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REPORT TO THE COMMITTEE ON  
AERONAUTICAL AND SPACE SCIENCES  
UNITED STATES SENATE

72-0206

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Use Of Construction Authority  
By The National Aeronautics And  
Space Administration B-165118

BY THE COMPTROLLER GENERAL  
OF THE UNITED STATES

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JULY 20, 1971



COMPTROLLER GENERAL OF THE UNITED STATES  
WASHINGTON, D.C. 20548

B-165118

Dear Mr. Chairman:

The accompanying report presents the results of our review, made pursuant to your request of February 24, 1971, of the use of construction authority by the National Aeronautics and Space Administration.

As agreed with your office, we provided a copy of the draft report to the National Aeronautics and Space Administration for its review. Its comments are included as appendix II.

This is the second of two reports you requested. The first, issued March 29, 1971 (B-165118), dealt with the construction of the Engineering Building at the Manned Spacecraft Center.

We believe that the contents of this report will be of interest to other committees and members of Congress. Release of the report, however, will be made only upon your agreement or upon public announcement by you concerning its contents.

Sincerely yours,

Comptroller General  
of the United States

The Honorable Clinton P. Anderson, Chairman  
Committee on Aeronautical and Space Sciences  
United States Senate

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D I G E S T

WHY THE REVIEW WAS MADE

The Committee Chairman requested the General Accounting Office (GAO) to (1) identify instances where the National Aeronautics and Space Administration (NASA) has constructed major facilities different from those approved by the Congress and (2) determine whether NASA is adhering to the dollar limitations imposed on the use of research and development funds and research and program management funds for minor construction and alteration projects. (See p. 47.)

The construction projects reviewed by GAO were not selected on a statistical basis and therefore were not necessarily representative of the total NASA construction program during the periods covered by the review. GAO's review did not involve an evaluation of the need for the facilities. (See p. 5.)

FINDINGS AND CONCLUSIONS

Major construction

2/ NASA has been required to obtain congressional approval for each major facility that it proposes to construct. The legislative history indicates that, if NASA decides to construct a major facility which significantly differs in purpose or scope from that described to the Congress, the Congress expects NASA to notify it of the deviation and to obtain approval to construct the revised facility. GAO found several instances where NASA constructed major facilities which significantly differed in scope or purpose from those described in its budget submissions to the Congress. There were no indications that the Congress or its committees had been notified of the changes. (See p. 6.)

There is no legal requirement that NASA advise the Congress of revisions made to construction projects. GAO, however, is of the opinion that the authorization and appropriation committees are in the best position to decide whether NASA's practices are in accordance with the committees' intent. (See p. 7.)

Construction of facilities funds are not to be used for rehabilitation and modification of facilities which will change the purpose of the

Tear Sheet

facility or result in an extension of the facility. GAO reviewed a rehabilitation and modification project which changed the designated purpose of the two buildings involved and resulted in an external extension of one of the buildings. (See p. 23.)

The legislative history also indicates that the Congress expects NASA to include in the cost estimate of a major facility all costs needed to make the facility fully operable. Some cost estimates submitted to the Congress did not include all such costs. There is a degree of uncertainty on NASA's part, or disagreement between the Congress and NASA, with regard to what constitutes a fully operable facility and what equipment costs should be included in the estimated cost of a facility project. (See pp. 25 and 26.)

Minor construction and minor alterations

NASA is authorized to use research and development funds for minor construction projects that have an estimated cost (including collateral equipment) of \$250,000 or less for additions, extensions, and expansions of existing facilities. Also NASA is authorized to use research and program management funds for new construction having an estimated cost (including collateral equipment) of \$100,000 or less. NASA has unilaterally applied the \$100,000 limitation to the use of research and development funds for new construction. (See p. 31.)

NASA is authorized to use research and development funds or research and program management funds for alterations without dollar limitation and without obtaining congressional approval. GAO, however, believes that the Congress has been led to understand that it would be notified when the estimated cost of an alteration project (including collateral equipment) exceeded \$250,000. (See p. 35.)

For a number of projects classified as either minor construction or alterations, NASA did not include in the estimated cost of the projects all costs needed to make the facilities fully operable. As a result NASA has constructed major facilities and has made major alterations pursuant to its minor construction and minor alteration authority. Again there is a degree of uncertainty on NASA's part, or disagreement between the Congress and NASA, with respect to what constitutes a fully operable facility and what equipment costs are to be included in the estimates to determine whether the project should be considered major or minor.

GAO noted one case in which minor construction authority had been used to complete a congressionally authorized facility. The funding action taken in this example was clearly illegal. In another case minor construction authority was used to completely build a construction of facilities project which had been previously authorized but subsequently canceled. NASA's actions in this instance were not in violation of law. (See pp. 40 and 42.)

AGENCY ACTIONS AND UNRESOLVED ISSUES

NASA is presently engaged in a review to improve the controls over facility planning. NASA said the matters included in GAO's draft report would be considered along with the information and recommendations developed during the broader NASA review. (See p. 44.)

The recommendations approved by the Administrator will be presented to the Senate Committee on Aeronautical and Space Sciences as a means of developing a complete understanding with the Committee and its staff. Therefore NASA said it was not able at this time to furnish separate comments to GAO. (See p. 44.)

MATTERS FOR CONSIDERATION BY THE COMMITTEE

Major construction

The Committee may wish to identify in the authorization acts for NASA the specific projects that are to be constructed. This identification would restrict the availability of funds appropriated under the construction of facilities appropriations to the projects and amounts identified in the authorization acts.

The Committee may wish also to consider requiring NASA to include in the estimated cost of proposed projects all costs required to construct and equip a fully operable facility and to notify the Congress of the need for any additional construction or equipment subsequently identified. (See p. 30.)

Minor construction and minor alterations

The Committee may wish to consider requiring NASA to include in the estimated cost of proposed projects all reasonably identifiable costs. NASA has not always included the estimated cost of all equipment in the estimated cost of a project. As a result facilities costing in excess of the \$250,000 limitation have been constructed as minor construction projects.

The Committee may wish also to consider the propriety of NASA's using minor construction funds to construct authorized major facilities.

In addition, the Committee may wish to impose a limitation on the use of research and development funds and research and program management funds for alteration projects and require that projects exceeding this limitation be submitted for review and approval. (See p. 43.)

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#### ABBREVIATIONS

GAO	General Accounting Office
LEM	Lunar Excursion Module
NASA	National Aeronautics and Space Administration

## D I G E S T

### WHY THE REVIEW WAS MADE

The Committee Chairman requested the General Accounting Office (GAO) to (1) identify instances where the National Aeronautics and Space Administration (NASA) has constructed major facilities different from those approved by the Congress and (2) determine whether NASA is adhering to the dollar limitations imposed on the use of research and development funds and research and program management funds for minor construction and alteration projects. (See p. 47.)

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### FINDINGS AND CONCLUSIONS

#### Major construction

NASA has been required to obtain congressional approval for each major facility that it proposes to construct. The legislative history indicates that, if NASA decides to construct a major facility which significantly differs in purpose or scope from that described to the Congress, the Congress expects NASA to notify it of the deviation and to obtain approval to construct the revised facility. GAO found several instances where NASA constructed major facilities which significantly differed in scope or purpose from those described in its budget submissions to the Congress. There were no indications that the Congress or its committees had been notified of the changes. (See p. 6.)

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The Committee may wish also to consider the propriety of NASA's using minor construction funds to construct authorized major facilities.

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## CHAPTER 1

### INTRODUCTION

In recent years the Congress has authorized and appropriated to NASA three types of funds--construction of facilities, research and development, and research and program management.

Construction of facilities funds are provided for advance planning, design, and construction of major facilities and for acquisition or condemnation of real property. Research and development funds are provided for research, development, operations, services, and other activities, including minor construction, maintenance, repair, and alterations of real and personal property necessary to carry out aeronautical and space research and development activities. Research and program management funds are provided for necessary expenses of research in Government laboratories, management of programs and other activities, including minor construction and maintenance, repair, and alteration of real and personal property. Thus NASA has authority to use research and development and research and program management funds, as well as construction of facilities funds for construction purposes.

### SCOPE OF REVIEW

Pursuant to the request of the Chairman, Senate Committee on Aeronautical and Space Sciences, we reviewed NASA's financial management of construction funds to (1) identify instances where NASA constructed facilities different from those described to and approved by the Congress and (2) determine whether NASA is adhering to the dollar limitations imposed on the use of research and development and research and program management funds for minor construction and minor alteration projects.

Our review of NASA's construction activities was conducted at NASA Headquarters, Washington, D.C.; Goddard Space Flight Center, Greenbelt, Maryland; John F. Kennedy Space Center, Florida; Manned Spacecraft Center, Houston, Texas; Ames Research Center, Moffett Field, California;

Langley Research Center, Hampton, Virginia; Lewis Research Center, Cleveland, Ohio; and the Jet Propulsion Laboratory, Pasadena, California. We reviewed construction project files and other related data and, where necessary, held discussions with agency officials at these locations.

We restricted our review of major construction projects to those authorized during and subsequent to fiscal year 1965 which appeared to show the greatest potential for deviation from the congressionally approved project.

We limited our review of minor construction and minor alteration projects to those initiated during and subsequent to fiscal year 1967 except for two projects initiated prior to that time. In selecting minor construction and alteration projects for detailed review, we gave priority to those projects which appeared most likely to involve costs in excess of the imposed limitations applicable to the type of project involved.

Thus the projects reviewed in detail were not selected on a statistical basis and were not necessarily representative of all major and minor facilities projects initiated during the periods covered by our review. Our review did not involve an evaluation of the need for the facilities discussed in this report.

## CHAPTER 2

### MAJOR CONSTRUCTION

#### DEVIATION IN THE SCOPE AND PURPOSE OF CONGRESSIONALLY AUTHORIZED FACILITIES

Since its creation in 1958, NASA has been required to obtain congressional approval for each major facility it proposes to construct. Major construction is defined as a construction project for a new facility having an estimated cost (including collateral equipment)<sup>1</sup> of more than \$100,000 or a construction project relating to an existing facility having an estimated cost (including collateral equipment) in excess of \$250,000.

NASA's construction of facilities budgets submitted to the Congress include a detailed description of each proposed project, its estimated cost, and justification for the project. The Congress, after reviewing the budget submission, authorizes a specific amount to be appropriated for construction projects at each NASA center. The projects identified in the NASA budget submission are considered to be authorized unless specifically deleted by the cognizant committees. Subsequently, the Congress appropriates a lump-sum amount for the construction of NASA facilities.

Although the authorization act for NASA does not identify specific projects, the amounts authorized for construction of facilities are based on a detailed review of the justification, scope, and estimated cost of each project by the cognizant congressional committees. Legislative history indicates that the Congress assumes that the projects will be constructed in the manner and for the purpose described by NASA in its budget submission. Legislative history indicates also that, if for any reason NASA decides to construct a major facility which significantly differs in purpose or scope from that described to the Congress, the Congress expects NASA to notify it of the deviation and to obtain the necessary approval to construct the revised facility.

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<sup>1</sup>See page 25 for NASA's definition of collateral equipment.

Six major construction projects that we reviewed significantly differed in purpose or scope from that which NASA described in its budget submissions to the Congress. A NASA Headquarters official advised us that the Congress was not advised of the deviations because, in NASA's opinion, the changes made in the six projects were within the scope of the congressional authorization.

As discussed on page 22 of the Comptroller General's report B-165118<sup>(1)</sup> dated March 29, 1971, there is no legal requirement that NASA advise the Congress of revisions made to construction projects. In our opinion, the authorization and appropriation committees are in the best position to decide whether NASA's practices with respect to revising congressional authorized projects are in accordance with the committees' intent.

The six projects and their location are listed and discussed below.

<u>Project</u>	<u>Location</u>
Propellant Systems Components) Laboratory ) Flight Crew Training Building) Flight Crew Training Building) extension )	Kennedy Space Center, Florida
Life Support Technology Laboratory	Langley Research Center Hampton, Virginia
Systems Development Laboratory	Jet Propulsion Laboratory, Pasadena, California
Heater replacement, 3.5-foot wind tunnel	Ames Research Center Moffett Field, California

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<sup>1</sup>Report to the Committee on Aeronautical and Space Sciences, United States Senate, entitled "Building Authorized to Provide Office Space at Manned Spacecraft Center Redesigned to Provide Laboratory Space, National Aeronautics and Space Administration."

## Propellant Systems Components Laboratory

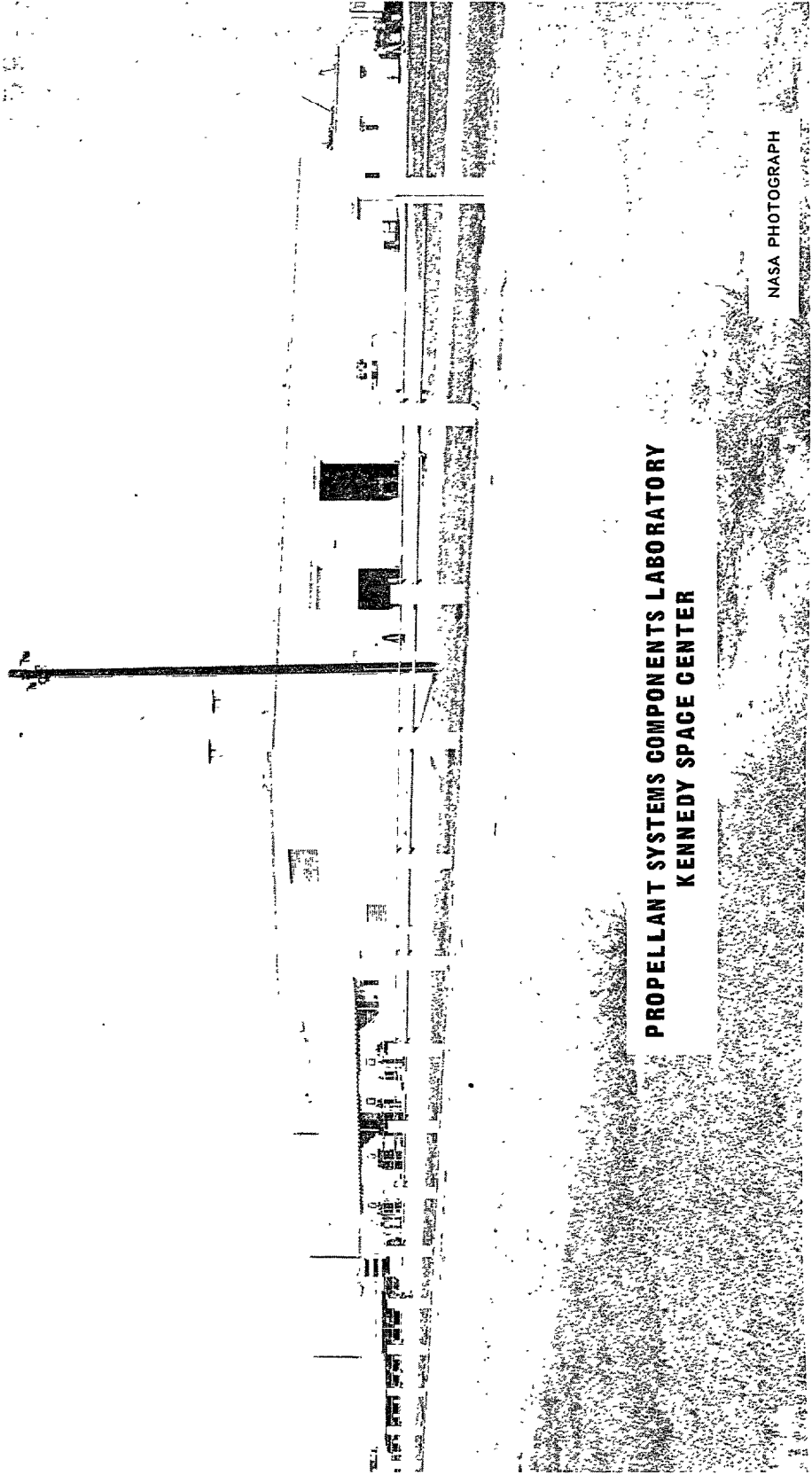
A project justification for the construction of the Propellant Systems Components Laboratory at the Kennedy Space Center was submitted to the Congress as part of NASA's fiscal year 1965 construction of facilities program. The laboratory was to consist of a 4,100-square-foot extension to an existing propellant laboratory and a 4,800-square-foot Propellant Transporter Repair and Maintenance Shed and the necessary equipment for each. The estimated cost of the project was \$588,000.

The justification for the project stated that (1) the extension to the laboratory was to provide space for cleaning, analyzing, repairing, and testing of propellant components and hardware of all NASA launch vehicles, launch complexes, and manned spacecraft facilities and (2) the Propellant Transporter Repair and Maintenance Shed was to provide space for the cleaning, purging, and repairing of 50 propellant transporters and other support equipment.

### Revised project scope

In October 1965, after the project had been approved by the Congress, the Kennedy Space Center submitted a justification for a revised and expanded project to NASA Headquarters. This justification provided for the construction of (1) a 35,200-square-foot Propellant Laboratory and High Pressure Gas Maintenance Facility to be located about 5 miles from the existing propellant laboratory in lieu of an extension to the propellant laboratory, (2) a 4,800-square-foot Propellant Transporter Repair and Maintenance Shed, (3) a Propellant Equipment Storage Area, (4) a Gaseous Nitrogen Loading and Charging Station, and (5) a Deionized Water Plant.

The justification for the revised project stated that the expanded Propellant Systems Components Laboratory Complex was needed to provide adequate launch operations support facilities for the Kennedy Space Center. It stated also that the requirement for the propellant laboratory as provided for originally had not been based on a consideration of the needed cleaning requirements for the Apollo spacecraft.



**PROPELLANT SYSTEMS COMPONENTS LABORATORY  
KENNEDY SPACE CENTER**

NASA PHOTOGRAPH



The revised project, with certain changes, was approved by NASA Headquarters in January 1966. The estimated cost of the revised project was \$2,734,000, an increase of \$2,146,000 over the estimated cost of \$588,000 for the project as submitted to the Congress. The additional amount was obtained by the transfer of funds from another fiscal year 1965 project for additions to the Manned Spacecraft Operations and Checkout Building.

Construction of the complex was completed in October 1967 at a cost of about \$2,651,000.

## Summary of project scope changes

The project, as described to the Congress, as revised, and as constructed, is summarized below for comparative purposes.

<u>Description</u>	<u>Project description provided to the Congress</u>	<u>Revised project description</u>	<u>Project as constructed</u>
Cost:			
Construction	\$256,300	\$1,997,300	\$2,651,088 <sup>a</sup>
Equipment	<u>331,700</u>	<u>736,700</u>	<u>(b)</u>
Total	<u>\$588,000</u>	<u>\$2,734,000</u>	<u>\$2,651,088<sup>a</sup></u>
Number of structures by type:			
Facility--addition	1	-	-
"--building (single story)	-	3	3
"--other	1	3	4
Concrete pads	-	1	1
Paved parking and open storage areas	(c)	5	4
Area by type (approximate square feet):			
Facility--building	4,100	39,472	39,230
"--other	4,800	8,750	17,520
Concrete pads	-	1,500	(d)
Paved parking and open storage areas	(c)	444,042	334,323

<sup>a</sup>Includes some equipment required for the facility to accomplish its intended function, the amount of which could not be identified.

<sup>b</sup>Not determined.

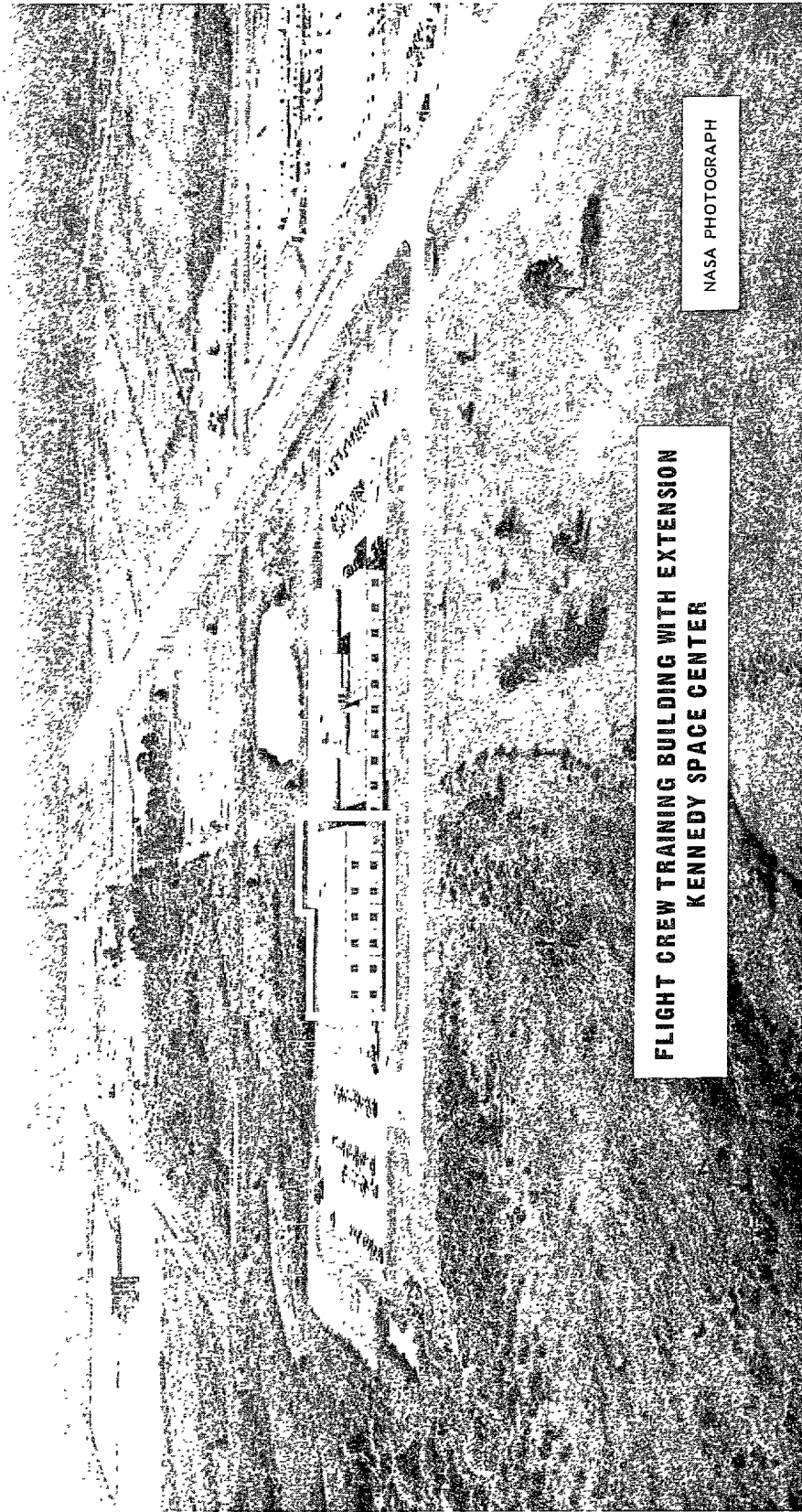
<sup>c</sup>Provision was made for parking; however, square footage and number of parking and storage areas were not indicated.

<sup>d</sup>Not identified in project file.

### Flight Crew Training Building

The project justification for additions to the Manned Spacecraft Operations and Checkout Building at the Kennedy Space Center was submitted to the Congress as part of NASA's fiscal year 1965 construction of facilities program. The estimated cost of the project was \$16,316,000.

The justification for the project stated that the additions to the Operations and Checkout Building were required to provide additional assembly and checkout, office, test, and service areas for contractor and NASA personnel to perform preflight checkouts of manned spacecraft systems to prove flight worthiness.



**FLIGHT CREW TRAINING BUILDING WITH EXTENSION  
KENNEDY SPACE CENTER**

NASA PHOTOGRAPH

### Revised project scope

In July 1964, after the project had been approved by the Congress, the Kennedy Space Center submitted a revised justification for the project to NASA Headquarters. The revised project was for a separate Manned Spacecraft Flight Crew Training Building and an addition to the Operations and Checkout Building. The estimated cost of the project, as revised, remained at \$16,316,000, of which \$14,054,800 was for the addition to the Operations and Checkout Building and \$2,261,200 was for a new Flight Crew Training Building.

The separate Flight Crew Training Building, which had not been included in the project justification submitted to the Congress, was to provide a working area of 36,008 square feet to house an Apollo mission simulator, a Lunar Excursion Module (LEM) mission simulator, and the required computers and related equipment. On October 26, 1964, NASA Headquarters approved \$16,124,000 of NASA's fiscal year 1965 construction of facilities budget for the project.

The cost of constructing (1) the addition to the Operations and Checkout Building--the project approved by the Congress--was about \$13 million and (2) the separate Flight Crew Training Building--which was not part of the project approved by the Congress--was about \$2 million. In addition, approximately \$39 million of research and development funds were used to procure two Apollo mission simulators, one LEM mission simulator, and the related equipment which were not provided for in the project as presented to the Congress.

## Flight Crew Training Building extension

A project justification for an extension of the Flight Crew Training Building at the Kennedy Space Center was submitted to the Congress as part of NASA's fiscal year 1966 construction of facilities program. The project was estimated to cost \$1,425,000 and was to provide 17,640 square feet of additional space to house two flight simulators (an Apollo mission simulator and a LEM mission simulator) and related computers. The estimated cost of the simulators and computers was not included in the estimated cost for the building extension.

On June 24, 1965, NASA Headquarters advised the Kennedy Space Center that the Congress had approved the Kennedy Space Center's total construction of facilities program, including the Flight Crew Training Building extension, and that the total amount approved was \$400,000 less than the amount requested in the budget for the Center. The \$400,000 reduction was made without specifying its allocation to individual projects.

On July 20, 1965, the Kennedy Space Center advised NASA Headquarters that the project description and justification for the extension to the Flight Crew Training Building had not changed but that the estimated cost had been reduced from \$1,425,000 to \$1,025,000 because of the reduction of \$400,000 from the amount requested in the budget for the Center.

### Revised project scope

In June 1966, after the Congress had approved the extension to the building, the Kennedy Space Center submitted to NASA Headquarters a revised project justification increasing the original area of the extension from 17,640 to 32,180 square feet and increasing the estimated cost from \$1,025,000 to \$1,259,570.

Construction of the extension to the Flight Crew Training Building was completed in August 1967. The extension provided about 32,000 square feet of floor area or about 80 percent more space than that approved by the Congress.

Although the Congress authorized the construction of the extension to the Flight Crew Training Building to house two mission simulators, the extension was never used for that purpose. We have found that the extension to the building has been used since May 1969 to house a mock-up of the LEM which does not simulate flight. The LEM mock-up is used by the flight crews to practice tasks they will perform on the moon's surface, such as climbing out of the LEM and picking up moon rocks. We were advised that, prior to May 1969, the extension to the building had been used to house a mock-up of the Apollo spacecraft which the flight crews used to practice emergency exits and which did not simulate flight.

### Life Support Technology Laboratory

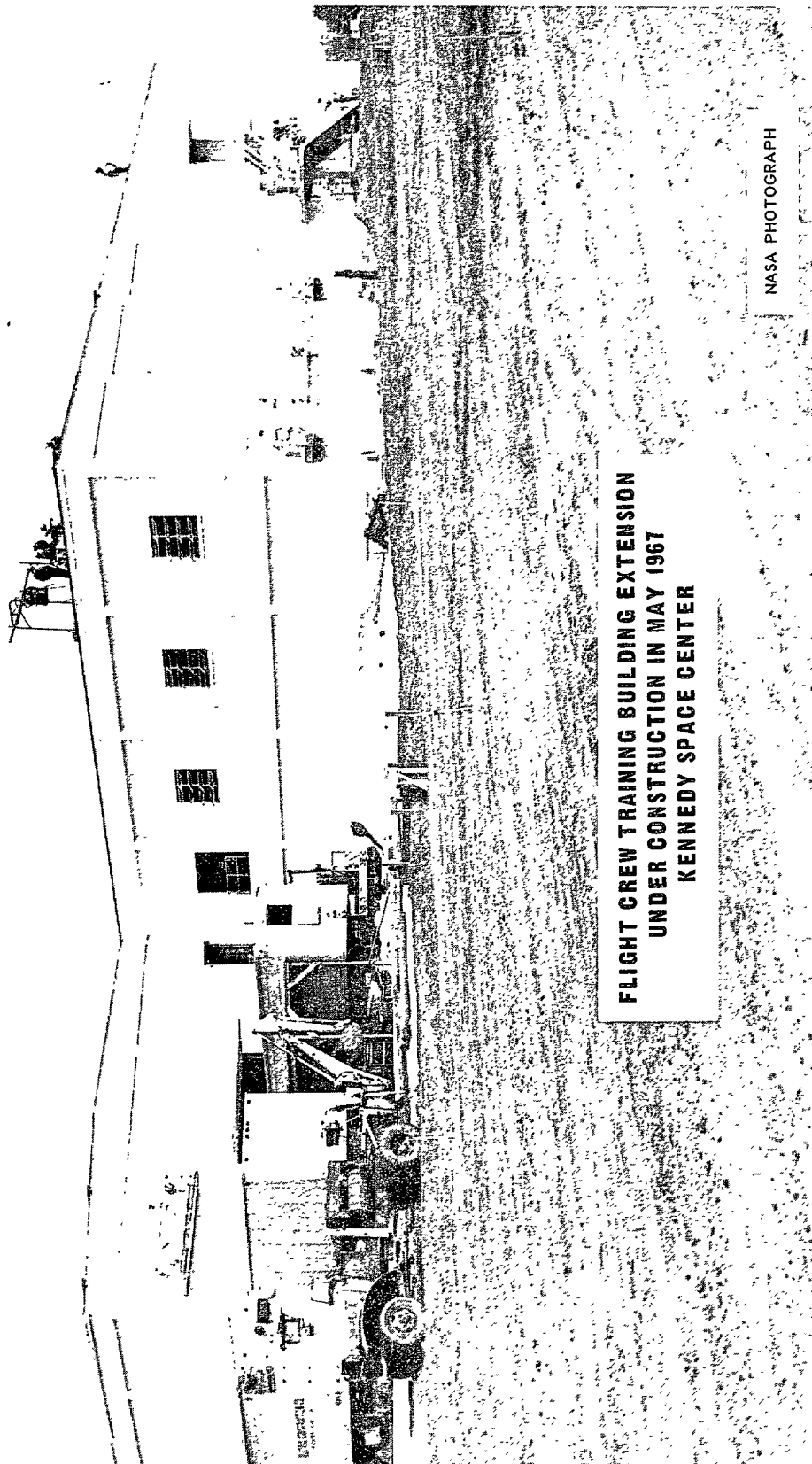
NASA's budget submission for fiscal year 1966, which was approved by the Congress, included a project for a Life Support Technology Laboratory to be constructed at the Langley Research Center. The justification for the project stated that the laboratory was needed to provide NASA with the research capability to obtain and apply the technology necessary to equip future manned space vehicles with optimum life support systems for future manned missions of extended duration.

The laboratory was to contain about 42,000 square feet of laboratory space at an estimated cost of \$2,492,000 including the cost of two environmental simulators to be housed in the laboratory to provide a means of simulating conditions in space.

NASA Headquarters approved the construction of the facility in November 1965.

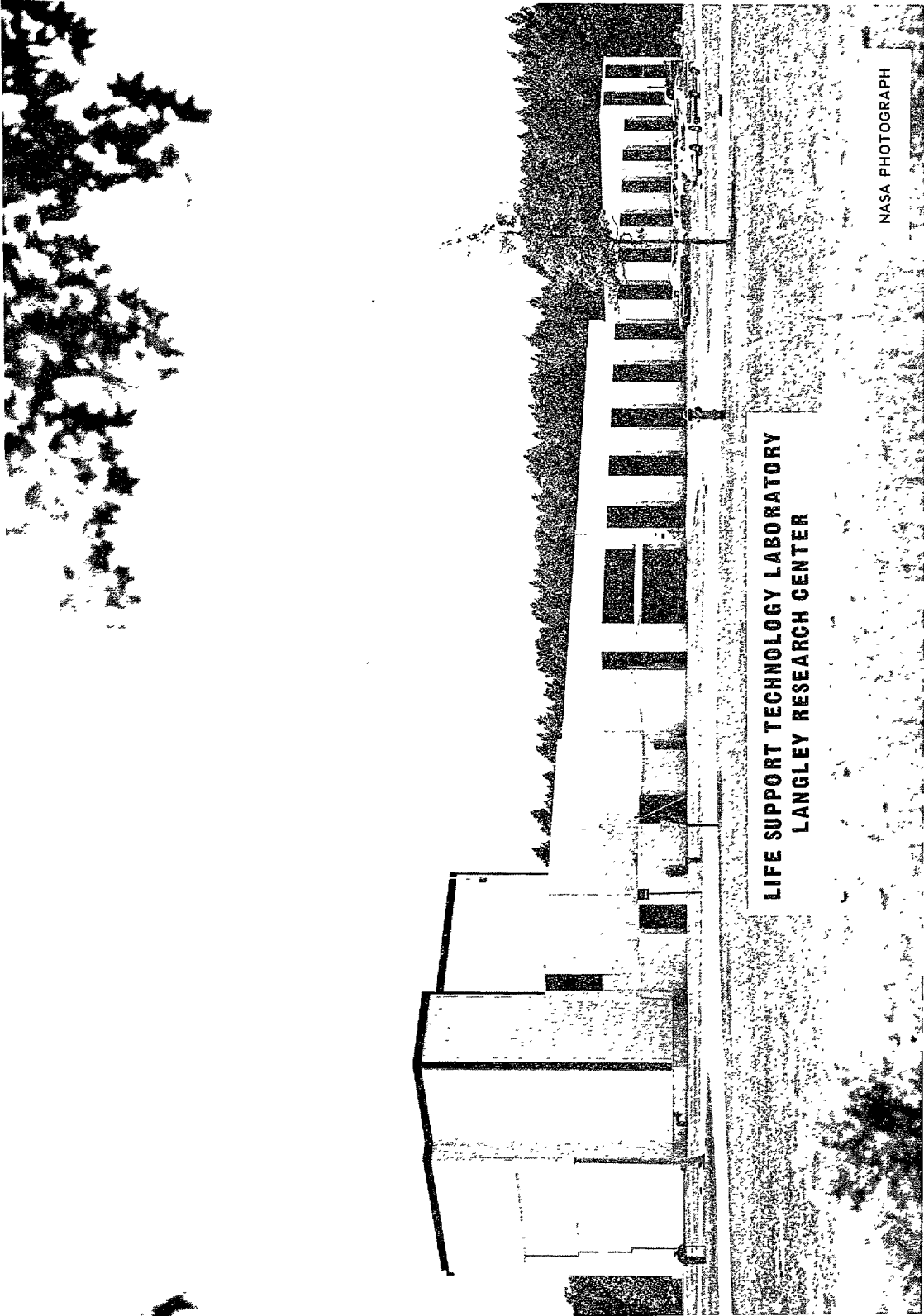
### Revised project scope

In February 1966 Langley, on the basis of a reevaluation of the need for the two environmental simulators, determined that one of the simulators would no longer meet the requirements and that a more expensive simulator was needed. Because the additional cost of the more expensive simulator prohibited its purchase, Langley decided to buy only one of the two simulators approved by the Congress.



**FLIGHT CREW TRAINING BUILDING EXTENSION  
UNDER CONSTRUCTION IN MAY 1967  
KENNEDY SPACE CENTER**

NASA PHOTOGRAPH



**LIFE SUPPORT TECHNOLOGY LABORATORY  
LANGLEY RESEARCH CENTER**

NASA PHOTOGRAPH



In November 1968, when the Life Support Technology Laboratory was being occupied, Langley submitted a proposal to NASA Headquarters for an addition to the laboratory of 7,900 square feet of office space at an estimated cost of \$212,000. Langley explained that the cost of the addition could be funded within the amount originally estimated for the project because of favorable bids on equipment items and a reduction in the estimated cost of constructing the laboratory. NASA Headquarters approved the office-space addition on February 13, 1969.

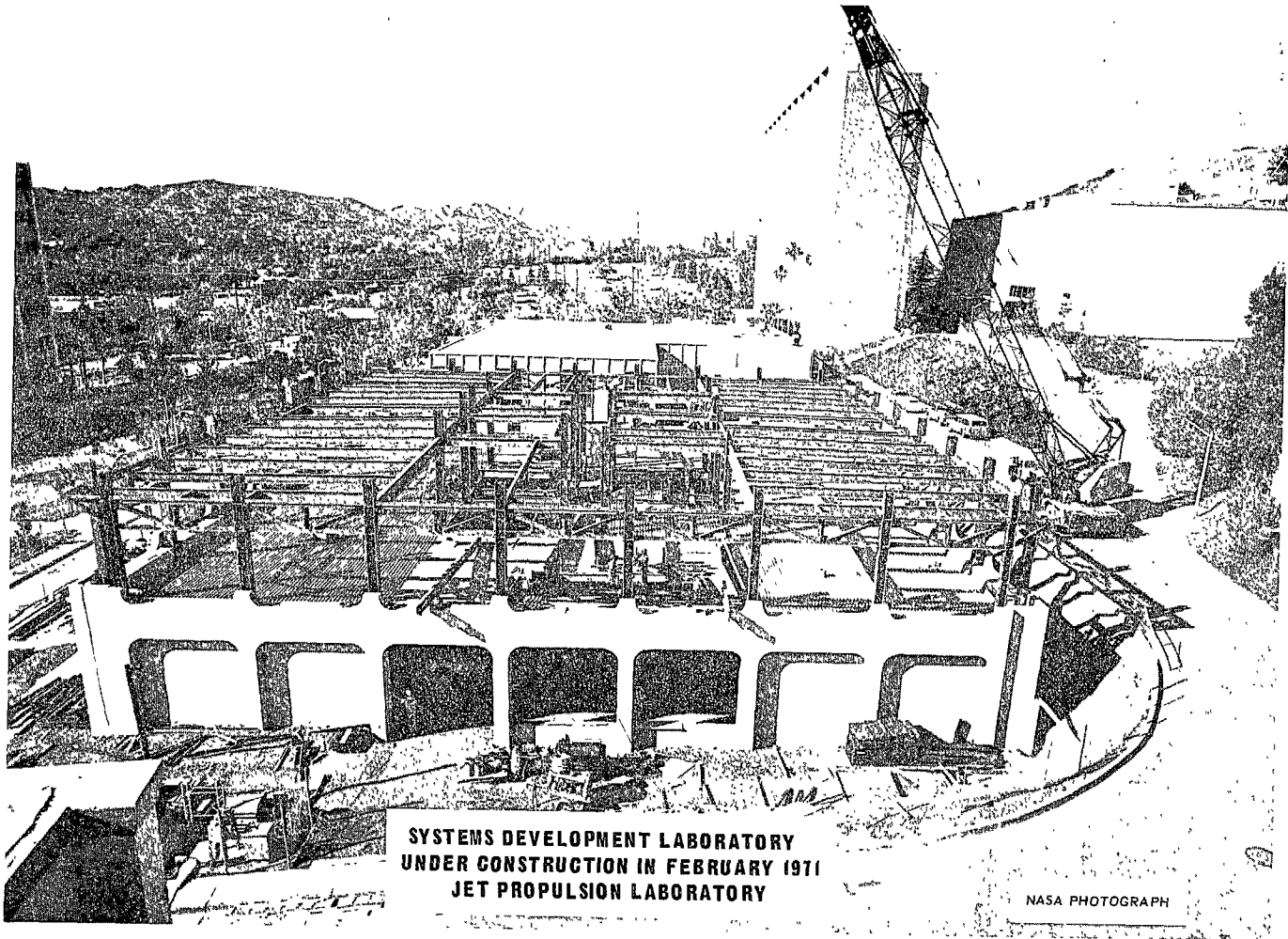
NASA therefore constructed, without congressional approval, a 7,900-square-foot office-space addition to the Life Support Technology Laboratory. It appears that most of the funding for the addition was available because of the elimination of one of the two simulators that had been approved by the Congress.

#### Systems Development Laboratory

A project justification for the construction of a Space Flight Operations Facility Systems Development Laboratory at the Jet Propulsion Laboratory was authorized by the Congress as part of the NASA fiscal year 1968 construction of facilities program. The structure, estimated to cost \$1,195,000, was to consist of three stories to provide space for a science computing facility, a data processing development workshop, a telecommunications development laboratory, and an engineering office area for related technical and operational personnel.

#### Incomplete project justification

The justification for the project, as approved by the Congress, did not contain a discussion of NASA's plans to ultimately construct an eight-story Systems Development Laboratory. On March 3, 1967, 5 months prior to congressional approval of the three-story laboratory, the Jet Propulsion Laboratory had developed design criteria which provided for the construction of an eight-story building. Congressional approval of a three-story structure, in effect, represented only the first phase of a much larger building.



NASA is using the \$1,195,000 for the first phase of construction of the laboratory which will consist of two floors rather than the three approved by the Congress.

The smaller structure resulted primarily because (1) building costs had increased during the period of time between project approval and the release of funds by NASA Headquarters and (2) air-conditioning equipment and an elevator were added to the revised project cost estimate.

The first phase of construction will provide a facility with structural strength, entrance and elevator lobby arrangement, and utility systems adequate to accommodate six future floors. The future third floor will be used for computer-related equipment and the remaining five floors will be used for offices.

### Heater replacement, 3.5-foot wind tunnel

This fiscal year 1968 project to replace the heater components of a 3.5-foot hypersonic wind tunnel with newly designed components was authorized by the Congress for the Ames Research Center. The estimated cost of the project, as submitted to the Congress, was \$3,170,000. Between the time the project was approved and construction was begun, however, a change in the type and cost of materials to be used resulted in the funding for the project being reduced by NASA Headquarters to \$2,040,000.

#### Revised project scope

After congressional approval of the project, the Ames Research Center, in a memorandum dated November 24, 1969, requested NASA Headquarters' approval to modify the test section of the wind tunnel and to provide a new model support mechanism as part of the heater replacement project. The memorandum stated that, although this modification was not part of the congressionally approved heater replacement project, it was related to the approved project in that the heater replacement provided capabilities which could not be fully exploited without provision for larger wind tunnel models. The memorandum also stated that the Center had originally planned to include the test-section modification and model-support mechanism in the construction of facilities project but that they were deleted during budget reviews to reduce costs.

On January 13, 1970, NASA Headquarters granted approval to use construction of facilities funds for this modification, stating, in part:

"An analysis of the original project write-up indicates that the requirement to modify the test section and to provide a model support mechanism is within the scope of the FY 1968 C of F Project 2135, which provides for alterations to the 3.5-foot Wind Tunnel."

A construction contract for the test-section modification and the new model-support mechanism was awarded on June 24, 1970, at a cost of \$433,691.

In addition to the modification described above, the operator's station for the wind tunnel heater was being moved from the equipment building to the wind tunnel test-section control room. In this case, however, Ames did not request NASA Headquarters' approval on the use of funds for the approved heater replacement project on the basis that:

"Since NASA Hqrs ruled on Jan. 13, 1970 that the test-section modifications were within [the] scope of Project 2135 - we are reassured that the above work is also within [the] scope."

The contract for this modification was awarded on February 4, 1971, in the amount of \$33,500.

Therefore Ames used about \$467,000 of the approved construction of facilities funds for wind tunnel modifications which were outside the scope of the project authorized by the Congress.

USE OF CONSTRUCTION OF FACILITIES FUNDS  
FOR REHABILITATION AND MODIFICATION PROJECTS

In its fiscal year 1970 budget submission, NASA included as a part of its construction of facilities program a category entitled "Modifications and Rehabilitations at all Locations." This project category, which in the fiscal year 1971 budget submission was entitled "Rehabilitation and Modification of Facilities," provides for major improvements, rehabilitation, and alteration of facilities at NASA installations and was to be funded from the construction of facilities appropriation. These projects are not individually justified to the Congress or subject to dollar limitation.

In approving this budget classification, the Congress directed NASA to confine projects in this category to "major structural repair work, deferred maintenance, and replacement of installed equipment." In March 1970 NASA Headquarters issued guidelines to all NASA centers containing criteria for including a project in the rehabilitation and modification program. The guidelines contained the following definitions of rehabilitation and modification.

"\*\*\* Rehabilitation is the restoration of a facility or the components thereof to such a condition that it may be used effectively for its designated purpose. \*\*\*

"Modification is the work required to modify, adjust, or modernize an existing facility so that it can more effectively be adapted or used for its designated purpose provided an internal expansion or external extension is not involved."

A rehabilitation and modification of facilities project at the Ames Research Center resulted in modifying an existing three-story facility for use as a library when the designated purpose of the facility had been to provide office space on two floors and a library on the top floor. This modification also resulted in an external extension of the building.

## Ames library

On February 13, 1970, Ames requested NASA Headquarters' approval of a project to expand the existing library. The project provided for the modification of Building N202 to house the expanded library and for the renovation of a portion of the first and second floors of Building N203 to house the Fiscal Division, which was occupying two floors of Building N202.

The modification of Building N203 to house the Fiscal Division required construction of new partitions, flooring, ceilings, lighting, and air conditioning at an estimated cost of \$100,000. The modification of Building N202 to house the expanded library provided for the renovation of the three floors of the building. This renovation involved (1) removal and relocation of rest rooms, (2) construction of new partitions, floors, ceiling, and lighting, and (3) acquisition of new library equipment and furnishings. The estimated cost, including furnishings, was about \$260,000.

On March 17, 1970, Ames submitted to NASA Headquarters a sketch of an external extension to Building N202 to provide for an entranceway, elevator, and rest rooms. On April 9, 1970, NASA Headquarters approved the initial allocation of funds for the rehabilitation and modification project. On June 25, 1970, a contract was awarded for the modification of both buildings in the amount of \$319,175, which was subsequently increased by seven amendments to \$368,410.

Funds totaling about \$468,000--consisting of approximately \$361,000 of construction of facilities funds, \$100,000 of research and development funds, and \$7,000 of research and program management funds--had been used on this project. The research and development funds were used primarily to buy furniture and equipment for the library. The research and program management funds were used primarily to design space to be occupied by the Fiscal Division.

According to NASA's guidelines, the modifications of the two buildings should not have been considered a rehabilitation and modification project because they resulted in a change in the designated purpose of the buildings and in an

external extension of one of the buildings. The space in Building N203 to house the Fiscal Division was changed from office and laboratory space to office space only. Two floors of Building N202 were converted from office space to library space; in addition, the building was expanded externally to house an entranceway, elevator, and rest rooms. Therefore the modification project should have been submitted to the Congress for review and approval as a construction of facilities project.

#### TURN-KEY CONCEPT

The legislative history indicates that, in estimating the cost of a construction of facilities project, the Congress expects NASA to include the total estimated costs necessary to provide for a fully operable facility. In addition, NASA's policies and procedures provided that each facility project be planned and managed as a turn-key project--that is, each facility project presented for approval within NASA and to the Congress for authorization and appropriation shall include the estimated cost of any collateral equipment and all other reasonably identifiable elements of cost. Thus upon completion of a facility project, the user should be able to "turn a key" and enter a fully operable facility in terms of the function and capacity intended for the facility.

NASA defines collateral equipment as:

"\*\*\* all that non-integral, severable equipment which is acquired for use, or used, in a facility. 'Collateral equipment' is not required to make the structure or building useful and operable as a structure or building, but imparts to the facility its particular character at the time, e.g., furniture in an office building, laboratory equipment in a laboratory building, test equipment in a test stand, machine tools in a manufacturing facility, electronic computers in a computer facility, etc. 'Collateral equipment' is placed in use in a facility but is not permanently attached thereto except for operating purposes and is removable without significant damage to the real property."



We found that the estimated costs of some equipment needed to make a facility fully operable had not always been included in the estimated cost of a construction of facilities project. We found also that there was a degree of uncertainty on NASA's part or disagreement between the Congress and NASA with regard to what constituted a fully operable facility and what equipment costs should be included in the estimated cost of a facility project.

We found that, for two congressionally approved projects, NASA used research and development and/or research and program management funds to supplement the authorized construction of facilities funds to acquire fully operable facilities. These projects are discussed below.

## Space Science Research Laboratory

As part of NASA's fiscal year 1968 construction of facilities program, the Congress authorized the construction of a Space Science Research Laboratory at the Ames Research Center. The project was estimated to cost \$2,195,000, of which \$332,000 was for equipment. The purpose of the facility was to provide adequate laboratory, equipment, and engineering space to consolidate space science personnel and to house over \$2 million worth of existing equipment.

At the time of our review, Ames planned to use all of the construction of facilities funds for construction. In addition, Ames used \$29,000 of research and program management funds for the construction of access roads and a parking lot for the building. The project, as approved by the Congress, provided for the use of construction of facilities funds for the construction of the access roads and parking lot.

On February 4, 1970, an Ames' official in the Space Sciences Division stated in a memorandum for the Chief, Research Facilities and Equipment Division, that part of the laboratory would have to be extended before existing equipment could be installed. He stated also that the extension of part of the laboratory could be done as a future minor construction project.

Ames has not used construction of facilities funds for the purchase of the equipment described to the Congress in the budget justification. Ames used research and development funds of about \$469,000 for the purchase of at least 20 pieces of equipment.

As shown below, we were able to identify costs of \$2,638,000 incurred in connection with constructing and equipping the Space Science Research Laboratory which as of March 1971 had not been completed.

	Estimated project costs submitted to the <u>Congress</u>	Incurred <u>costs</u>	Increase or <u>decrease(-)</u>
Construction of facilities funds:			
Construction	\$1,863,000	\$2,140,000	\$277,000
Equipment	332,000	-	-332,000
Research and development funds:			
Equipment	-	469,000	469,000
Research and program management funds:			
Construction	<u>-</u>	<u>29,000</u>	<u>29,000</u>
Total	<u>\$2,195,000</u>	<u>\$2,638,000</u>	<u>\$443,000</u>

#### Systems Engineering Facility

As part of NASA's fiscal year 1966 construction program, the Congress authorized the construction of a Systems Engineering Facility at the Ames Research Center. The facility was to provide about 58,000 square feet of space at an estimated cost of \$2,749,000, of which \$940,800 was for equipment.

#### Increase in square footage

The proposal for the Systems Engineering Facility as approved by the Congress stated that 57,925 square feet of laboratory and equipment space would be constructed. On March 16, 1967, a month before the occupancy date of April 17, 1967, Ames informed NASA Headquarters that the facility had been increased by 21,839 square feet. We were informed, however, that NASA Headquarters had been notified of the increased size of the facility by memorandum dated August 25, 1965. This memorandum forwarded the final design drawings for a facility containing about 80,000 square feet.

Purchase of equipment with  
research and development funds

Of the equipment housed in the Systems Engineering Facility, we were able to readily identify items--acquired at a cost of \$783,677--which were purchased with research and development funds in addition to equipment purchased at a cost of \$744,448 with construction of facilities funds. A list of the equipment purchased with research and development funds follows.

<u>Item</u>	<u>Cost</u>
Spin table	\$ 79,100
Digital components:	
Central processor	205,092
Card reader	11,568
Recorder reproducer	49,359
Digital recorder	2,285
Solar concentrator	82,951
Analog computer	<u>353,322</u>
 Total	 <u>\$783,677</u>

A comparison of the estimated cost of the project as provided to the Congress with the actual costs readily identifiable with the project is shown below.

	<u>Estimated cost of project as provided to the Congress</u>	<u>Project costs identified</u>
Construction of facilities funds:		
Construction	\$1,808,200	\$2,090,818
Equipment	940,800	744,448
Research and development funds:		
Equipment	<u>-</u>	<u>783,677</u>
 Total	 <u>\$2,749,000</u>	 <u>\$3,618,943</u>

MATTERS FOR CONSIDERATION BY THE COMMITTEE

The Committee may wish to identify in the authorization acts for NASA the specific projects that are to be constructed. This identification would restrict the availability of funds appropriated under the construction of facilities appropriations to the projects and amounts identified in the authorization acts.

In addition, the Committee may wish to consider requiring NASA to include in the amounts requested for future major facilities all costs required to construct and equip a fully operable facility and to notify the Congress if the need for additional construction or equipment is identified subsequent to congressional approval.

## CHAPTER 3

### MINOR CONSTRUCTION AND MINOR ALTERATIONS

#### TURN-KEY CONCEPT--MINOR CONSTRUCTION

NASA is authorized to use research and development funds for minor construction projects having an estimated cost (including collateral equipment) of \$250,000 or less for additions, extensions, and expansions of existing facilities. NASA is authorized also to use research and program management funds for new construction having an estimated cost (including collateral equipment) of \$100,000 or less. In addition, NASA has unilaterally applied the \$100,000 limitation to the use of research and development funds for new construction.

We found that there was a degree of uncertainty on NASA's part, or disagreement between the Congress and NASA, with respect to what constituted a fully operable facility and what equipment costs were to be included in the estimated cost of a construction project in determining whether the project should be considered a major or minor project. Therefore the estimated cost of all equipment needed to make a facility fully operable has not always been included in the estimated cost of a project; therefore, NASA has constructed some major facilities pursuant to its minor construction authority.

We noted that two major facilities were constructed without congressional approval because the estimated cost of the projects did not include the estimated cost of the collateral equipment. The failure to include the cost of the equipment resulted in the construction of the facilities as minor construction projects by using research and development funds and research and program management funds rather than as major facilities by using construction of facilities funds.

Addition of two bays to the high bay area  
of the Life Sciences Research Laboratory

This construction project was for the addition of two bays to the high bay area of the Life Sciences Research Laboratory at the Ames Research Center to house a lunar laboratory to be used in analyzing rock samples returned to earth by the Apollo moon missions. Ames estimated that the cost of constructing the two bays would be \$260,000. Although this cost estimate exceeded the authorized \$250,000 limitation, NASA Headquarters approved the construction of the project on May 26, 1967. Our review showed that the construction and equipment costs amounted to \$1,049,481 to obtain a fully operable lunar laboratory.

Construction costs substantially  
exceeded the estimated costs

Two contracts were awarded for construction of this project. The first contract was awarded on September 5, 1967, for the construction of the two bays. The construction was completed on August 30, 1968, at a final cost of \$241,710. The second contract was awarded on June 28, 1968, for the mechanical, plumbing, and electrical installation within the bays. This contract was completed on September 27, 1969, at a final cost of \$191,862.

Cost of equipment not included in  
estimated project costs

Ames purchased equipment for the lunar laboratory at a cost of \$615,909. However, the cost of this equipment, necessary to make the laboratory fully operational, was not included in the estimated cost of the project. Ames' proposal to NASA Headquarters stated that the equipment required to perform experiments on the lunar rock samples was available in the Life Sciences Research Laboratory.

An Ames' revised proposal dated October 5, 1967, and a statement by its Chief of the Exobiology Branch indicated that the necessary equipment was not available at Ames. The revised proposal included an itemized list of equipment needed for lunar rock analysis at an estimated cost of

\$685,700. We were told by the Chief of the Exobiology Branch that a major portion of the equipment listed in the revised proposal had to be purchased to provide the capability to perform the required chemical and biological analyses. The actual cost of equipment was \$615,909.

Thus the total cost necessary to make the lunar laboratory fully operational was \$1,049,481 (\$433,572 for the two construction contracts and \$615,909 for the equipment) compared with the \$260,000 originally approved for the project.

#### Closed Optical Test Pad

In September 1964 the Facilities Engineering Division of the Goddard Space Flight Center prepared a project proposal for the construction of a 36-inch telescope facility at an estimated cost of \$280,000 which included \$73,000 for design and construction and \$207,000 for a 36-inch telescope. The proposal, however, was not approved by the Center director and was not submitted to NASA Headquarters. The project file did not contain an explanation of why the proposal was not approved.

In December 1964 the Director, Goddard Space Flight Center, approved a minor construction project for a Closed Optical Test Pad to provide for "protection of optical equipment mounted on two (2) isolated concrete pads." The roof of this facility was to be constructed in two sections and was to be completely removable. Goddard estimated the cost of this facility to be \$75,000 and there was no mention in the project proposal of any equipment to be housed in the facility. This project was not submitted to NASA Headquarters for approval because the Center had the authority to approve the construction of new facilities estimated to cost \$75,000 or less.

Construction of the Closed Optical Test Pad was completed in November 1965 at a cost of \$71,550. Administrative operations funds now designated as research and program management funds were used for this construction. This facility houses a 36-inch telescope and camera which were purchased with research and development funds at a cost of \$266,311. Thus the total cost for the fully operable new facility was \$337,861.



Although the physical shape of the facility differed from that described in the September 1964 proposal, its purpose did not change. A NASA official, who was involved in determining the need for the 36-inch telescope and related facility, stated that the Closed Optical Test Pad, rather than the 36-inch telescope facility originally proposed, was constructed to avoid creating a single-purpose building. He indicated that providing for equipment in the project justification for the telescope facility would have limited the use of the facility. He indicated also that Goddard was somewhat uncertain as to where the telescope was to be located. He indicated further that, in his opinion, these factors were adequate justification for not providing for equipment in the proposal for the Closed Optical Test Pad.

We found, however, that, 2 days after the construction of the Closed Optical Test Pad had begun on June 23, 1965, a contract was awarded for the purchase and installation of a 36-inch telescope. The contract stipulated that the contractor ship and fully install the equipment at the NASA Goddard Space Flight Center Closed Optical Test Pad. In addition, the NASA official presently responsible for the operation of the Closed Optical Test Pad indicated that to his knowledge this facility had always been intended to house the 36-inch telescope.

## TURN-KEY CONCEPT--ALTERATIONS

An alteration is defined by NASA as the modification or modernization of an existing facility which may or may not affect the function, capability, utility, structure, stability, safety, or efficiency of the facility but does not, for practical purposes, affect its external dimensions. An alteration may involve the removal, relocation, or installation of existing or additional interior walls or ceilings, doors, windows, collateral equipment, and utilities.

NASA is authorized to use research and development funds or research and program management funds for alterations without dollar limitation and without obtaining congressional approval. On the basis of the legislative history of NASA's facility funding, however, we believe that the Congress has been led to understand that it would be notified in those cases where the estimated cost of an alteration project (including collateral equipment) exceeded \$250,000.

During our review, we noted three cases in which the total cost of alteration projects exceeded \$250,000 and the Congress was not notified.

### Alteration of a 40- by 80-foot wind tunnel

Ames Research Center submitted a proposal to NASA Headquarters for approval of an alteration of a 40- by 80-foot wind tunnel, at an estimated cost of \$96,000, to house a new automatic data processing system at the Center. Although the alteration was to house new automatic data processing equipment estimated to cost \$364,000, there was no mention of this cost in the proposal for the alteration of the wind tunnel.

In September 1968, about a year prior to submitting the proposed project to NASA Headquarters for approval, Ames estimated the cost of the automatic data processing system at \$364,000. The description of the project submitted to NASA Headquarters on August 15, 1969, stated that:

"\*\*\* The decision to procure a dedicated data processor for the 40- by 80-Foot Wind Tunnel and the required space for the computer dictated the need for modifications to the second, third, and fourth floor of the wind tunnel test chamber. \*\*\*"

\* \* \* \* \*

"\*\*\* Addition of the proposed rooms will accomodate the new equipment and allow for some future expansion of the data processing equipment."

The project was approved by NASA Headquarters on September 5, 1969. The construction contract for the chamber modifications was awarded on September 24, 1969, and was completed on July 17, 1970, at a cost of \$98,142. A contract for computer equipment was awarded on October 16, 1969, less than a month after the construction contract was awarded. The equipment was shipped to Ames on June 18, 1970, and its installation was completed on December 18, 1970. Ames' present estimate of the cost to complete the new automatic data processing system is approximately \$493,000. If this estimate is accurate, the alteration project will cost \$591,142 (\$493,000 plus \$98,142), as opposed to the estimated cost of \$96,000 for the project. Research and development funds and research and program management funds have been used to fund this project.

#### Alterations to Photographic Technology Laboratory

On June 19, 1969, NASA Headquarters approved a project for alterations to approximately 4,000 square feet in Building 8 at the Manned Spacecraft Center to accommodate five film processors and related equipment. The project consisted of five alteration projects which were combined into one project by NASA Headquarters because all five projects pertained to alterations in Building 8 in support of the photographic-processing effort. NASA's estimated cost of the project was \$325,800 which was funded with research and development funds.

The estimated cost for this project included \$87,000 for equipment but did not include the estimated cost of

\$134,000 for additional equipment purchased for the project during fiscal year 1969 and the estimated cost of \$50,000 for modifying existing equipment. Therefore the total estimated cost of this project should have been \$509,800 rather than \$325,800.

The estimated costs for the consolidated project (listed by the project numbers before consolidation), together with the excluded equipment costs, are presented below.

Estimated Costs After Consolidation

<u>Project</u>	<u>Construction and modification</u>	<u>Design and engineering</u>	<u>Equipment</u>	<u>Total</u>	<u>Equipment improperly excluded</u>
72-9035	\$ 22,640	\$ 2,260	\$ -	\$ 24,900	\$ 50,000
72-9036	70,320	7,040	-	77,360	9,000
72-9059	21,700	2,170	-	23,870	-
72-9060	81,050	8,100	87,000	176,150	125,000
72-9106	<u>22,600</u>	<u>900</u>	<u>-</u>	<u>23,500</u>	<u>-</u>
Total	<u>\$218,310</u>	<u>\$20,470</u>	<u>\$87,000</u>	<u>\$325,780</u>	<u>\$184,000</u>

Installation of film processors

On January 15, 1970, the Manned Spacecraft Center prepared for submittal to NASA Headquarters a proposal for approval of a project for the acquisition and installation of two film processors, including support equipment, and for the modification of about 1,000 square feet of Building 8 to accommodate this equipment at an estimated cost of \$447,000. The estimated cost consisted of (1) facility construction and modification, \$140,000, (2) equipment, instrumentation, and support systems, \$290,000, and (3) design and engineering services, \$17,000. The project was to be funded with research and development funds.

The January 15, 1970, proposed project was not submitted to NASA Headquarters. Rather, the Center revised the proposal to exclude the cost of all equipment and on

May 6, 1970, submitted it for approval to NASA Headquarters. The estimated cost of the project was \$247,500.

The revised proposal provided for the installation of the film processors and related equipment and the modification of the building to accommodate this equipment but contained no explanation as to why the cost of the two processors and related equipment were not included in the estimated cost of the project except to note that the Center had ordered the processors at a cost of \$140,000. Although the proposal recognized the need for \$209,500 for supporting equipment, this amount was not included in the estimated cost of the project. Therefore the project cost estimate did not include estimated equipment costs of \$349,500.

On May 28, 1970, NASA Headquarters agreed with the need for installing the film processors and instructed the Manned Spacecraft Center to proceed with the design of the project. NASA Headquarters indicated, however, that the Center's cost estimates were low and requested the Center to provide more current estimates.

On September 25, 1970, the Center recommended that the installation of an existing color photo processor be included in the project at an estimated cost of \$50,000. The color processor was on order under a contract at a cost of about \$58,500. The contract provided for delivery of the processor about January 15, 1971.

On November 6, 1970, the Center submitted to NASA Headquarters a revised cost estimate of \$270,000 for the project on the basis of a design that was 80 percent complete. The estimated cost of \$270,000 covered the alteration of Building 8, the cost of installing two film processors, the color processor, and related equipment.

We were advised by a Center official that NASA Headquarters requested the Center to reduce the estimated cost of the project from \$270,000 to \$250,000 or less so that the project could remain a minor alteration project. On November 16, 1970, the Center submitted a revised project cost estimate of \$250,000 to NASA Headquarters. On December 8, 1970, NASA Headquarters approved the project at a

cost of \$248,000 to be funded with research and development funds.

The inclusion of the estimated cost of the equipment purchased for this project would have resulted in an estimated cost for the project of \$656,000 as shown below.

Construction and installation costs	\$248,000
Two film processors	140,000
Color processor	58,500
Related equipment	<u>209,500</u>
Total	<u>\$656,000</u>

CONSTRUCTION OF FACILITIES PROJECTS  
COMPLETED UNDER MINOR CONSTRUCTION AUTHORITY

During our review we noted two cases in which minor construction authority had been used to complete congressionally authorized facilities. In one case minor construction authority had been used illegally to complete an authorized construction of facilities project. In the other case minor construction authority was used to completely build a construction of facilities project which had been previously authorized but subsequently canceled.

Basement of Administrative Management Building

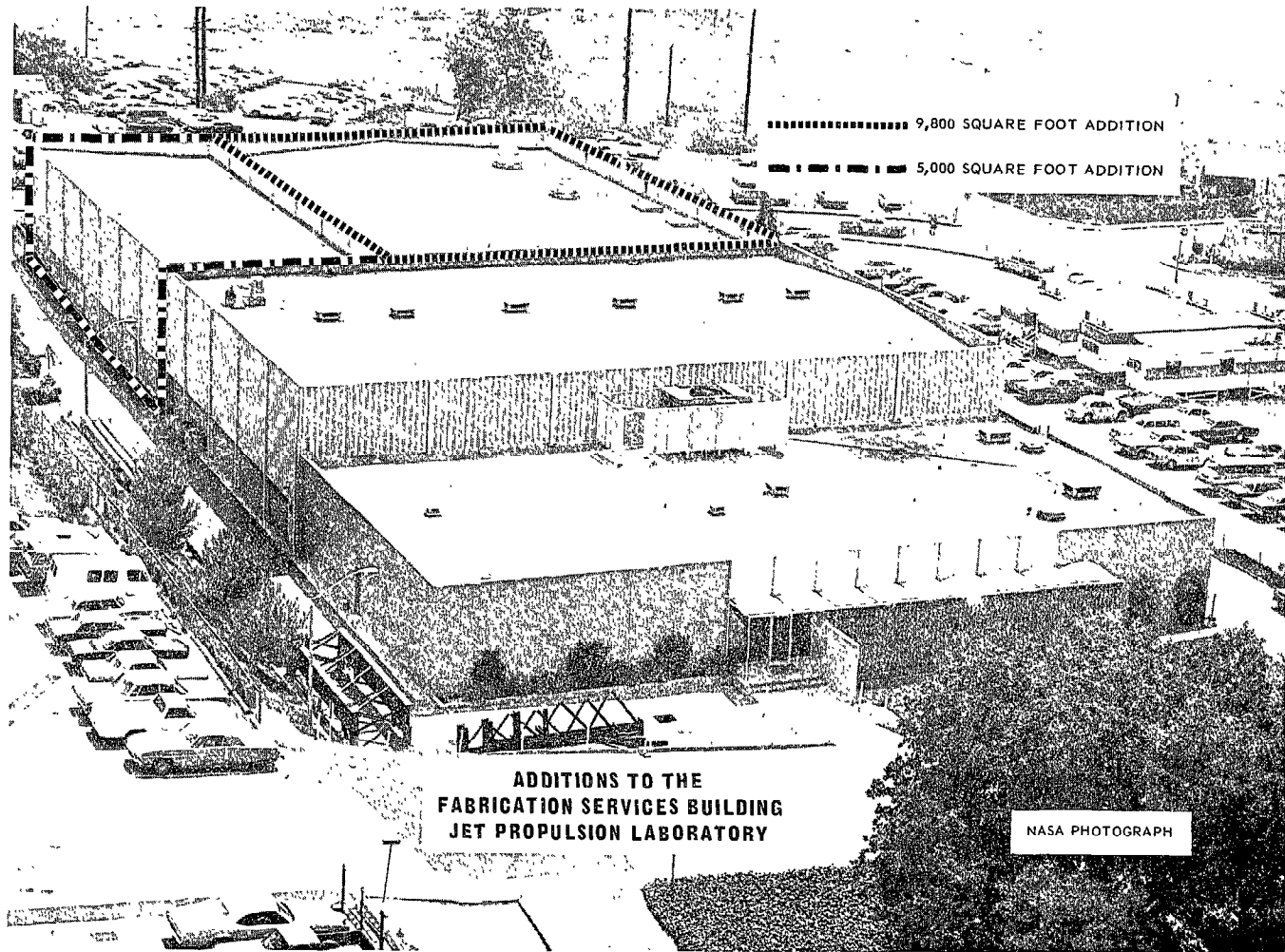
The Congress authorized the construction of the Administrative Management Building as part of the Ames Research Center's fiscal year 1965 construction of facilities program. NASA Headquarters allotted \$1,218,000 for its construction. On October 14, 1964, a contract was awarded for the construction of the building in the amount of \$1,109,000, which under nine modifications was increased to \$1,204,964.

The basement of the building as proposed to and approved by the Congress was to provide space for the Reproduction Department. The basement remained unfinished on November 15, 1965, when the building was occupied.

On December 23, 1965, Ames approved a job order for an estimated \$64,000 to complete the basement as originally planned. On May 2, 1966, the job order was revised to increase the estimated cost to \$91,500. The job order stated that NASA personnel would do the work. The final construction cost was \$93,164 and was paid for with research and program management funds.

Therefore Ames used research and program management minor construction authority to complete a previously authorized construction of facilities project.

Funds are available under the minor construction authority only when the total cost of the facility or project does not exceed the authorized minor construction limitation. Thus minor construction funds may not be used to supplement funds appropriated for and used to construct a facility under the construction of facilities appropriation





where the total cost of such facility exceeds \$250,000 or \$100,000, whichever is appropriate. Consequently, the funding action taken in this example was clearly illegal.

Additions to Fabrication  
Services Building

The first phase of the Fabrication Services Building at the Jet Propulsion Laboratory was completed in January 1963 and consisted of a machine shop, inspection area, metrology laboratory, and offices. In August 1962 the Congress authorized a construction of facilities project for the second phase of the building to add a weld shop, sheet metal shop, and metal stores area as a part of the Jet Propulsion Laboratory's 1963 construction program. The addition to the building was estimated to cost \$605,000 and was to provide about 18,000 square feet of space. In March 1963 the project was canceled and the funds were used for the construction of an addition to another building which had a higher priority.

Later the Jet Propulsion Laboratory requested NASA to approve two minor construction projects. These two projects substantially satisfied the 1963 requirement for the 18,000-square-foot addition to the Fabrication Services Building previously authorized by the Congress.

On February 8, 1967, NASA approved an addition to the building to provide about 9,800 square feet of space for use as a weld shop and a sheet metal shop at an estimated cost of \$250,000. The addition was constructed in 1969 as a minor construction project. We were advised by NASA that the actual cost of the project was \$234,165.

On May 25, 1970, NASA approved another addition to the building to provide about 5,000 square feet of space for use as a metal stores area at an estimated cost of \$146,000. This addition was constructed in 1971 as a minor construction project. NASA advised us that the actual cost of the project was \$136,860.

Thus the Jet Propulsion Laboratory acquired a major facility addition to the Fabrication Services Building through

two minor construction projects which had been previously authorized by the Congress to be constructed with construction of facilities funds. The cost of constructing the two additions was \$371,025.

NASA's actions in this instance were not in violation of law. However, the Committee may wish to decide whether NASA's actions in cases such as this are in accordance with the Committee's intent.

#### MATTERS FOR CONSIDERATION BY THE COMMITTEE

In our opinion, the question of whether the estimated cost of a proposed project should include the cost of equipment needed to make the completed facility fully operable needs resolution. Generally NASA's minor construction authority is limited to facilities estimated to cost less than \$250,000 including collateral equipment. NASA, however, has not always included the estimated cost of all identifiable equipment in the estimated cost of a project. As a result facilities costing in excess of the dollar limitation have been constructed as minor construction projects. If the Committee is to have assurance that all major facilities are presented for approval, the estimated cost of proposed facilities projects should include all reasonably identifiable costs necessary to achieve a fully operable facility. Therefore the Committee may wish to consider requiring NASA to include in the estimated cost of proposed projects all reasonably identifiable costs.

Because NASA has constructed a major facilities project under its minor construction authority, the Committee may wish to consider the propriety of NASA's use of minor construction funds to construct authorized major facilities. Also, because NASA is authorized to fund alteration projects without dollar limitation or without obtaining congressional approval, the Committee may wish to impose a limitation on the use of research and development funds and research and program management funds for alteration projects and require that projects exceeding this limitation be submitted for review and approval.

## CHAPTER 4

### AGENCY COMMENTS

NASA's comments on our draft report were furnished in a letter dated May 13, 1971 (see app. II), by the Associate Administrator for Organization and Management.

The Associate Administrator stated that NASA was presently engaged in a review to help improve the management processes and controls over facilities planning and related operating procedures and that the matters included in the draft report would be considered and any conclusions would be included with the information provided to the Administrator along with the recommendations developed during the broader NASA review.

The Associate Administrator said that the recommendations approved by the Administrator would be presented to the Senate Committee on Aeronautical and Space Sciences as a means of developing a complete understanding with the Committee and its staff. He stated therefore that NASA was not able to furnish at this time separate comments to us on the matters covered in the draft report.

**APPENDIXES**

CLINTON P. ANDERSON, N. MEK., CHAIRMAN  
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*United States Senate*

COMMITTEE ON  
 AERONAUTICAL AND SPACE SCIENCES  
 WASHINGTON, D.C. 20510

February 24, 1971

The Honorable Elmer B. Staats  
 Comptroller General of the United States  
 General Accounting Office  
 Washington, D. C. 20548

Dear Mr. Staats:

The National Aeronautics and Space Administration is constructing an engineering building which was authorized in fiscal year 1967 at the Manned Spacecraft Center. I would like to have the General Accounting Office review this project and determine: (1) the extent, if any, that it differs from the one described to the Congress, and (2) NASA's legal authority to revise such a project after it has been authorized by the Congress. I would appreciate receiving your report on these matters by April 1.

Subsequently, I would like to have a more comprehensive report on similar facilities built with construction of facilities funds as well as major or new facilities funded with either research and development, equipment, or research and program management funds, or various combinations thereof. The Authorization Act each year authorizes minor construction with research and development and research and program management appropriations. When the cost exceeds a specified dollar amount, however, NASA must notify the Congress. I would like your staff to review NASA's implementation of this provision.

Your assistance to the Committee is appreciated.

Sincerely yours,



Clinton P. Anderson  
 Chairman

## APPENDIX II



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
WASHINGTON D.C. 20546

REPLY TO  
ATTN OF D-2

MAY 13 1971

Mr. Klein Spencer  
Assistant Director, Civil Division  
U. S. General Accounting Office  
Washington, D. C. 20548

Dear Mr. Spencer:

This letter is in response to your letter of May 6, 1971, which enclosed a restricted draft report to the Chairman of the Senate Committee on Aeronautical and Space Sciences covering your review of NASA's financial management of construction and related activities -- including major construction, minor construction, maintenance, repair, and alterations.

This is the more comprehensive report requested by Chairman Clinton P. Anderson in his letter of February 24, 1971 (included as APPENDIX I of the draft report), which also requested your report on the Engineering Building at the Manned Spacecraft Center by April 1. As a general reaction, we believe that your restricted report on the MSC Engineering Building (B-165118, March 29, 1971) identified substantially the same basic issues and about the same GAO suggestions as those in draft report now with us for review. However, this draft report covers many different projects, with particular circumstances and significant management considerations pertaining to each of them.

NASA is engaged in a review to help improve the management processes and controls over facilities planning and related operating procedures. In this connection, we will consult with the staffs of our authorizing committees to identify congressional needs and we will solicit the views of NASA's top managers, including Center Directors, on the intrinsic needs of a research and development agency. From this review, we expect to formulate recommendations to the Administrator within the next 60 days or so.

During the review we will, of course, consider the projects and situations mentioned in your May 6 draft report. However, these will require a thorough evaluation and any conclusions on these matters will be presented to the Administrator along with the other information and recommendations developed during the broader NASA review. Thereafter, the recommendations approved by the Administrator will be presented to the Senate Committee on Aeronautical and Space Sciences as a means of developing a complete understanding with the Committee and its staff.

We appreciate the opportunity to review your findings and suggestions in draft form but, in view of the above-mentioned arrangements for handling NASA's review, we are not now able to furnish separate comments to GAO in connection with this particular draft report.

Sincerely yours,



Richard C. McCurdy  
Associate Administrator for  
Organization and Management