14	15	15
OTHER GS	60	60
TOTAL	90	90

DIRECTOR OF SPACE FLIGHT PROGRAMS

	74	75
EXCEPTED	1	1
OTHER GS	1	1
TOTAL	2	2

CTS PROJECT OFFICE

	74	75
EXCEPTED	1	1
GS-14	7	7
OTHER GS	8	8
TOTAL	16	16

SPACECRAFT TECHNOLOGY DIVISION

	74	75
EXCEPTED	1	1
GS-15	5	6
GS-14	19	21
OTHER GS	90	87
TOTAL	115	115

SPACE FLIGHT SYSTEMS STUDY OFFICE

	74	75
GS-15	1	1
GS-14	2	2
OTHER GS	7	7
TOTAL	10	10

DIRECTOR OF SPACE TECHNOLOGY AND MATERIALS

	74	75
EXCEPTED	1	1
OTHER GS	1	1
TOTAL	2	2

ENERGY CONVERSION AND MATERIALS SCIENCE DIVISION

	74	75
GS-16	1	1
GS-15	9	9
GS-14	12	13
OTHER GS	49	48
TOTAL	71	71

POWER SYSTEMS DIVISION

	74	75
GS-16	2	2
GS-15	5	5
GS-14	21	21
OTHER GS	47	47
TOTAL	75	75

PHYSICAL SCIENCE DIVISION

	74	75
EXCEPTED	1	1
GS-16	2	2
GS-15	15	15
GS-14	25	26
OTHER GS	54	53
TOTAL	97	97

MATERIALS AND STRUCTURES DIVISION

	74	75
EXCEPTED	1	1
GS-16	2	2
GS-15	11	12
GS-14	19	19
OTHER GS	95	94
TOTAL	128	128

DIRECTOR OF ENGINEERING SERVICES

	74	75
GS-16	1	1
OTHER GS	1	1
TOTAL	2	2

ENGINEERING DESIGN DIVISION

	74	75
GS-15	5	5
GS-14	12	13
OTHER GS	108	107
TOTAL	125	125

FACILITIES ENGINEERING DIVISION

	74	75
GS-15	5	5
GS-14	7	7
OTHER GS	70	70
TOTAL	82	82

CONSTRUCTION DIVISION

	74	75
GS-14	1	1
OTHER GS	13	13
TOTAL	14	14

OFFICE OF CENTER DEVELOPMENT

	74	75
EXCEPTED	1	1
OTHER GS	1	1
TOTAL	2	2

SAFETY AND PROJECT PLANNING OFFICE

	74	75
OTHER GS	45	45
WB	6	6
TOTAL	51	51

INSTRUMENT APPLICATIONS OFFICE

	74	75
GS-14	4	4
OTHER GS	18	18
TOTAL	22	22

DIRECTOR OF TECHNICAL SERVICES

	74	75
EXCEPTED	1	1
GS-15	1	1
OTHER GS	1	1
TOTAL	3	3

TEST INSTALLATIONS DIVISION

	74	75
OTHER GS	11	11
WB	437	437
TOTAL	448	448

FACILITIES OPERATIONS AND MAINTENANCE DIVISION

	74	75
GS-14	2	2
OTHER GS	44	44
WB	250	250
TOTAL	296	296

FABRICATION DIVISION

	74	75
GS-14	2	2
OTHER GS	34	34
WB	128	128
TOTAL	164	164

EQUIPMENT AND SUPPLY DIVISION

	74	75
GS-14	1	1
OTHER GS	39	39
WB	87	87
TOTAL	127	127

DIRECTOR OF LAUNCH VEHICLES

	74	75
EXCEPTED	2	2
GS-15	1	1
GS-14	2	2
OTHER GS	15	15
TOTAL	20	20

ATLAS/CENTAUR PROJECT OFFICE

	74	75
GS-15	4	4
GS-14	14	15
OTHER GS	58	57
TOTAL	76	76

TITAN/CENTAUR PROJECT OFFICE

	74	75
GS-15	6	6
GS-14	10	10
OTHER GS	48	48
TOTAL	64	64

CHEMICAL PROPULSION DIVISION

	74	75
EXCEPTED	1	1
GS-15	4	4
GS-14	13	13
OTHER GS	64	64
TOTAL	82	82

PERSONNEL DIVISION

	74	75
GS-15	1	1
GS-14	2	2
OTHER GS	33	33
TOTAL	36	36

RESOURCES AND FINANCIAL MANAGEMENT DIVISION

	74	75
EXCEPTED	1	1
GS-14	5	5
OTHER GS	41	41
TOTAL	47	47

COMPUTER SERVICES DIVISION

	74	75
EXCEPTED	1	1
GS-15	3	4
GS-14	8	10
OTHER GS	115	113
WB	19	19
TOTAL	147	147

PROCUREMENT DIVISION

	74	75
EXCEPTED	1	1
GS-14	4	4
OTHER GS	87	87
TOTAL	92	92

MANAGEMENT SERVICES DIVISION

	74	75
GS-14	1	1
OTHER GS	98	98
WB	14	14
TOTAL	113	113

RPM 181

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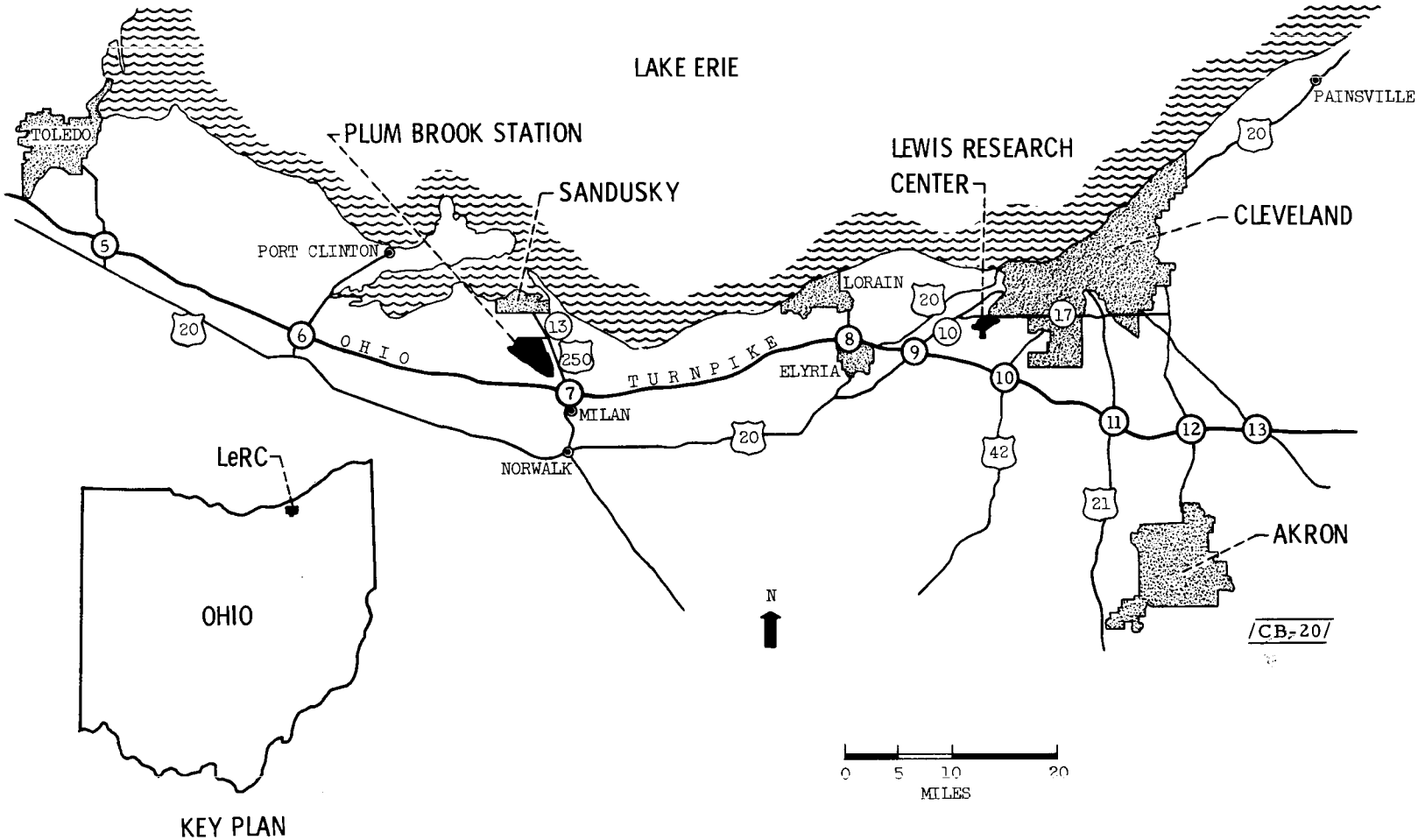
LEWIS RESEARCH CENTER
FISCAL YEAR 1975 ESTIMATES

AREA MAP



RPM 182

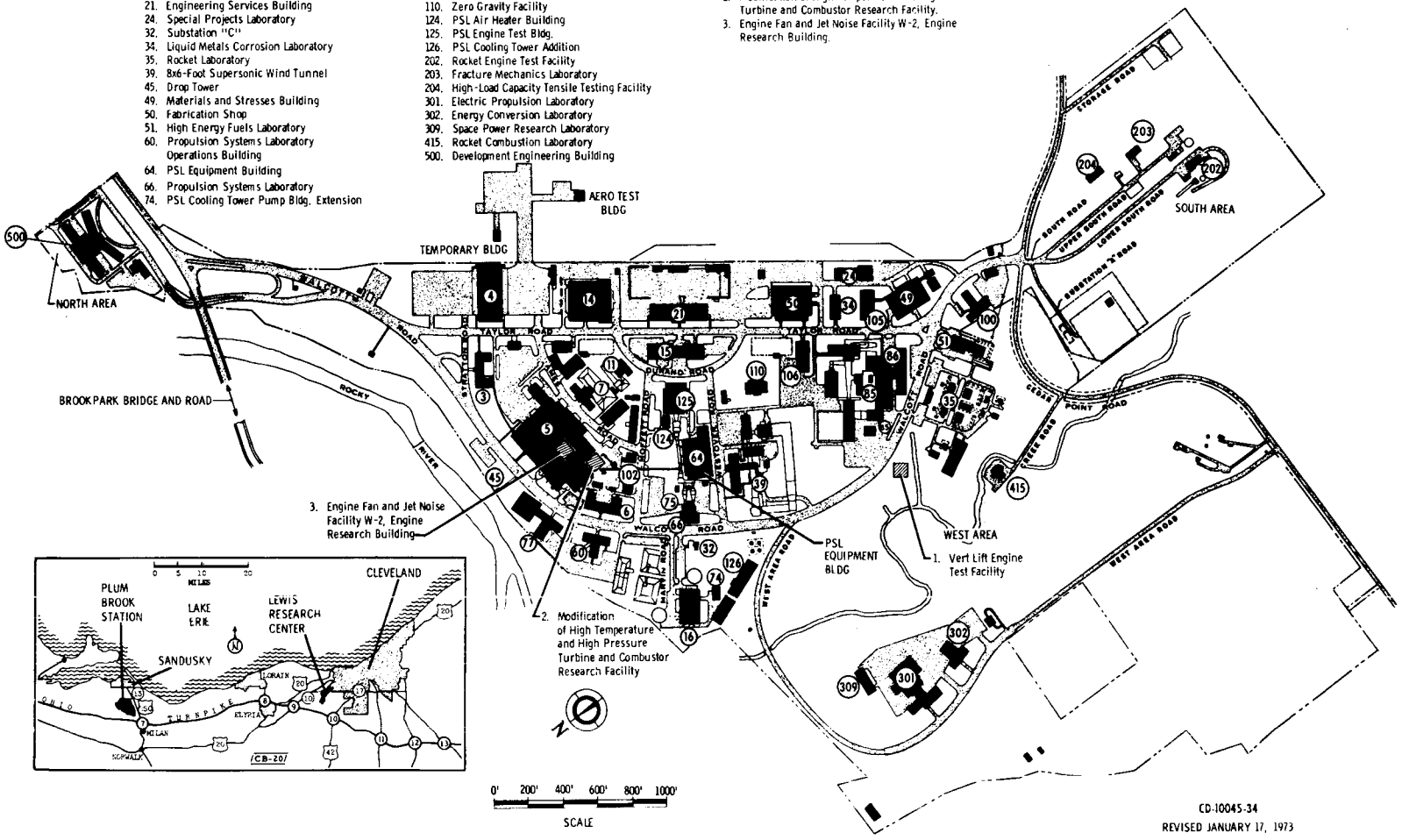
LEWIS RESEARCH CENTER
FISCAL YEAR 1975 ESTIMATES

LEGEND-EXISTING BUILDINGS

3. Administration Building
4. Flight Research Building
5. Engine Research Building
6. Chemistry Laboratory
7. Space Power Chambers
11. Icing Research Tunnel
14. Technical Services Building
15. Utilities Building
16. Electric Propulsion Research Building
21. Engineering Services Building
24. Special Projects Laboratory
32. Substation "C"
34. Liquid Metals Corrosion Laboratory
35. Rocket Laboratory
39. 8x6-Foot Supersonic Wind Tunnel
45. Drop Tower
49. Materials and Stresses Building
50. Fabrication Shop
51. High Energy Fuels Laboratory
60. Propulsion Systems Laboratory Operations Building
64. PSL Equipment Building
66. Propulsion Systems Laboratory
74. PSL Cooling Tower Pump Bldg. Extension
75. PSL Substation "J"
77. Instrument Research Laboratory
85. 10x10-Foot Supersonic Wind Tunnel
86. 10x10-Foot Supersonic Wind Tunnel Office and Computer Center
100. Rocket Operations Building
102. Engine Components Research Laboratory
105. Materials Processing Laboratory
106. Basic Materials Laboratory
110. Zero Gravity Facility
124. PSL Air Heater Building
125. PSL Engine Test Bldg.
126. PSL Cooling Tower Addition
202. Rocket Engine Test Facility
203. Fracture Mechanics Laboratory
204. High-Load Capacity Tensile Testing Facility
301. Electric Propulsion Laboratory
302. Energy Conversion Laboratory
309. Space Power Research Laboratory
415. Rocket Combustion Laboratory
500. Development Engineering Building

FACILITIES AUTHORIZED AND UNDER CONSTRUCTION

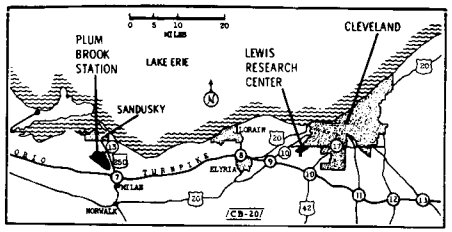
1. Vert Lift Engine Test Facility.
2. Modification of High Temperature and High Pressure Turbine and Combustor Research Facility.
3. Engine Fan and Jet Noise Facility W-2, Engine Research Building.

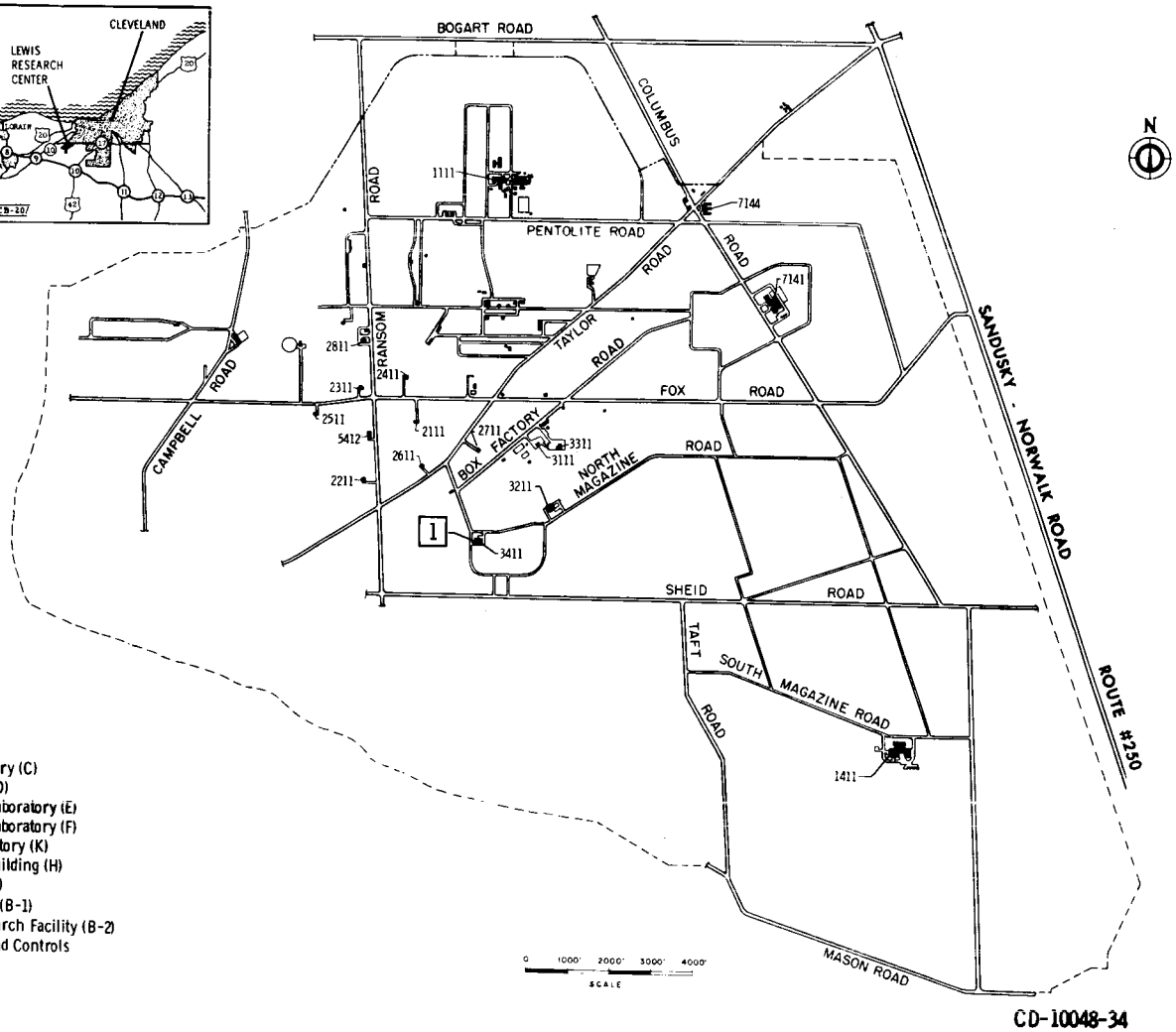


CD-10045-34
REVISED JANUARY 17, 1973

LEWIS RESEARCH CENTER
PLUM BROOK STATION
FISCAL YEAR 1975 ESTIMATES

LOCATION PLAN





LEGEND

EXISTING FACILITIES

1111 Reactor Facility Group
1411 Space Power Facility
7144 Administration Building
2111 Rocket Pump Laboratory (A)
2211 Rocket Turbo-pump Laboratory (C)
2311 Rocket Turbine Laboratory (D)
2411 Rocket Systems Dynamics Laboratory (E)
2511 Rocket Systems Hydraulic Laboratory (F)
2811 Cryogenic Propellant Laboratory (K)
5412 Central Control and Data Building (H)
2611 Fluorine Pump Laboratory (I)
3111 Altitude Rocket Test Facility (B-1)
3211 Spacecraft Propulsion Research Facility (B-2)
3311 Nuclear Rocket Dynamics and Controls Facility (B-3)
3411 Heat Transfer Facility
7141 Engineering Building

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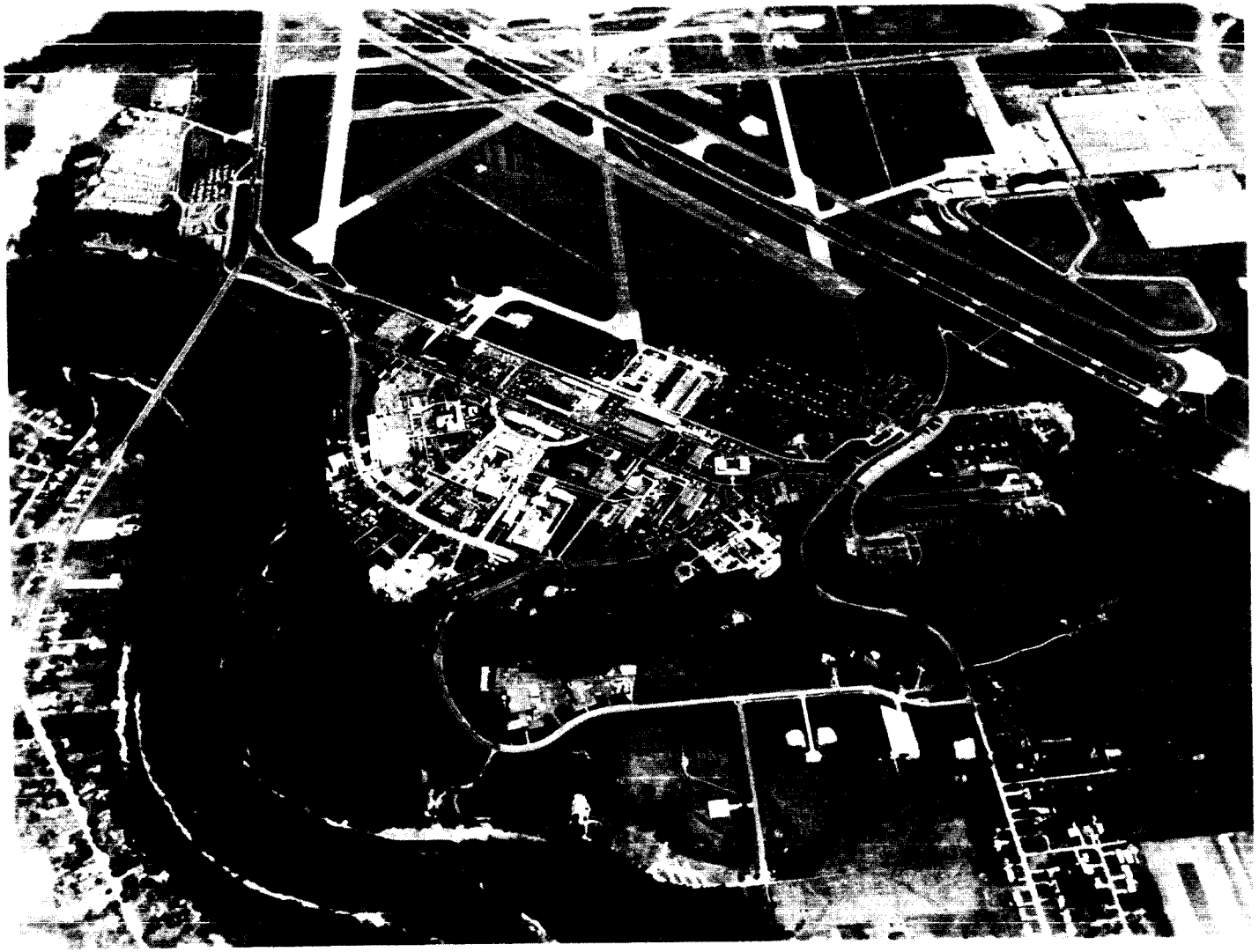
LEWIS RESEARCH CENTER
FISCAL YEAR 1975 ESTIMATES

CLEVELAND FACILITIES



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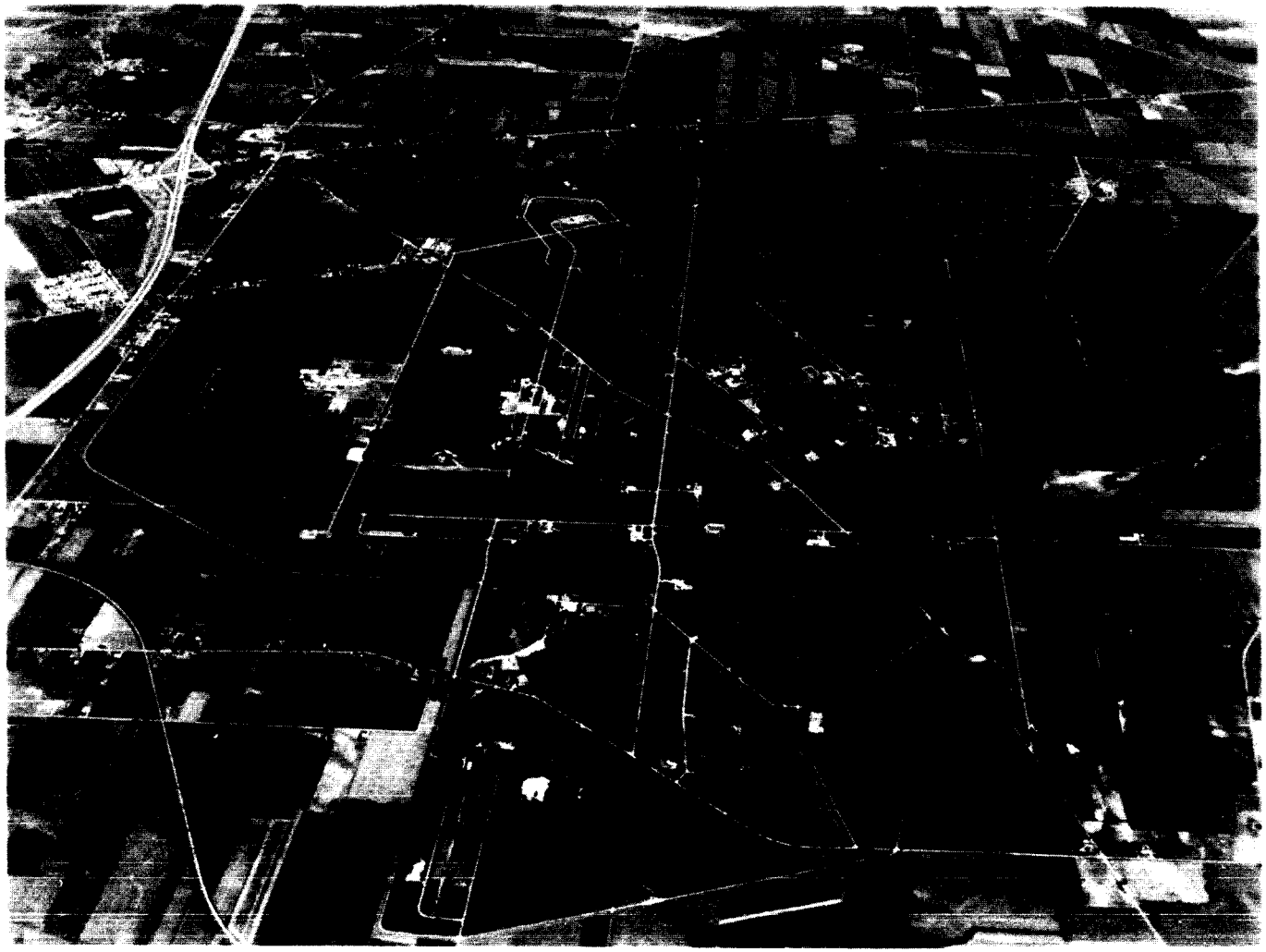
LEWIS RESEARCH CENTER
FISCAL YEAR 1975 ESTIMATES

PLUM BROOK FACILITIES



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RESEARCH AND PROGRAM MANAGEMENT

FISCAL YEAR 1975 ESTIMATES

NASA HEADQUARTERS

MISSION

The mission of the National Aeronautics and Space Administration Headquarters is to plan and provide executive direction for the programs authorized by the Congress, and to implement the national objectives stated in the National Aeronautics and Space Act of 1958, as amended. The principal statutory functions are:

1. To conduct research into, and for the solution of, problems of flight within and outside the earth's atmosphere and to develop, construct, test, and operate aeronautical and space vehicles for research purposes.

2. To conduct activities required for the exploration of space with manned and unmanned vehicles.

3. To arrange for participation by the scientific community in planning scientific measurements and observations to be made through the use of aeronautical and space vehicles, and conduct or arrange for the conduct of such measurements and observations.

4. To provide for the widest practicable and appropriate dissemination of information concerning its activities and their results.

The following offices at Headquarters assist management in carrying out the technical aspects of this mission:

Office of Manned Space Flight - Responsible for the research, development and operation of manned space flight programs including Skylab and the Apollo Soyuz Test project; and also responsible for the development of the Space Shuttle, a space transportation system which will replace almost all existing U.S. launch vehicles.

In performing its assigned functions the office has overall management responsibilities for the three installations primarily concerned with manned space flight programs which are: the George C. Marshall Space Flight Center; the Lyndon B. Johnson Space Center; and the John F. Kennedy Space Center, which also supports unmanned launch activities at the Eastern and Western Test Ranges.

Office of Space Science - Responsible for the NASA automated space flight program directed toward scientific investigations of the solar system utilizing ground-based, airborne, and space techniques including sounding rockets, earth satellites, and deep space probes; for scientific experiments to be conducted by man in space and for the scientific training of astronauts; and for the development, procurement and use of light and medium class launch vehicles.

The Office of Space Science has overall institutional responsibility for installations primarily involved in space science programs. These are the Goddard Space Flight Center, Wallops Station, the Jet Propulsion Laboratory (a Government-owned facility operated for NASA by the California Institute of Technology), and the NASA Pasadena Office, a component field activity of Headquarters.

Office of Applications - Responsible for research and development activities leading to programs providing beneficial applications of space systems, the space environment, and space related or derived technology. Programs involved include earth observation, meteorology, geodesy, and related disciplines; use of the space environment for materials, sciences and processing; and the application of space developed technology to domestic problems.

Office of Aeronautics and Space Technology - Responsible for the planning, direction, execution, evaluation, documentation, and dissemination of the results of all NASA research and technology programs that are conducted primarily to demonstrate the feasibility of a concept, structure, component, or system and which may have general application to the nation's aeronautical and space objectives. This office is also responsible for coordinating the agency's total program of supporting research and technology related to carrying out specific flight missions in order to avoid unnecessary duplication and to insure an integrated and balanced agency research program.

In addition, this office has overall institutional responsibility for the research centers primarily involved in carrying out the agency's advanced research programs. These installations are: the Ames Research Center, the Flight Research Center, the Langley Research Center, and the Lewis Research Center.

Office of Tracking and Data Acquisition - Responsible for the development, implementation, and operation of tracking, data acquisition, command communications, and data processing facilities, systems and services required for NASA flight missions. This office is also responsible for agency-wide coordination of the management of automatic data processing systems and services. In addition, this office provides for centralized planning and systems management for the administrative communications at NASA installations.

The NASA Pasadena Office, Pasadena, California, is a component field activity of the NASA Headquarters Office of Space Science. Its responsibilities are to negotiate and administer NASA contracts with the California Institute of Technology for the operation of the Jet Propulsion Laboratory; provide patent and technology utilization services as they relate to prime and subcontracts at the Jet Propulsion Laboratory; and perform such additional procurement, contract administration, and other functions as may be assigned by the Associate Administrator for Space Science.

DESCRIPTION

The NASA Headquarters is located at 400 Maryland Avenue, S.W., Washington, DC, and also occupies other buildings in the District of Columbia and nearby Virginia. Except for some office space leased in the District of Columbia and a storage area in Virginia, personnel occupy Government-owned buildings.

SUMMARY OF RESOURCES REQUIREMENTS

FUNDS

Functions	1973	1974	1975	Change in 1975
Personnel.....	$42,299,000	$44,880,000	$43,914,000	$-966,000
Travel.....	2,291,000	2,565,000	2,615,000	+50,000
Facilities Services....	470,000	327,000	4,240,000	+3,913,000
Technical Services.....	9,951,000	9,988,000	10,647,000	+659,000
Administrative Support.	6,556,000	5,788,000	5,917,000	+129,000
Total, fund requirements.....	$61,567,000	$63,548,000	$67,333,000	+3,785,000

Personnel - The decrease is primarily the result of the full year effect of abolished positions in 1974 in both personnel compensation and benefits, and a decrease in the cost of the NASA-wide Workmen's Compensation, offset by the full year's cost of revised salary rates implemented by Executive Order, effective October 1973.

Travel - The increase of $50,000 is attributable to non-NASA employee travel associated with the expected acceleration in joint meetings with the USSR, especially by the Apollo Soyuz Test Project working groups in connection with the launch of the Apollo Soyuz mission in mid-July 1975.

Facilities Services - Public Law 92-313 requires that agencies be charged for space and related services provided by the General Services Administration. The increase is primarily the amount for which Headquarters will be charged for space presently provided by the General Services Administration.

Technical Services - The increase is basically the result of actions to realign the obligation with the year in which the services were performed for the operation of the Scientific and Technical Information Facility. Also, additional requirements exist for safety studies and the publication, documentation, printing and dissemination of scientific and technical information.

Administrative Support - The increase is primarily attributable to updating of safety publications, interpreter support, and anticipated equipment and component requirements.

PERSONNEL

	1973	1974	1975	Change in 1975
I. PERSONNEL.....	$42,299,000	$44,880,000	$43,914,000	$-966,000

Basis of Fund Requirements

	1973	1974	1975
A. Compensation and Benefits:			
1. Compensation:			
a. Permanent positions....	$36,517,000	$38,094,000	$37,429,000
b. Nonpermanent positions.	683,000	860,000	703,000
c. Reimbursable details...	422,000	525,000	530,000
d. Overtime and other compensation.....	181,000	224,000	224,000
Subtotal, Compensation.	$37,803,000	$39,703,000	$38,886,000
2. Benefits.....	3,958,000	4,510,000	4,323,000
Subtotal, Compensation and Benefits.....	$41,761,000	$44,213,000	$43,209,000
B. Supporting Costs:			
1. Transfer of personnel.....	$184,000	$232,000	$270,000
2. Civil Service Commission services.....	35,000	58,000	56,000
3. Personnel training.....	319,000	377,000	379,000
Subtotal, Supporting Costs.	$538,000	$667,000	$705,000
Total, Personnel and Related Costs.....	$42,299,000	$44,880,000	$43,914,000

Distribution of Permanent Positions by Program

	1973	1974	1975
Direct Positions			
Manned Space Flight	267	218	218
Space shuttle	42	65	68
Space flight operations	194	132	129
Advanced missions	27	21	21
Apollo	4	---	---
Space Science	170	159	159
Physics and astronomy	56	78	78
Lunar and planetary exploration	83	53	52
Launch vehicle procurement	31	28	29
Space Applications	93	94	94
Aeronautics and Space Technology	178	151	151
Aeronautical research and technology	94	76	76
Space and nuclear research and technology	84	75	75
Tracking and Data Acquisition	54	52	52
Technology Utilization	22	22	22
Subtotal, direct positions	784	696	696
Indirect Positions			
Administrator and staff	195	178	178
Agency-wide management	556	526	525
Headquarters administration	206	191	192
Subtotal, indirect positions	957	895	895
Total positions	1,741	1,591	1,591

1. Compensation.....	$37,803,000	$39,703,000	$38,886,000
a. Permanent Positions.....	$36,517,000	$38,094,000	$37,429,000

The funds shown above will support 1,591 permanent positions in 1974 and 1975. This represents a reduction of 150 permanent positions from 1973.

Basis of Cost for Permanent Positions

Cost of permanent positions in 1974.....		$38,094,000
Cost of increases in 1975.....		1,699,000
Within grade advances and career development:		
Full year effect of 1974 actions.....	$547,000	
Partial year effect of 1975 actions.....	559,000	
Extra day.....	137,000	
Full year effect of October 1973 pay raise	456,000	
Cost decreases in 1975.....		-2,364,000
Full year effect of positions abolished in 1974.....	-1,606,000	
Turnover savings.....	-758,000	
Cost of permanent positions in 1975.....		$37,429,000

Other Compensation Costs

	1973	1974	1975
b. Nonpermanent Positions.....	$683,000	$860,000	$703,000

A portion of the nonpermanent positions provides for Headquarters participation in the President's Disadvantaged Youth Programs, which enables disadvantaged youths to work at unskilled summer jobs. Some of these positions are used during the school year as part of the President's Youth Opportunity Back to School Drive. During this phase, the youth's workweek may not exceed 16 hours.

Distribution of Nonpermanent Positions by Program

	1973	1974	1975
Co-ops	12	12	12
Summer Program (Excluding Disadvantaged Youth)	114	114	114
Disadvantaged Youth Program	82	82	82
Other	21	21	10
Total	229	229	218

c. Reimbursable Details	$422,000	$525,000	$530,000

The number of detailees assigned varies from 19 to 21, all of whom are assigned to program offices with the exception of three or four assigned to the Office of Facilities. The estimate for 1975 is to cover the cost of approximately 20 manyears.

d. Overtime and Other Compensation	$181,000	$224,000	$224,000

The estimate for overtime compensation for 1975 is the same for 1974 which is considered to be consistent with Headquarters mission and legal requirements.

2. Benefits	$3,958,000	$4,510,000	$4,323,000
Category of Cost			
Contribution to the Civil Service Retirement Fund	$2,525,000	$2,660,000	$2,620,000
Contribution for employee life insurance	133,000	140,000	138,000
Contribution to employee health insurance	290,000	298,000	290,000
FICA	33,000	43,000	43,000
Incentive award	26,000	51,000	51,000
Workmen's compensation	939,000	1,266,000	1,181,000
Severance pay	12,000	52,000	---
Total	$3,958,000	$4,510,000	$4,323,000

Distribution of Nonpermanent Positions by Program

	1973	1974	1975
Co-ops	12	12	12
Summer Program (Excluding Disadvantaged Youth)	114	114	114
Disadvantaged Youth Program	85	87	87
Other	21	21	9
Total	232	234	222
c. Reimbursable Details	$422,000	$525,000	$530,000

The number of detailees assigned varies from 19 to 21, all of whom are assigned to program offices with the exception of three or four assigned to the Office of Facilities. The estimate for 1975 is to cover the cost of approximately 20 manyears.

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The estimate for overtime compensation for 1975 is the same for 1974 which is considered to be consistent with Headquarters mission and legal requirements.

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Category of Cost			
Contribution to the Civil Service Retirement Fund	$2,525,000	$2,660,000	$2,620,000
Contribution for employee life insurance	133,000	140,000	138,000
Contribution to employee health insurance	290,000	298,000	290,000
FICA	33,000	43,000	43,000
Incentive award	26,000	51,000	51,000
Workmen's compensation	939,000	1,266,000	1,181,000
Severance pay	12,000	52,000	---
Total	$3,958,000	$4,510,000	$4,323,000

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A large part of personnel benefits is the amount for Workmen's Compensation, for which the agency-wide requirement is included in the Headquarter's budget. The amount shown for 1975 reflects a decrease of $85,000 and represents the amount for which NASA has been billed by the Labor Department pursuant to Section 35 of the Federal Employees' Compensation Act as amended by Public Law 86-767, which provides among other things that:

(a) The Secretary of Labor shall, prior to August 15 of each year, furnish each executive department or agency, having employees who are or may be entitled to compensation benefits, a statement showing total cost of benefits and other payments made from the Employees' Compensation Fund during the preceding fiscal year on account of the injury or death of employees or persons under the jurisdiction of such agency occurring after December 1, 1960.

(b) That each agency shall include in its annual budget estimates for the next fiscal year a request for an appropriation in an amount equal to such costs. Sums appropriated pursuant to such request shall, within thirty days after they become available, be deposited in the Treasury to the credit of the Employee's Compensation Fund.

	1973	1974	1975
B. Supporting Costs.....	$538,000	$667,000	$705,000

These costs are summarized as follows:

1. Transfer of personnel.....	$184,000	$232,000	$270,000

The $38,000 increase in 1975 is due to an expected increase in the number of reassignments of field center personnel to the Headquarters in accordance with policy to rotate personnel for career development.

2. Civil Service Commission services.....	$35,000	$58,000	$56,000

Headquarters reimburses the Civil Service Commission for security investigations on new hires for the entire agency. The cost of security investigations is a function of two variables, the number of investigations to be conducted and the unit charge made by the Civil Service Commission. There is also a payment to the Commission for recruitment advertising, career-maturity surveys, and any requested investigation of formal discrimination complaints. The estimated cost for 1975 is slightly less than for 1974.

	1973	1974	1975
3. Personnel training.....	$319,000	$377,000	$379,000

The estimate for training in 1975 is approximately the same as for the prior year. The estimate provides for approximately 1,538 enrollments for training in the following categories: scientific, engineering and related professional training - 220; technical support and administrative skills training - 328; supervision, management and executive development - 600; secretarial, office support, safety and personal skills - 390.

TRAVEL

	1973	1974	1975	Change in 1975
II. TRAVEL.....	$2,291,000	$2,565,000	$2,615,000	$+50,000

Basis of Fund Requirements

Summary of Travel by Major Category

	1973	1974	1975
A. Program Travel.....	$798,000	$888,000	$888,000
B. Meetings and Technical Seminars.	$829,000	$911,000	$911,000
C. Administrative Travel.....	$664,000	$766,000	$816,000
Total, Travel.....	$2,291,000	$2,565,000	$2,615,000

A. Program Travel.....	$798,000	$888,000	$888,000

Program travel represents approximately 34% of the Headquarters travel requirements for 1975. The 1975 estimate remains essentially the same as 1974 and is in consonance with the planned launch schedule for 1975.

B. Meetings and Technical Seminars.	$829,000	$911,000	$911,000

This category of travel is in connection with the interface of NASA with other Governments as well as other U.S. Government departments and agencies and representatives of the world-wide aerospace community. The travel required for FY 1975 is essentially the same as FY 1974.

C. Administrative Travel.....	$664,000	$766,000	$816,000

The increase of $50,000 is mainly attributable to non-NASA employee travel associated with the expected accelerations in joint meetings with the USSR, especially by the Apollo Soyuz Test Project working groups in connection with the launch of the Apollo Soyuz mission in mid-July. 1975.

The detail of the 1975 estimate is as follows: Direction and coordination of administrative management programs $381,000; charter or lease of aircraft $28,000; Local transportation $32,000; rental of passenger vehicles $16,000; travel performed in accordance with the provisions of 31 U.S.C. 22a (Congressional travel) $30,000; other nonemployee travel such as that of unpaid members of research advisory committees $299,000; and permanent change of station and family travel expenses $30,000.

The estimates shown for each of the above travel categories are required for the NASA Headquarters to provide the necessary direction in carrying out the space program as authorized by Congress.

FACILITIES SERVICES

	1973	1974	1975	Change in 1975
III. FACILITIES SERVICES	$470,000	$327,000	$4,240,000	$+3,913,000

Basis of Fund Requirements

Summary of Facilities Services

	1973	1974	1975
A. Rental of Real Property.....	$49,000	$44,000	$3,993,000
B. Maintenance and Related Services			
1. Maintenance, repair and alterations of buildings and grounds.....	$234,000	$108,000	$108,000
2. Maintenance of equipment.....	4,000	4,000	9,000
3. Custodial services.....	183,000	166,000	128,000
Subtotal.....	$421,000	$278,000	$245,000

	1973	1974	1975
C. Operation of Facilities			
1. Supplies and equipment.....	---	$5,000	$2,000
Total, Facilities Services.....	$470,000	$327,000	$4,240,000
A. Rental of Real Property.....	$49,000	$44,000	$3,993,000

Public Law 92-313 requires that agencies be charged for space and related services provided by the General Services Administration (GSA) at approximate commercial equivalent rates effective July 1, 1974.

The amount shown for 1975 represents the Headquarters and NaPO portion of the amount for which NASA will be charged for space presently provided by the General Services Administration. In addition the estimate includes $39,000 for lease of a parking area for JPL employees; $4,000 for lease of hangar and workshop space at Burbank Airport; and $1,000 for Headquarters share of rental of the relocation site.

B. Maintenance and Related Services.....	$421,000	$278,000	$245,000
1. Maintenance, repair and alterations of buildings and grounds.....	$234,000	$108,000	$108,000

The requirement for 1975 is the same as for 1974.

2. Maintenance of equipment....	$4,000	$4,000	$9,000

This estimate covers the maintenance and repair of the security alarm systems and equipment in the NASA Headquarters buildings. The increase is attributable to the acquisition of a different system.

3. Custodial Services.....	$183,000	$166,000	$128,000

This estimate covers security guard service in the various Headquarters buildings. The decrease in 1975 is attributable to a reduction in the number of security guards and guard posts required in 1974.

	1973	1974	1975
C. Operation of Facilities.....	---	$5,000	$2,000
1. Supplies and equipment.....	---	$5,000	$2,000

Supplies and equipment are required for the operation of the Headquarters Occupational Medicine and Environmental Health Unit.

TECHNICAL SERVICES

	1973	1974	1975	Change in 1975
IV. TECHNICAL SERVICES....	$9,951,000	$9,988,000	$10,647,000	$+659,000

Basis of Fund Requirements

Summary of Technical Services

	1973	1974	1975
A. Automatic Data Processing			
1. Equipment.....	$1,073,000	$1,189,000	$1,121,000
2. Programming and operation services.....	$1,165,000	$1,713,000	$1,783,000
Subtotal.....	$2,238,000	$2,902,000	$2,904,000
B. Engineering Services	$44,000	$13,000	$57,000
C. Scientific and Technical Information and Educational Program Programs			
1. Operation of NASA Technical Libraries.....	$45,000	$46,000	$49,000
2. Educational/informational programs.....	$1,972,000	$1,990,000	$1,990,000
3. Scientific and technical information.....	5,652,000	5,037,000	5,647,000
Subtotal.....	$7,669,000	$7,073,000	$7,686,000
Total, Technical Services.....	$9,951,000	$9,988,000	$10,647,000

	1973	1974	1975
A. Automatic Data Processing.....	$2,238,000	$2,902,000	$2,904,000

The major portion of the estimate for equipment is to cover the rental of an IBM 360/50 computer system and peripheral equipment which provides data processing services for Headquarters. In addition, this estimate provides for equipment peripheral to a NASA-owned IBM 360/50 computer which supports the NASA Scientific and Technical Information Facility at College Park, Maryland. Also included is lease of terminal equipment and related costs for NASA Pasadena Office participation in the NASA Procurement Information Computer System (PICS).

The basic ADP systems for carrying out the function of the Scientific and Technical Information Facility currently consists of one Government-owned IBM 360/50 with one large-scale data storage unit plus three leased storage units. These direct-access storage units take advantage of the multi-programming capability of the 360/50 to accommodate a NASA-wide time shared, on-line remote retrieval system for scientific and technical information. As the number of files, the amount of data in the files, and the varieties of users grow, additional storage capability and additional programs for manipulating the data are required. The estimate anticipates advances in data storage technology whereby larger quantities of data can be stored with faster retrieval time than at present.

The major increase in cost is attributable to the enhancement of the central processor of the computer system to accommodate demand for on-line retrieval by regional dissemination centers, NASA contractors, and other Government agencies in the exchange of data-base service.

The major portion of the estimate for ADP programming and operations services is to cover systems analysis, programming, computer operation and related services associated with the Headquarters data processing requirements. The 1975 estimate shows an increase of $70,000. This increase is for the operation of a newly developed legal information research system for abstracting, indexing, retrieval of information, and to meet additional program requirements; also, to cover the design of an interagency data collection network which will provide for direct exchange between NASA and several Government agencies of computer-stored scientific and technical information. It is anticipated that this will result in considerable reduction in duplicate storage of technical data.

	1973	1974	1975
B. Engineering Services.....	$44,000	$13,000	$57,000

The $13,000 is for medical studies to be completed in 1974. The $57,000 in 1975 will provide for the preparation of a study of failure and mishap data to focus on prevention and costs; a study of field installation, fire protection staffing, equipment, and operations to establish guidelines for future planning; and dissemination of information on lessons learned to prevent recurrence of mishap and failure.

C. Scientific and Technical Information and Educational Programs.....	$7,669,000	$7,073,000	$7,686,000

The funding required to finance these programs is $7,686,000. The costs are summarized as follows:

1. Operation of technical libraries.....	$45,000	$46,000	$49,000

The cost of the operation of technical libraries is essentially the same as the 1974 level.

2. Educational/Informational Programs.....	$1,972,000	$1,990,000	$1,990,000

Research, development, and operational missions in aeronautics and space provide substantive knowledge and serve as an educational stimulus to students and teachers. NASA responds to expressed needs of students and teachers by developing curriculum supplements in space-related areas such as physics, biology, chemistry, and math; assistance to over 1,000 teacher workshops and professional education meetings (with over 30,000 teachers participating); sponsorship of the Youth Science Congresses; and participation in science fairs. The largest single program is the Spacemobile, a touring space-science education lecture demonstration unit.

The cost for these programs in 1975 is estimated to be $1,990,000 which is the same as for 1974.

3. Scientific and Technical Information.....	$5,652,000	$5,037,000	$5,647,000

The largest requirement is the NASA Scientific and Technical Information Facility, which will cost $3.2 million in 1975. The level of cost for all other information services is estimated at $2.4 million. These costs are for the documentation of worldwide aerospace journal and report literature; monographs and technical reviews; analyzing, evaluating, and testing new methods and systems in the field of scientific communications to increase the effectiveness of the technical information program; and translating foreign language technical books, reports, and journal articles required

to meet the needs of NASA and its contractor scientific personnel to keep abreast of world developments in the space sciences and related fields. The 1975 estimate shows an increase of $610,000. This increase is the result of actions to realign the obligation with the year in which the services were performed for the operation of the scientific and technical information facility and additional requirements for the publications, documentation, printing and dissemination of scientific and technical information.

ADMINISTRATIVE SUPPORT

	1973	1974	1975	Change in 1975
V. ADMINISTRATIVE SUPPORT..	$6,556,000	$5,788,000	$5,917,000	$+129,000

Basis of Fund Requirements

Summary of Administrative Support

	1973	1974	1975
A. Communications			
1. Leased lines and long distance tolls.....	$647,000	$694,000	$697,000
2. Local telephone services.....	369,000	425,000	425,000
3. Other communications.....	1,978,000	2,352,000	2,354,000
Subtotal.....	$2,994,000	$3,471,000	$3,476,000
B. Administrative Printing.....	$312,000	$326,000	$324,000
C. Supplies, Materials, and Equipment.....	$841,000	$363,000	$411,000
D. Transportation			
1. Center operations.....	$878,000	$85,000	$85,000
2. Common carrier.....	20,000	18,000	18,000
Subtotal.....	$898,000	$103,000	$103,000

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	1973	1974	1975
E. Administrative Support Services			
Installation support services.....	$1,335,000	$1,339,000	$1,407,000
Occupational medicine and environmental health.....	176,000	186,000	196,000
Subtotal.....	$1,511,000	$1,525,000	$1,603,000
Total, Administrative Support.....	$6,556,000	$5,788,000	$5,917,000
A. Communications.....	$2,994,000	$3,471,000	$3,476,000

Included in this estimate are the costs of leased lines, long distance tolls, telephone exchange services, and other communications, such as TWX and postage (Headquarters pays for the agency's postage). The estimate for communications remains essentially the same as 1974.

B. Administrative Printing.....	$312,000	$326,000	$324,000

The estimate for printing remains essentially the same as 1974.

C. Supplies, Materials and Equipment.	$841,000	$363,000	$411,000

Of the amount estimated for 1975, $194,000 is for supplies and materials and $217,000 for purchased and rented equipment. The $48,000 increase in 1975 is to replace aged equipment at NASA Pasadena Office.

D. Transportation.....	$898,000	$103,000	$103,000

The requirement for 1975 is the same as 1974.

E. Administrative Support Services...	$1,511,000	$1,525,000	$1,603,000

The requirement for 1975 for an additional $78,000 provides for increased interpreter requirements to support the Apollo Soyuz Test Project Working Groups, updating the Parts and Materials ALERT Experience Handbooks, and a slight increase in medical services.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
ORGANIZATION AND STAFFING
NASA HEADQUARTERS

STAFFING SUMMARY

	FY 74	FY 75
Excepted	169	169
GS-16	46	46
GS-15	351	350
GS-14	249	247
All Other GS	751	756
Wage Board	13	13
Total Perm.	1,591	1,591

ADMINISTRATOR

	FY 74	FY 75
Excepted	8	8
GS-16	-	-
GS-15	5	5
GS-14	6	6
All Other GS	35	35
Wage Board	3	3
Total Perm.	57	57

GENERAL COUNSEL

	FY 74	FY 75
Excepted	6	6
GS-16	-	-
GS-15	13	13
GS-14	5	5
All Other GS	17	17
Wage Board	-	-
Total Perm.	41	41

COMPTROLLER

	FY 74	FY 75
Excepted	10	10
GS-16	1	1
GS-15	25	25
GS-14	40	40
All Other GS	91	91
Wage Board	-	-
Total Perm.	167	167

POLICY & UNIVERSITY AFFAIRS

	FY 74	FY 75
Excepted	4	4
GS-16	1	1
GS-15	5	5
GS-14	2	2
All Other GS	6	6
Wage Board	-	-
Total Perm.	18	18

INDUSTRY AFFAIRS AND TECHNOLOGY UTILIZATION

	FY 74	FY 75
Excepted	6	6
GS-16	-	-
GS-15	16	16
GS-14	16	16
All Other GS	50	50
Wage Board	-	-
Total Perm.	88	88

EQUAL OPPORTUNITY PROGRAMS

	FY 74	FY 75
Excepted	2	2
GS-16	-	-
GS-15	3	3
GS-14	1	2
All Other GS	13	13
Wage Board	-	-
Total Perm.	19	20

(AD HOC)

AEROSPACE SAFETY ADVISORY PANEL

	FY 74	FY 75
Excepted	-	-
GS-16	-	-
GS-15	-	-
GS-14	-	-
All Other GS	-	-
Wage Board	-	-
Total Perm.	-	-

ORGANIZATION & MANAGEMENT

	FY 74	FY 75
Excepted	10	10
GS-16	1	1
GS-15	35	35
GS-14	34	33
All Other GS	145	145
Wage Board	9	9
Total Perm.	234	233

DOD AND INTERAGENCY AFFAIRS

	FY 74	FY 75
Excepted	4	4
GS-16	-	-
GS-15	3	3
GS-14	1	1
All Other GS	3	3
Wage Board	-	-
Total Perm.	11	11

INTERNATIONAL AFFAIRS

	FY 74	FY 75
Excepted	5	5
GS-16	-	-
GS-15	3	3
GS-14	3	3
All Other GS	13	13
Wage Board	-	-
Total Perm.	24	24

LEGISLATIVE AFFAIRS

	FY 74	FY 75
Excepted	2	2
GS-16	-	-
GS-15	4	4
GS-14	3	3
All Other GS	17	17
Wage Board	1	1
Total Perm.	27	27

PUBLIC AFFAIRS

	FY 74	FY 75
Excepted	3	3
GS-16	-	-
GS-15	12	12
GS-14	13	13
All Other GS	44	44
Wage Board	-	-
Total Perm.	72	72

INSTITUTIONAL MANAGEMENT

	FY 74	FY 75
Excepted	6	6
GS-16	-	-
GS-15	11	11
GS-14	11	11
All Other GS	54	54
Wage Board	-	-
Total Perm.	82	82

PROCUREMENT

	FY 74	FY 75
Excepted	5	5
GS-16	-	-
GS-15	17	17
GS-14	27	27
All Other GS	28	28
Wage Board	-	-
Total Perm.	77	77

MANNED SPACE FLIGHT

	FY 74	FY 75
Excepted	31	31
GS-16	10	10
GS-15	80	77
GS-14	45	43
All Other GS	52	57
Wage Board	-	-
Total Perm.	218	218

SPACE SCIENCE

	FY 74	FY 75
Excepted	22	22
GS-16	16	16
GS-15	35	35
GS-14	19	19
All Other GS	67	67
Wage Board	-	-
Total Perm.	159	159

APPLICATIONS

	FY 74	FY 75
Excepted	16	16
GS-16	4	4
GS-15	29	29
GS-14	10	10
All Other GS	35	35
Wage Board		
Total Perm.	94	94

TRACKING & DATA ACQUISITION

	FY 74	FY 75
Excepted	9	9
GS-16	6	6
GS-15	19	19
GS-14	5	5
All Other GS	13	13
Wage Board	-	-
Total Perm.	52	52

AERONAUTICS & SPACE TECHNOLOGY

	FY 74	FY 75
Excepted	20	20
GS-16	9	9
GS-15	46	46
GS-14	8	8
All Other GS	68	68
Wage Board	-	-
Total Perm.	151	151

RESEARCH AND PROGRAM MANAGEMENT

FISCAL YEAR 1975 ESTIMATES

JET PROPULSION LABORATORY

MISSION

The Jet Propulsion Laboratory (JPL) is a Government-owned facility managed, staffed, and operated by the California Institute of Technology under a contract with NASA. The cost of operating the Laboratory is funded from the Research and Development appropriation, except for the lease or purchase of administrative aircraft and the purchase of passenger motor vehicles which are funded from the Research and Program Management appropriation and are included in the NASA Headquarters budget presentation. The Research and Program Management type costs are presented for purpose of comparison only and are not a part of the NASA Research and Program Management budget.

The Jet Propulsion Laboratory performs a variety of engineering, scientific, and management missions including:

1. Project management of complete automated spacecraft systems for planetary exploration.

2. Operation of the Deep Space Network including tracking and data acquisition activities required by planetary and interplanetary flights.

3. A continuing program of supporting research and technology.

Specific examples of the Jet Propulsion Laboratory's activity in these areas are:

Planetary Exploration - The Mariner series of automated spacecraft was designed at the Jet Propulsion Laboratory. The Laboratory has been responsible for the project management of all Mariner missions including the integration, assembly, and testing of the spacecraft. Five of these spacecraft have been flown on successful flyby missions since 1962 -- two to Venus and three to Mars -- providing a wealth of scientific information on these planets. In addition, the Mariner 9 spacecraft launched in May 1971, was placed in orbit about Mars on November 13, 1971. The Mariner 9 operations in orbit were highly successful, continuing for nearly a year and resulting in the return of a great quantity of detailed scientific information, including photographs of the entire planetary surface.

Another Mariner mission in this series was a single launch to Venus and Mercury in October 1973. The gravity-assist technique will be employed in this mission to perform flybys of both Venus and Mercury with one spacecraft. This mission will obtain photographic and other scientific data on the environments, atmospheres, surfaces, and body characteristics of the planets, and it will be the first exploratory flight to the planet Mercury.

In 1975, the Viking mission consisting of two launches to Mars is planned. Each spacecraft will consist of an orbiter and a lander. The Langley Research Center has responsibility for the overall Viking project management and development of the lander, while JPL has responsibility for development of the orbiter, spacecraft navigation, and tracking and data acquisition. The spacecraft will orbit Mars and separate a lander capsule which will enter the Martian atmosphere and soft land on the surface of the planet. Orbital, entry, and landed science data will be collected and transmitted to earth. The primary functions of the orbiter are to provide site surveillance data for the use in selecting the exact landing site for the lander capsule, and to serve as a relay station to record and transmit to earth data received from the lander. At other times, the orbiter will conduct its own science experiments, including the transmission of pictures of the Martian surface back to earth, infrared radiometry to determine surface temperatures, infrared spectrometry to detect water vapor, and radio experiments to obtain data to improve planetary navigation capabilities and provide measurements of radio propagation properties and Mars atmospheric data.

The Jet Propulsion Laboratory also has management responsibility for the Mariner Jupiter/Saturn 1977 mission which involves two launches in 1977. At that time the relative positions of Jupiter and Saturn are uniquely favorable for the utilization of gravity-assist techniques which will permit the spacecraft in passing near Jupiter to be accelerated to reach Saturn in the relatively short time of 3.5-4 years. Scientific data will be gathered on the interplanetary medium, the planets themselves, several of the large satellites of the planets, and the rings of Saturn. These missions and objectives have been endorsed by the Space Science Board of the National Academy of Sciences as an appropriate next step in planetary exploration. The spacecraft design for these missions will make maximum use of previous Mariner and Viking Orbiter designs and technology, consistent with the requirements of long-range communications, solar independent power, and flight times of 3.5 to 4 years.

Supporting Research and Technology - The Jet Propulsion Laboratory maintains a strong program of supporting research and technology and advanced development. Much of the knowledge gained from active research in such areas as fluid physics, electrophysics, materials, applied mathematics, and guidance and control will continue to be applied to problems in space exploration.

Another activity of considerable importance is the development and fabrication of scientific experiments to be flown on vehicles other than Jet Propulsion Laboratory spacecraft. These include high altitude balloons, Aerobee rockets, NASA aircraft, and spaceflight vehicles. The scientific teams involved in these experiments frequently include faculty members of various universities and staff members from NASA field installations.

Tracking and Data Acquisition - The Jet Propulsion Laboratory is responsible for the design and operation of NASA's worldwide Deep Space Network. The Deep Space Network is comprised of the Space Flight Operations Facility in Pasadena -- the nerve center of the network -- and tracking and data acquisition stations located in California, Spain, South Africa, and Australia. The Deep Space Network provides support to Jet Propulsion Laboratory managed flight missions and to projects such as Pioneer and Helios which are managed by other NASA installations. The Network also provides backup and support for manned flights in appropriate instances.

DESCRIPTION

The Jet Propulsion Laboratory is located in Pasadena, California, approximately 20 miles north of downtown Los Angeles. Subsidiary facilities are located at Goldstone, California (tracking and data acquisition), Edwards Air Force Base, California (propellant formulation and testing), and Table Mountain, California (open air testing and astronomy).

At Pasadena, the Laboratory occupies 176.8 acres of land of which 145.9 acres are owned by NASA and 30.9 acres are leased. At Goldstone, facilities are located on land occupied under permit from the Army. At Edwards Air Force Base, facilities are located on land occupied under permit from the Air Force. Facilities at Table Mountain are located on land occupied under permit from the Forest Service of the Department of Agriculture. The capital investment of the Jet Propulsion Laboratory, including the Deep Space Network, fixed assets in progress and contractor-held facilities, as of June 30, 1973 was $342,920,000.

SUMMARY OF RESOURCES REQUIREMENTS

Functions	Funds 1973	1974	1975	Change in 1975
Personnel.....	$77,066,000	$77,397,000	$80,496,000	+$3,099,000
Travel.....	2,743,000	2,628,000	2,502,000	-126,000
Facilities Services...	5,495,000	6,044,000	6,467,000	+423,000
Technical Services....	1,166,000	1,275,000	1,332,000	+57,000
Administrative Support	7,627,000	7,620,000	7,676,000	+56,000
Total, fund requirements.....	$94,097,000	$94,964,000	$98,473,000	+$3,509,000

Personnel - The higher FY 1975 compensation cost is the net result of cost of living and merit increases for permanent (+$4,343,000) and temporary personnel (+$240,000), partially offset by lower man years, turnover savings, and reduction in overtime (-$1,901,000). Benefits increase as a result of increased social security payments (+$143,000), and other benefits associated with higher personnel compensation (+$292,000). Supporting personnel costs decrease due to a lower level of recruitment activity and related relocation (-$18,000).

Travel - Decrease in program travel and travel to professional society meetings.

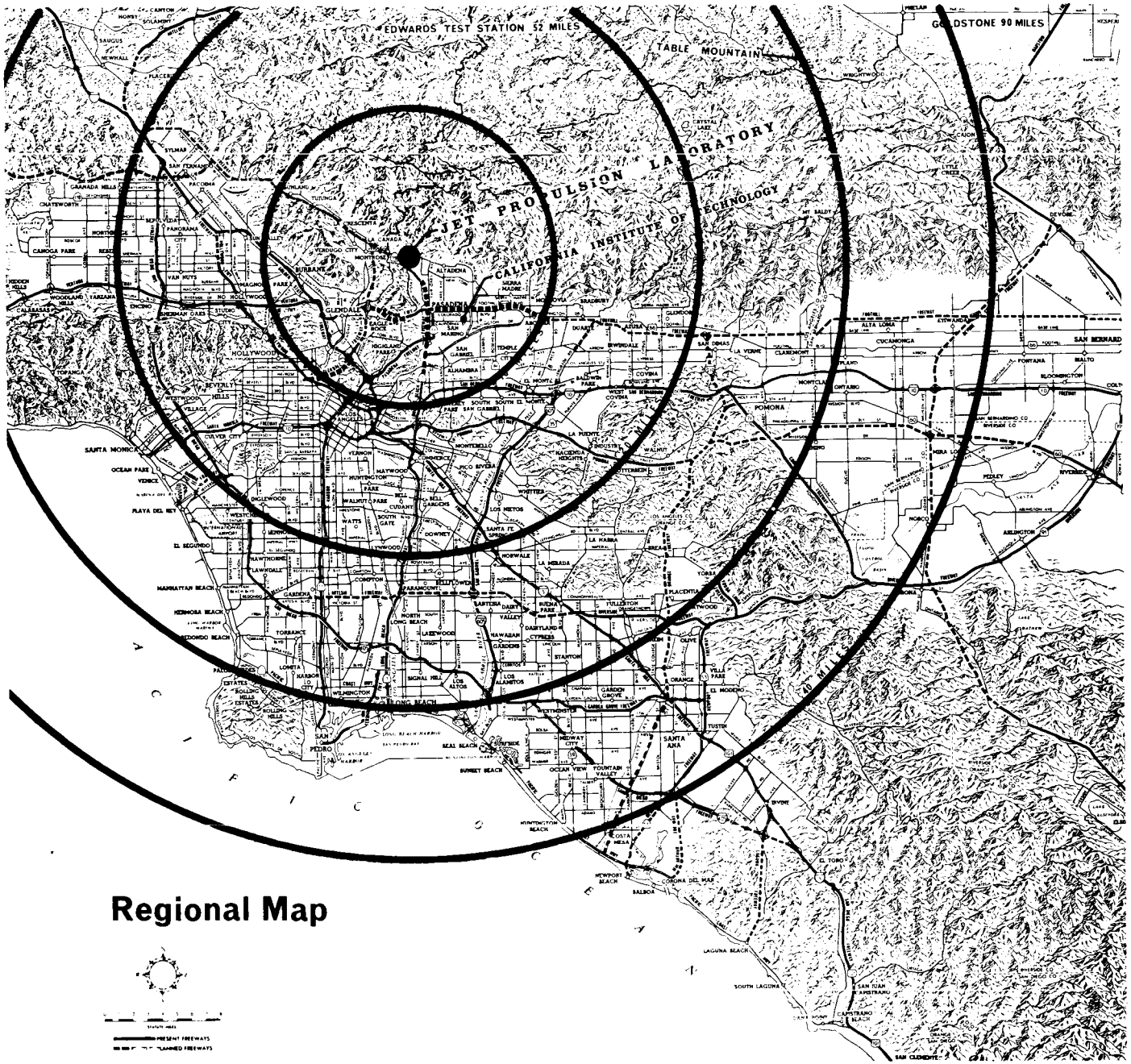
Facilities Services - The increase is in maintenance and related services due to an increase in contractual labor rates for building tradesman and janitorial services; in acquisition of facilities due to expected additional lease of off-site space to house equipment and personnel temporarily displaced by Langley and contractor personnel for Viking; and in operations of facilities due to utilities rate increases.

Technical Services - Programming and operations costs increase as a result of higher rates for contracted services. Engineering service costs increase due to higher subcontract rates for architectural and engineering design services and electronic fabrication services. Scientific and technical information costs increase as a result of higher rates for service contracts utilized by the technical library and documentation groups.

Administrative Support - The increases in supplies, materials, and equipment is due chiefly to higher prices for supplies and materials and rental of Xerox equipment.

Distribution of Permanent Positions by Program

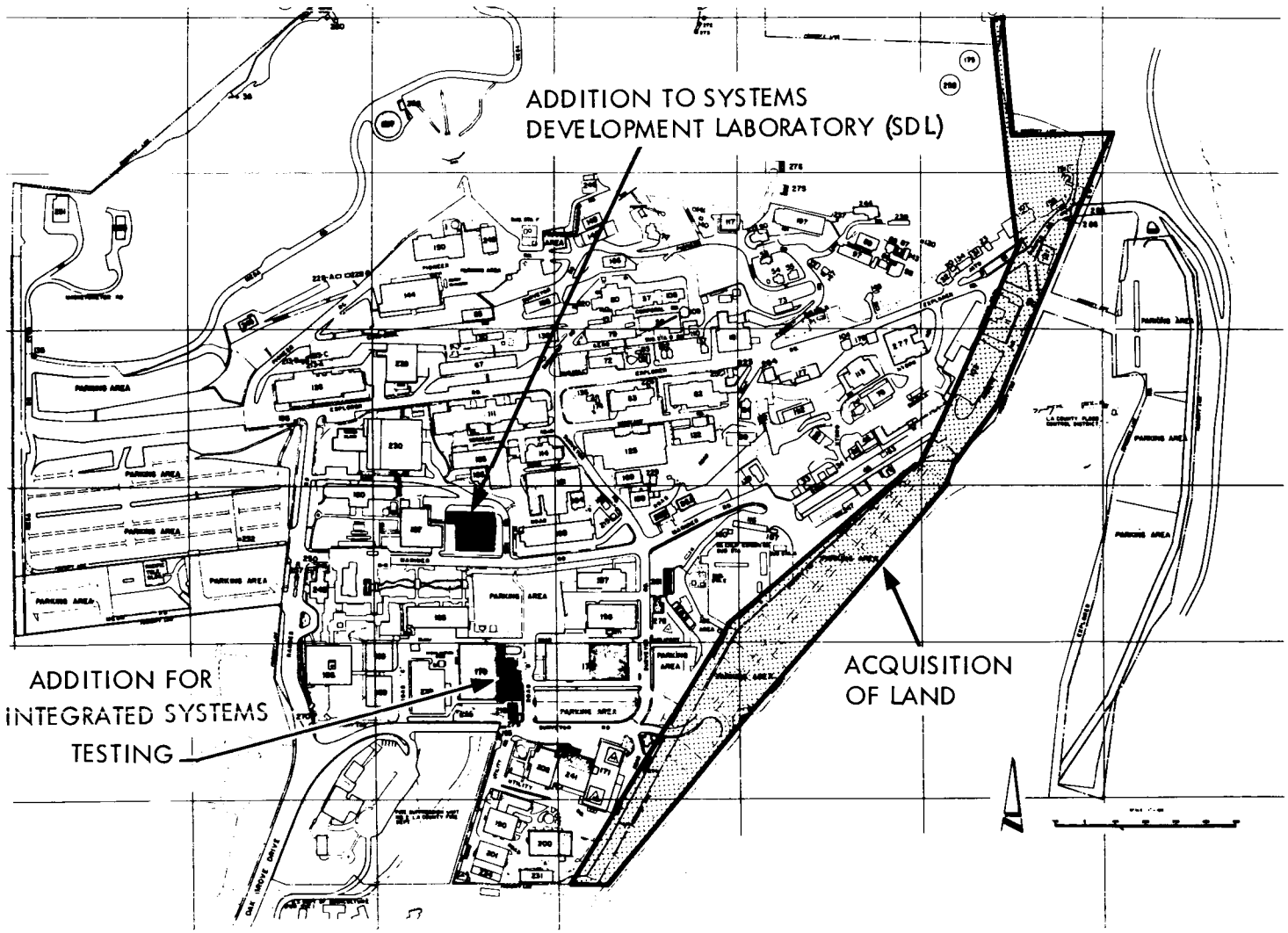
	1973	1974	1975
Direct Positions			
Manned Space Flight			
Space shuttle	7	9	11
Space flight operations	3	4	5
Apollo	12	3	1
Space Science			
Physics and astronomy	19	17	16
Lunar and planetary exploration	1,106	1,061	1,060
Launch vehicle procurement	9	9	9
Space Applications	47	68	73
Aeronautics and Space Technology			
Aeronautical research and technology	20	13	13
Space and nuclear research and technology	270	241	237
Tracking and Data Acquisition	344	342	342
Subtotal, direct positions	1,837	1,767	1,767
Direct support	742	703	703
Indirect positions	1,241	1,186	1,186
Total positions	3,820	3,656	3,656

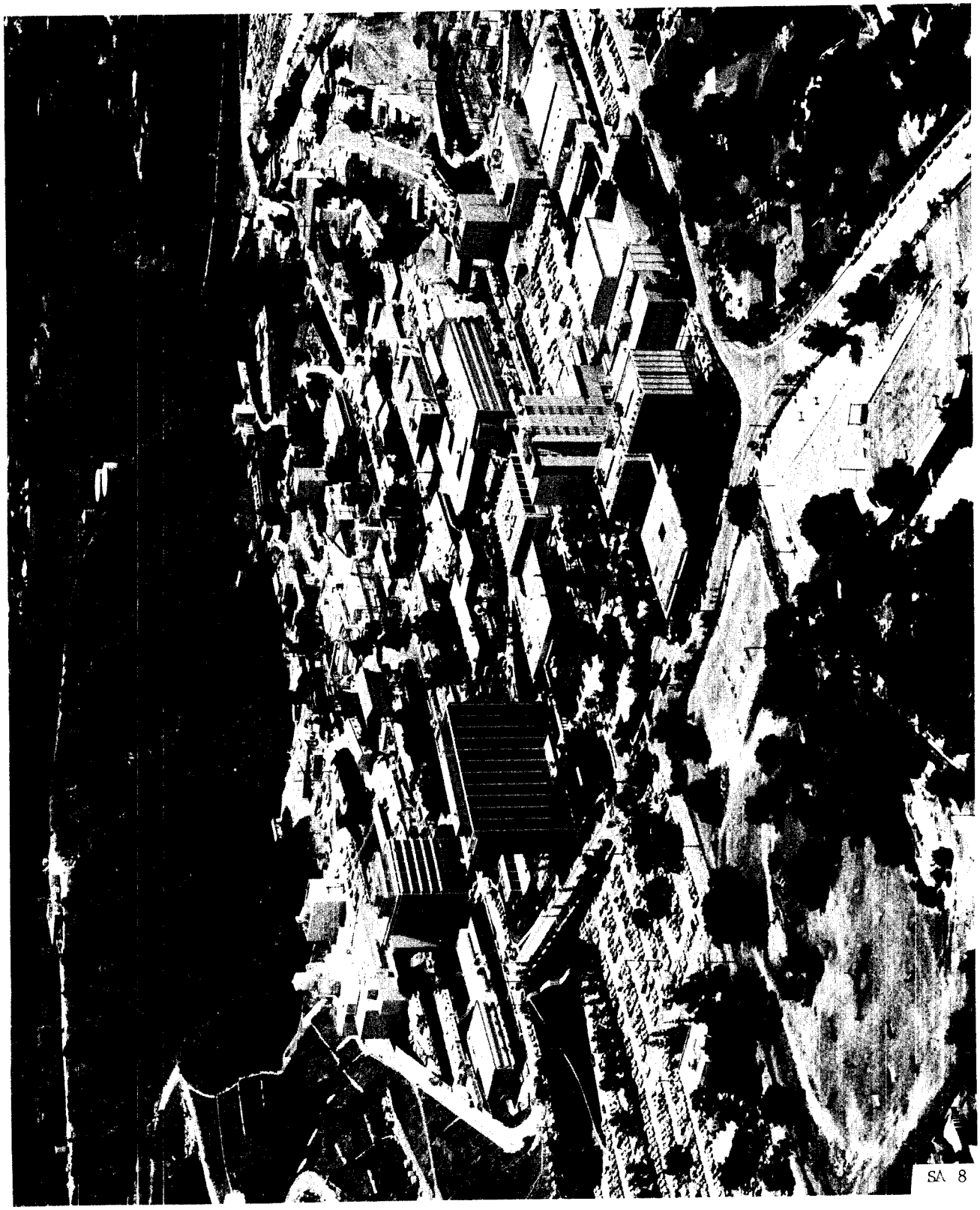


Regional Map

JET PROPULSION LABORATORY
FISCAL YEAR 1975 ESTIMATES

LOCATION PLAN





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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

FISCAL YEAR 1975 ESTIMATES

SUMMARY OF AERONAUTICAL RESEARCH AND TECHNOLOGY
OFFICE OF AERONAUTICS AND SPACE TECHNOLOGY

	(Millions of Dollars)		
	1973	1974	1975
Research and Development	$150.6	$168.0	$166.4
Construction of Facilities	12.9	2.4	9.7
Research and Program Management	123.7	130.2	135.1
Total	$287.2	$300.6	$311.2
Number of direct positions (end of year) associated with Aeronautical Research and Technology	3,659	3,870	3,899

The FY 1975 aeronautical research and technology program is directed at improving the performance and reducing the energy requirements and undesirable environmental effects of civil and military aircraft. Maintaining the Nation's superiority in civil and military aviation is essential to the economic well-being and military security of the United States. In civil aviation the program is aimed at removing or reducing the current growth restraints to civil air transportation of congestion, safety, noise, pollution, and fuel consumption. A technology program to reduce terminal area congestion and noise and to increase operating safety in the airport environment through the development of improved propulsion systems, avionics, guidance and control systems, and operating procedures. The technology to reduce pollution and fuel consumption and to utilize fuels other than those based on petroleum is being developed. Work is in progress on clean, quiet, efficient propulsion applicable to short take off and landing (STOL) and conventional take off and landing (CTOL) aircraft including propulsion system technology which could be applied to current narrow-body civil jet transports. Technology is being developed to provide superior short-haul, high-density, STOL and vertical take off and landing (VTOL) service in the future. NASA is supporting joint development with the Department of Defense (DOD) of appropriate research, experimental, and prototype aircraft, to exploit technologies recently developed but not yet sufficiently verified for use in future production aircraft and providing direct support to specific military aircraft to enhance the success of their development.

The Supersonic Cruise Aircraft Research effort will continue in the area of supersonic technology. The program's objectives are the development of an expanded technology base for future military or civil supersonic cruise aircraft and to provide the data required to assess environmental impacts of present and future foreign supersonic cruise aircraft. The Quiet Propulsive-Lift Technology program has been expanded to include flight research utilizing the Air Force Advanced Medium STOL Transport and an existing aircraft modified into a swept-wing, quiet, propulsive-lift research airplane.

Planned new activities include flight test confirmation of integrated design guidelines required for the implementation of active control concepts, the demonstration of the use of advanced materials, the development of low cost avionics for general aviation, and the demonstration of highly maneuvering aircraft technology utilizing remotely piloted research vehicles.

The Construction of Facilities request for 1975 includes funding for the following: Modification of 6,000 p.s.i. air storage system and rehabilitation of 16-foot transonic wind tunnel at the Langley Research Center; and modification of propulsion systems laboratory at the Lewis Research Center.

The Research and Program Management funding provides for the civil service salaries, travel, electric power for wind tunnel operations, and other general installation costs necessary to support the aeronautics program.

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RESEARCH AND DEVELOPMENT

ESTIMATED FY 1975 OBLIGATIONS FOR
EQUIPMENT TO BE PLACED AT NASA INSTALLATIONS

Program Budget Line Item	(Thousands of Dollars) 1975
Manned Space Flight	$48,582
Space Shuttle	(26,616)
Space Flight Operations	(21,966)
Space Science	13,653
Physics and Astronomy	(3,672)
Lunar and Planetary Exploration	(8,300)
Launch Vehicle Procurement	(1,681)
Space Applications	2,425
Aeronautics and Space Technology	29,363
Aeronautical Research and Technology	(21,618)
Space and Nuclear Research and Technology	(7,745)
Tracking and Data Acquisition	9,830
Technology Utilization	60
GRAND TOTAL	$103,913

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

SUMMARY OF MAJOR EQUIPMENT ACQUISITION OBLIGATIONS INCLUDED IN FY 1975 BUDGET

PROGRAM BUDGET LINE ITEM	RECEIVING INSTALLATION AND BUILDING LOCATION	EQUIPMENT DESCRIPTION	PROGRAMMATIC PURPOSE	FY 1975 OBLIGATIONS ($ in Thous.)	RELATED FACILITY PROJECT
Space Shuttle	Johnson Space Center (Building 5)	Apollo procedures simulator modifications to provide shuttle capability. Modifications include addition of the shuttle type crew station with cockpit instrumentation.	The Shuttle Procedures Simulator, (SPS) is to establish and evaluate crew procedures, and provide part task training for related mission phases.	2,100	Facility Modifications. FY 1976 (Relocate SPS-from Bldg. 35 to Bldg.5)
Space Shuttle	Johnson Space Center (Building 5)	Horizontal Flight Test Simulator (HFTS) will be developed utilizing some equipment from the Apollo mission simulators. New equipment will be required for a motion base, a shuttle orbiter crew station, a visual display system and an instructor's console.	The HFTS is required to provide training to flight crews as well as ground controllers in preparation for, and during the horizontal flight test phase.	2,600	FY 1975 Modifications to crew training facilities-JSC.
Space Shuttle	Johnson Space Center	Two Shuttle Training Aircraft (STA). These are conventional turbojet aircraft modified to simulate expected flight performance of the orbiter during the subsonic atmospheric flight phase from 35,000 ft. altitude to landing.	The STA will provide required inflight training to the orbiter pilots and allow them to maintain proficiency at a much reduced cost as compared to use of the actual orbiter.	14,000	

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Space Shuttle	Johnson Space Center Mission Simulator and Training Facility (Building 5)	Shuttle Mission Simulator (SMS). This is the major simulation device for the training of flight crews and ground controllers.	To train flight crews and ground controllers in the operation of all spacecraft systems in the launch, orbital, de-orbit, entry, terminal, and landing phases of shuttle operations.	4,100	FY 1975 Modifications to crew training facilities JSC.
Space Flight Operations Mission and Systems Integration	Marshall Space Flight Center/Spacelab (Building not identified)	Engineering model (bread board) of the Standard Experiment Pointing Base (SEPB) including such subsystems as: control electronics, rate gyros, star sensors, and S.T.E.	To provide a piece of test hardware for use in developing Spacelab experiments.	500	
Space Flight Operations Mission and Systems Integration	Marshall Space Flight Center (Building not identified)	Prototype Control Moment Gyro Kit (CMG) large gyros and associated controls for use in experimental hardware.	Required for Spacelab guidance and control simulation facility.	275	

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PROGRAM BUDGET LINE ITEM	RECEIVING INSTALLATION AND BUILDING LOCATION	EQUIPMENT DESCRIPTION	PROGRAMMATIC PURPOSE	FY 1975 OBLIGATIONS ($ in Thous.)	RELATED FACILITY PROJECT
Space Flight Operations Mission and Systems Integration	Marshall Space Flight Center (Building not identified)	Prototype concept verification test electrical bread board computer. This is an advanced aerospace computer using large scale integration (LSI) circuitry and capable of being microprogrammed.	This computer will be used to interface with multiple bread board system, providing the computational requirement of concept verification in support of Spacelab and other advanced payload systems.	450	
Space Flight Operations Development, Test, and Mission Operations	Marshall Space Flight Center Computer Lab (Buildings 4663 & 4491)	9 track tape drives. Replace 7 track tape drives with 9 track tape drives.	Replace older 7 track NRZ1 mode of recording with technically advanced and younger equipment. This will greatly expand the amount of information that can be put on a single tape.	502	
Space Flight Operations Development, Test, and Mission Operations	Marshall Space Flight Center Computer Lab (Building 4491)	New computer system to replace 7010/7740 computer. This is a large scale computer capable of processing financial management transactions for MSFC, all stock control and supply problems.	Replacement of 7010/7740 necessary due to age and technical obsolesence.	904	

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Space Flight Operations Development, Test, and Mission Operations	Marshall Space Flight Center Computer Lab (Building 4491)	IBM 370/155 Computer system.	Perform image enhancement and analysis of imagery recorded by Skylab Experiment S-056. Other applications include analysis of imagery recorded by other Skylab experiments, and development of software for the family of SUMC computers and perform data flow analysis of data from sensor to user.	2,503	
Space Flight Operations Development, Test, and Mission Operations	Johnson Space Center Data Technical Lab (Building 17)	HR Film Scanner provides interface to existing laser scanner with the cut film read only capability to a data bus and/or tape recorder.	The film scanner will support photographic sensor of multi-band cameras carried by spacecraft or aircraft.	380	
Physics and Astronomy	Goddard Space Flight Center (Building #23)	AE Central Computer, Sigma 3, Sigma 9 and associated peripherals.	Central computer for data handling and analysis for the Atmosphere Explorer Satellite.	1,675	
Lunar and Planetary Exploration	Jet Propulsion Laboratory SFOF-230	Univac 1110 computing system with 131K fast case, 131K show case, and mass storage and data handling peripherals.	Computing and analysis for Viking project.	858	FY-1975-Facil. Mods. for Comp. Inst.

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PROGRAM BUDGET LINE ITEM	RECEIVING INSTALLATION AND BUILDING LOCATION	EQUIPMENT DESCRIPTION	PROGRAMMATIC PURPOSE	FY 1975 OBLIGATIONS ($ in Thous.)	RELATED FACILITY PROJECT
Lunar and Planetary Exploration	Jet Propulsion Laboratory (Building SFOF-230)	IBM 360/75L Computer (Lease)	Data processing for pioneer, MVM73, Helios and Viking	916	Included in above est. for Facil. Mods. for Comp. Inst.
Lunar and Planetary Exploration	Jet Propulsion Laboratory (SFOF-230)	Post Viking data system prototype command and tracking data processing system.	Viking tracking and data support.	400	Included in above est. for Facil. Mods. for Comp. Inst.
Lunar and Planetary Exploration	Jet Propulsion Laboratory (Building SFOF-230, SDL-264)	360 user terminal and display devices including 23 user line printers, 7 user card readers and the hardware required to build the interfaces for these devices.	Expansion of capability for Viking project.	487	FY-1974-Facil. Mods.
Lunar and Planetary Exploration	Jet Propulsion Laboratory (Buildings SFOF-230, SDL-264)	Digital TV assembly including DTV computer expansion. Output capabilities to be 220 channels and 24 hard copy devices.	To be used in support of Viking project.	1,305	Included in above est. for Facil. Mods.
Lunar and Planetary Exploration	Jet Propulsion Laboratory (Buildings SFOF-230, SDL-264)	Mission Support Area Television system, including monitors, selectors and switching equipment.	Viking control center computer driven displays.	823	Included in above est. for Facil. Mods.
Lunar and Planetary Exploration	Jet Propulsion Laboratory (Building SFOF-230)	Mission Control and Computing Center (MCCC) Voice Internal Communications System.	To replace the current Voice Operated Communicating Agency communications system in support of Viking project.	870	FY-1975-Facil. Mods. for DSN-MCCC

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PROGRAM BUDGET LINE ITEM	RECEIVING INSTALLATION AND BUILDING LOCATION	EQUIPMENT DESCRIPTION	PROGRAMMATIC PURPOSE	FY 1975 OBLIGATIONS ($ in Thous.)	RELATED FACILITY PROJECT
Aeronautical Research and Technology	Ames Research Center (Building N-227)	Forced Oscillation Semispan Model Support System and Associated Instrumentation.	This system is needed to conduct investigations of unsteady aerodynamics at transonic speeds. No such equipment exists in large NASA transonic wind tunnels.	250	
Aeronautical Research and Technology	Ames Research Center (Building N-227)	Digital computer and control system for the Ames 9-by-7 foot SWT for wind tunnel and experiment control, data acquisition, and on-line computation and display of test results.	The existing data I/O rate of computers serving the Ames Unitary Wind Tunnels is not fast enough to handle all static and dynamic problems in real time.	250	
Aeronautical Research and Technology	Ames Research Center (Building N-227)	Dynamic rotary balance mechanism.	This apparatus is needed to provide an adequate dynamic aerodynamics data base at high angles of attack, high reynolds numbers and subsonic to low supersonic speeds required for good stall/ spin motion prior to flight testing.	400	
Aeronautical Research and Technology	Ames Research Center (Building N-227C)	Model support system components and controls.	The proposed component modifications will provide adequate strength to fully accomplish "high load" test objectives and significantly increase facility operational efficiency.	150	

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PROGRAM BUDGET LINE ITEM	RECEIVING INSTALLATION AND BUILDING LOCATION	EQUIPMENT DESCRIPTION	PROGRAMMATIC PURPOSE	FY 1975 OBLIGATIONS ($ in Thous.)	RELATED FACILITY PROJECT
Multi-program usage. Also supported under:					
Space and Nuclear Research and Technology				100	
	TOTAL			(250)	
Aeronautical Research and Technology	Ames Research Center (N-227, N-226, N-218, N-206 and N-222)	All electronic strain gage signal conditioning and raw data display equipment for seven wind tunnel facilities.	The proposed equipment will not only reestablish high reliability in these systems but will provide improved data accuracy.	175	
Multi-program usage. Also supported under:					
Space and Nuclear Research and Technology				100	
	TOTAL			(275)	
Aeronautical Research and Technology	Ames Research Center (N-227, N-226, N-218, N-206 and N-222)	Primary reference pressure transducer and readout, necessary cables and data acquisition system interface.	The new systems will provide the necessary improved accuracy. Further the resulting improved realiability and decreased settling time will significantly improve facility operational efficiency.	150	
Multi-program usage. Also supported under:					
Space and Nuclear Research and Technology				100	
	TOTAL			(250)	

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SUMMARY OF MAJOR EQUIPMENT ACQUISITION OBLIGATIONS INCLUDED IN FY 1975 BUDGET

PROGRAM BUDGET LINE ITEM	RECEIVING INSTALLATION AND BUILDING LOCATION	EQUIPMENT DESCRIPTION	PROGRAMMATIC PURPOSE	FY 1975 OBLIGATIONS ($ in Thous.)	RELATED FACILITY PROJECT
Aeronautical Research and Technology	Ames Research Center (Building N-243)	Graphic display system to be located in the cockpit of the Flight Simulator for Advanced Aircraft and used to present flight performance parameters to the pilots. A second unit will be located in the operational area.	Graphic capability is required to conduct meaningful research using the Flight Simulator for Advanced Aircraft.	300	
Multi-program usage. Also supported under:					
Space and Nuclear Research and Technology				200	
	TOTAL			(500)	
Aeronautical Research and Technology	Ames Research Center (Building N-243)	Electronic system providing command, control, compensation and display for the Flight Simulator for Advanced Aircraft (FSAA).	This system will become an integral part of FSAA Simulator permitting the functions of control, command, compensation and display to be independent of computation facilities.	400	
Aeronautical Research and Technology	Ames Research Center (Building N-243)	Visual display system.	Provides visual cues for such maneuvers as crosswind landings and circular approaches. Permits research to be conducted on the effects of peripheral cues on piloted landings and near ground maneuvers.	482	

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Aeronautical Research and Technology	Ames Research Center (Building N-221)	Transportable Data Acquisition System.	The data system will be used to complete functional checkout of the model in the final test area rather than in the 40x80 ft. test section.	300	
Aeronautical Research and Technology	Ames Research Center (Building N-210)	Flight test support equipment for radar tracking (portable), ILS (microwave), noise measurements and real time data acquisition and processing.	Provides the flight test support equipment necessary to accurately track test aircraft, provide terminal area guidance, measure aircraft generated noise, and acquire, merge and process all flight test data onsite.	390	
Aeronautical Research and Technology	Ames Research Center (Building N-233)	Large scale computer system with ten times the capability of the existing IBM 360/67 duplex system.	Required to assume the workload that is currently being sent to Lawrence Berkeley Laboratory (CDC 7600) which is the equivalent of 5.4 shifts per day of 360/65 computer time.	627	

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PROGRAM BUDGET LINE ITEM	RECEIVING INSTALLATION AND BUILDING LOCATION	EQUIPMENT DESCRIPTION	PROGRAMMATIC PURPOSE	FY 1975 OBLIGATIONS ($ in Thous.)	RELATED FACILITY PROJECT
Multi-program usage. Also supported under:					
Space and Nuclear Research and Technology				408	
	TOTAL			(1,035)	
Aeronautical Research and Technology	Ames Research Center (Building N-210)	Medium scale general purpose digital computer for use with ground-based simulation facilities.	Required to replace two aging EAI8400 computer systems which are obsolete.	1,300	
Aeronautical Research and Technology	Lewis Research Center Computer Center 86	High speed, large core capacity computer system for application to scientific data reduction.	Replacement of two existing batch processing computers (7094/40 & 7094/44) due to limited capacity, speed and age of the existing equipment.	1,665	
Multi-program usage. Also supported under:					
Space and Nuclear Research and Technology				830	
Launch Vehicle Procurement				480	
Space Applications				275	
	TOTAL			(3,250)	

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PROGRAM BUDGET LINE ITEM	RECEIVING INSTALLATION AND BUILDING LOCATION	EQUIPMENT DESCRIPTION	PROGRAMMATIC PURPOSE	FY 1975 OBLIGATIONS ($ in Thous.)	RELATED FACILITY PROJECT
Tracking and Data Acquisition	GSFC, Spacecraft Operations Facility Bldg. 14	IUE Control Center System. Provides control and mission operations consoles, with CRT displays.	Required to provide the necessary real-time control and display of the space telescope during mission operations of International Ultra-violet Explorer spacecraft.	500	
Tracking and Data Acquisition	GSFC, Data Interpretation Lab. Bldg. 23	Telemetry On-line Processing System (TELOPS). Provides input processor and mass storage system to handle and process telemetry and other data in near-realtime.	Required to provide sufficient processing and storage capability to handle the increase in data volume requirements of NASA scientific spacecraft.	1,300	Mod. to Data Process Facil. in FY 76 is required to instl. system.
Tracking and Data Acquisition	GSFC, Data Interpretation Lab. Bldg. 23	Rapid Access Disc Storage Device. High capacity storage system with fast access capability to stored data.	Required to accommodate the transfer of large-volume data files between the TELOPS system and the existing 1108 computer during near-realtime data processing operations conducted for a large number of spacecraft.	300	
Tracking and Data Acquisition	GSFC, Network Test and Training Facility, Bldg. 25	Prototype Ku-Band subsystem. Provides for development of receiver, transmitter, and associated equipment for network test and evaluation.	Required for Space Shuttle compatibility test and checkout and support to future planned spacecraft.	500	

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Tracking and Data Acquisition	GSFC Central Flight Control and Range Operations Bldg 3	Centralized High Speed Data Control and Switching Subsystem. Provides CRT displays, control consoles, and interface equipment for automatic control of high speed data matrix switch. Replaces obsolete manual patch-cord switch system	Required to efficiently handle flow of data from all network stations, to maximize utilization and sharing of world-wide circuits, to provide an automatic test and monitoring capability, and increase overall NASCOM reliability. Supports all spacecraft missions.	300	
Tacking and Data Acquisition	Jet Propulsion Lab Plant Engineering Bldg 202	Network Support Processor for Deep Space Network control. Leased computer processor with associated storage, control, and display peripherals	Short-term augmentation to existing on-line network control processors functioning with on-going planetary missions (Pioneer and Mariner Spacecraft). Required for off-line network control software development for Viking, Mariner Jupiter/Saturn and other planetary missions	260	
Tracking and Data Acquisition	Jet Propulsion Lab Combined Electronics Bldg 125	Network Compatibility Test Telemetry Sub-system for Deep Space Network. Prototype engineering unit for handling telemetry data flow of new approved planetary spacecraft during compatibility test phases.	Required to achieve and test compatibility between new spacecraft telemetry systems and new network equipment being developed for the Mariner Jupiter/Saturn and other future missions.	650	

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Tracking and Data Acquisition	Jet Propulsion Lab Space Flight Operations Facility (SFOF) Bldg 230	Ground Communications Facility Switching Sub-system. Provide high-speed matrix switch and associated mini-computer and display for circuit switching, control, and monitoring.	Required to handle multiple data circuits from multiple spacecraft of Viking and other missions. Provides needed capability for logging, error detection and circuit routing of data channels.	450	
Tracking and Data Acquisition	Wallops Station	Digital Range Systems for existing mobile MPS-19 radar systems. Provides for replacement of original analog range systems on three radars	Required to replace obsolete ranging systems on existing radars which support sounding rockets in U. S. and at international cooperative program sites.	345	
Tracking and Data Acquisition	Flight Research Center Laboratory Bldg 4800	Telemetry Ground Station System Augmentation. Provides for additional core memory and peripherals for existing telemetry data handling computer.	Required augmentation to provide needed real-time data handling and calibration display capability to support aeronautics program flight tests.	555	

U. S. GOVERNMENT PRINTING OFFICE : 1974 O - 529-958