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UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

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PROCUREMENT AND SYSTEMS
ACQUISITION DIVISION

B-133340

MARCH 15, 1979

The Honorable Robert A. Frosch
Administrator, National Aeronautics
and Space Administration

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Dear Dr. Frosch:

We have completed our survey of NASA's Facilities Utilization Program and are bringing our observations and recommendations to your attention. The actions we are proposing, if adopted, should produce a more effective system for monitoring utilization of facilities.

Our survey was conducted at NASA Headquarters, the Johnson Space Center, and the White Sands Test Facility. We discussed the program with NASA staff, reviewed your policy and procedural documents, and tested the program's implementation at the installation level. Our observations were discussed with your staff, and their relevant comments and suggestions have been incorporated in this letter.

REASON FOR SURVEY

In working with the Subcommittee on Space Science and Applications, House Committee on Science and Technology, we identified NASA's management of underused, deactivated, or inoperable facilities as an area for future study. (PSAD-77-78, May 19, 1977.)

NASA established its Facilities Utilization Program to monitor the use of its real property which has a capitalized value of over $2.8 billion. NASA's real property consists of over 136,000 acres of land and over 3,000 buildings which contain about 32 million gross square feet of space. NASA also controls over 280,000 acres of land which is held under permit, easement, lease, or other interests. The program's purpose is to strengthen the system for conducting annual facilities utilization reviews and to develop a building space management system to best utilize these facilities.

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NASA developed three management reports, which focus primarily on office space and major technical facilities, to measure the utilization of real property:

--The "Building Space Utilization Report."

--The "Major Facilities Report."

--The "Report of NASA Facilities Identified During the Past Reporting Period as Being Not Needed or Underutilized."

NASA installation directors submit these reports to NASA Headquarters once a year. NASA defines its major facilities as "those large complex technical and otherwise special institutional facilities representative of the installation's basic and essential capabilities." NASA has designated 110 of its facilities as "major."

UTILIZATION OF OVER HALF OF THE BUILDING SPACE NOT REPORTED

The "Building Space Utilization Report" identifies by category all space that is owned by or under control of NASA at each installation; however, it shows utilization factors only for office space on the basis of the average number of square feet per person requiring office space. The utilization of "other" types of space such as storage, laboratory, technical, and miscellaneous space which accounted for over half of the total space at the Johnson Space Center and the White Sands Test Facility, is not similarly reported. For example, the latest utilization report for the Johnson Space Center shows 279,271 square feet of storage space. NASA Headquarters assumes that all of this space is reasonably well utilized because none was reported to be otherwise.

If the building space report for this type of space is to be useful in assessing the "level-of-use," it should include utilization factors for the other types of space. Some of this information is already available. For example, we found that the Johnson Space Center Logistics Division keeps an internal record to monitor its storage space--at periodic intervals it knows how much storage space is occupied. A utilization factor (percentage of space occupied) could be incorporated into the "Building Space Utilization Report."

NASA officials told us that more completely monitoring this type of space is difficult and requires a significant increase in manpower and other costs. They added that the relative benefits and costs of such monitoring should be carefully considered.

IMPROPER CLASSIFICATION OF OFFICE SPACE

Errors in classifying some building space distorted the office density ratios and made it appear that office space was better utilized than it actually was. Since tenants label their space according to their interpretation of NASA Management Instructions, some space classifications vary from building to building. This variance affects, to a minor degree, the overall assessment of office space utilization. For example, the amount of office space in building 45 at the Johnson Space Center was underreported since some of it was misclassified as storage. This error caused the density factor to be inflated by 9 percent. Thus, the offices were not being used as fully as reported. To ensure that accurate utilization information is reported, NASA officials should consistently apply space classification standards.

UTILIZATION OF MAJOR FACILITIES NOT ACCURATELY MEASURED

The "Major Facilities Report" was intended to measure the utilization of a small number of facilities NASA has designated as "major facilities." NASA established baseline utilization rates for the various types of major facilities that depict the level-of-use which could reasonably justify acquisition and retention of a facility. This level-of-use is given either as a rate, such as hours per month; in usable capacity, such as rated population at 125 net square feet per person; or in activity, such as launches per year or as an Equivalent Utilization Day (EUD). NASA used EUDs for measuring the utilization of all of the major test facilities at the Johnson Space Center and the White Sands Test Facility.

NASA's recommended baseline utilization rate for most major test facilities is established at 220 EUDs per year, in which the facility is occupied for testing. This baseline is equivalent to one 8-hour shift, 5 workdays per week, per year, excluding 40 workdays for normal facility maintenance, weekends and holidays. Actual utilization is then expressed in terms of EUDs, computed on the basis of the number of shifts actually worked. For example, if a

facility with a baseline of 220 EUDs is used for two shifts a day, then actual utilization would be reported as 440 EUDs or 200 percent of the baseline. However, some NASA tenants were not certain how to calculate EUDs when partial shifts were worked. One tenant correctly considered 1-1/2 shifts a day as 330 EUDs per year, whereas another considered 1-1/2 shifts equal to 440 EUDs. Moreover, some tenants kept daily logs of actual utilization, while others merely estimated the EUDs at the end of the reporting year.

The EUD rate is intended to measure the extent to which the basic research capability of the facility is being used. Its calculation, however, does not consider the physical capabilities of the facility, such as volume of space actually in use, the size of the work force, or whether all of the facility equipment is being operated. The number of people per shift may vary from 1 to 20 or more; the amount of space occupied may vary from part to all of the usable space available. Accordingly, the use of EUDs may not always be an appropriate measure for reporting the actual use of a major facility. NASA officials agreed that tailoring utilization factors to better reflect a reasonable level-of-use for some of these facilities appears to be both desirable and feasible.

For example, the Space Environment Simulation Laboratory at the Johnson Space Center is a major test facility that houses two vacuum chambers. This facility's March 1978 Utilization Report shows a utilization rate of 235 percent, well in excess of 100 percent. However, we found that one of the chambers has not been used for over 2 years.

The use of EUDs based only on the utilization time of a facility's basic research capability without regard to the number of people in a facility, the volume of space or physical characteristics or whether all the facility equipment is being operated may in some cases tend to distort utilization rates and may diminish the reporting system's capacity to fully identify and quantify underutilized or unneeded facilities. We believe that management should design a system that will more accurately measure the utilization of all major facilities. However, we agree with NASA officials that the cost of closer monitoring at some point may exceed the benefits gained and that such consideration must be included in any analysis to improve the system.

UNUSED LAND NOT REPORTED

At the Johnson Space Center we found that unused land was not being reported on the installation's utilization reports. Installation directors are required, as part of their annual real property reviews, to report whether land is being put to its highest and best use and to determine whether all property, including land, is essential for program requirements. Personnel at the Johnson Space Center have correctly relied on the installation's Master Site Plan to determine the land's current use. However, this plan has not been updated in 5 years and does not appear to reflect the current land use requirements in all cases. Consequently, some underutilized land at the Johnson Space Center and at the White Sands Testing Facility was not reported. For example, at the Johnson Space Center the 7-acre buffer zone surrounding the Solar Telescope facility--deactivated since 1974--was not being used for its purpose or intensively for any other function. Yet, it was not reported as underutilized.

NASA management instructions emphasize the need for periodic review of land utilization and require that those areas which are no longer being used for program requirements be identified and reported so that NASA may improve the utilization status of such property, if feasible.

CONCLUSIONS AND RECOMMENDATIONS

The survey findings, if not corrected, could hamper NASA's ability to identify all space that is underutilized or not needed to meet program or support requirements. We recommend that you:

--Change the utilization program, if feasible, from a cost/benefit standpoint, to measure the utilization of all types of space, not just office space and major facilities.

--Instruct cognizant officials to more closely monitor space classification activities.

--Use the physical capabilities, the size of the dedicated work force, the operating time of equipment, and other criteria that more accurately reflect the level of actual use of the facilities to measure the utilization of those major facilities that may not be suited to the rigid use of EUDs.

--Compute utilization rates, such as EUDs, on a consistent basis and maintain logs.

--Enforce the requirement for annual real property reviews, including land, and update Master Site Plans to reflect current program and institutional needs.

Copies of this report are being sent to the House Committee on Science and Technology and its Subcommittees on Space Science and Applications, and Transportation, Aviation, and Weather; the Senate Committee on Commerce, Science, and Transportation and its Subcommittee on Science, Technology, and Space; and the Director, Office of Management and Budget. Also, copies are being sent to the committees with responsibilities under section 236 of the Legislative Reorganization Act of 1970.

Under the above act you are required to submit a written statement on actions taken on our recommendations to the Senate Committee on Governmental Affairs and the House Committee on Government Operations not later than 60 days after the date of the report and to the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report.

Sincerely yours,

J. H. Stolarow

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Director