BY THE U.S. GENERAL ACCOUNTING OFFICE

Report To The Secretary Of Defense

Planning For Navy Shore Facilities: Improvements Possible

GAO reviewed use of the Navy's Shore Facilities Planning System at selected activities and found that

--the criteria used for sizing certain facilities could result in inaccurately sized facilities,

--the Navy was not obtaining waivers for constructing family services centers in excess of DOD criteria, and

--outdated and inaccurate data were used as input to the Shore Facilities Planning System.

GAO believes that DOD and the Navy can take actions to improve the usefulness of the System and makes recommendations to assist in achieving this objective.

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

NATIONAL SECURITY AND
INTERNATIONAL AFFAIRS DIVISION

B-216029

The Honorable Caspar W. Weinberger
The Secretary of Defense

Dear Mr. Secretary:

We have reviewed selected Navy activities' use of the Shore Facilities Planning System (SFPS) to identify facility requirements and to achieve optimum utilization of existing assets. The Naval Facilities Engineering Command is responsible for the system. Our review, which was performed at selected headquarters and command levels and at 9 installations, was made to determine if the activities' use of the planning system resulted in accurately determining facility requirements and optimum use of existing facilities.

We found a number of instances where use of the planning system by the activities resulted in inaccurate facility requirements. As a result, the need for or the scope of some construction projects was questionable.

We noted three cases where use of Department of Defense (DOD) and Navy criteria for sizing certain facilities could result in inaccurately sized facilities.

--The Navy criteria for sizing family services centers provide for centers larger than DOD criteria allow. At the Naval Air Test Center, Patuxent River, Maryland, we found that based on Navy criteria, the Test Center was planning a 5,000 square foot family services center, while DOD criteria only allowed for a 1,500 square foot center. Additionally, the Navy had not obtained required DOD waivers for constructing these facilities in excess of DOD family services center criteria.

--The Navy has no assurance that the child care centers it plans to build will be properly sized to meet its needs because DOD and Navy criteria for sizing child care centers are inadequate. DOD plans to revise its child care center criteria.

--Current Navy criteria for aircraft parking aprons do not direct activities to use the most efficient angle for parking aircraft when computing aircraft parking apron

requirements. As a result, we estimate that one activity's 602,165 square yard parking apron requirement was overstated by about 109,589 square yards.

We also found that outdated and inaccurate data in the industrial planning system, used by the Naval Sea Systems Command to develop input to the SFPS, resulted in the Philadelphia Naval Shipyard overstating its electronics shop space requirements. Data in the system were based on a 1974 Shipyard Modernization Study and did not reflect current functions carried out or equipment in use in the shop. Using the outdated data, the space requirements were overstated by about 146,000 square feet.

We further noted that improper use of factors for converting net floor areas to gross floor areas can cause significant errors in facility requirements. For example, the Naval Ships Systems Engineering Station, Philadelphia, Pennsylvania, applied factors for converting net floor area to gross floor area for a proposed diesel engine test facility that was already measured in gross square feet. As a result, the Station overstated its space requirement by 11,000 square feet.

We believe that current and accurate data are essential if the SFPS is to be a useful tool for Navy officials in the management of facilities.

Additional information on these findings, background information, and our objectives, scope, and methodology are in appendix I.

RECOMMENDATIONS

We recommend that you

--Reevaluate DOD's criteria for determining the size of family services centers in light of the Navy's plans to construct larger facilities. If DOD's criteria are considered reasonable, then direct the Navy to adhere to the criteria or obtain necessary waivers; if not, revise the family services center criteria.

--Defer planning, programming, and construction of child care center projects not now in progress until DOD's child care center criteria are revised and projects are evaluated using that criteria.

We recommend that the Secretary of the Navy direct the Commander, Naval Sea Systems Command, to require activities using the industrial planning system to periodically update the SFPS with current industrial planning system data.

We also recommend that the Secretary of the Navy direct the Commander, Naval Facilities Engineering Command, to

--Revise the criteria for sizing aircraft parking aprons to require activities to use the most efficient parking angle when computing requirements.

--Improve the accuracy of the data in the SFPS by requiring engineering field divisions to review facility planning documents to ensure that information in the documents is based on current base loading or industrial planning system data.

AGENCY COMMENTS AND OUR EVALUATION

DOD commented on a draft of this report by letter dated September 10, 1984 (see app. II). In general, DOD agreed that improvements could be made to the planning for Navy shore facilities. In its comments, DOD stated that many of the planning figures criticized in the report were preliminary and subject to later study and review which resulted in their revision. We recognize that facility requirements are based on missions and base loading data which are subject to change. However, basic facility requirements such as those for the Philadelphia Shipyard's electronics shop and the Naval Air Station, Cubi Point's maintenance hangars and aircraft parking apron should not be considered preliminary when they have been in existence since 1974 and 1980, respectively. In the case of the Naval Ships Systems Engineering Station's basic facility requirements, we realize that the requirements did not have final approval. However, the Station and the Northern Division, Naval Facilities Engineering Command, reviewed and commented on the requirements as early as September, 1982.

In a draft of this report, we proposed that DOD defer further planning, programming, and, where practicable, construction of child care center projects until DOD's child care center criteria were revised and projects were evaluated using the criteria. DOD believes it would be impractical to stop the planning, programming, and construction of child care centers now in progress because of limited opportunity for cost avoidance and an adverse impact on morale. DOD said that a tri-service committee has been studying the criteria since 1981.

As a result of an August 1984 meeting we had with DOD representatives, the Deputy Assistant Secretary of Defense (Installations), in a September 5, 1984 letter, requested that the Army's, Navy's, and Air Force's Deputy Assistant Secretaries, responsible for developing the child care center criteria, take such action as is necessary to complete work on the child care center criteria as soon as possible and certainly

within the next 90 days. We believe that DOD's response is reasonable and, accordingly, revised our recommendation. We are now recommending that DOD defer planning, programming, and construction of child care centers not now in progress until improved criteria are available.

We also proposed that the Secretary of the Navy direct the Commander, Naval Sea Systems Command, to revise the industrial planning system so that all functions and equipment in use are considered when determining facility requirements. The Navy does not believe that the industrial planning system needs to be revised as we suggested, but believes that with training in system use, personnel will be able to take advantage of flexibility built into the system to accommodate function or equipment changes. The Navy plans to emphasize the need for training personnel in the use of the industrial planning system. We believe that, if the proposed training results in consideration of function and equipment changes in determining facility requirements, there would be no need to revise the industrial planning system. Therefore, we have dropped our proposal for changes in the industrial planning system.

In regard to our other recommendations, DOD said a tri-service committee is studying the need for revising the criteria for family services centers and would complete the study by the end of calendar year 1984. DOD also said that waivers for complying with criteria for sizing family services centers will be addressed as part of the supporting project documentation.

The Navy said that it plans to reemphasize the importance of activities updating the SFPS with current industrial planning system data and the importance of engineering field divisions' reviews of facility planning documents for ensuring that they are based on current base loading or industrial planning system data. The Navy also said that its November 1984 update of the Facility Planning Criteria for Navy and Marine Corps Shore Installations (referred to by DOD as NAVFAC P-80) will include criteria for determining aircraft parking apron requirements based on the most efficient parking angle.

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As you know, 31 U.S.C. §720 requires the head of a federal agency to submit a written statement of actions taken on our recommendations to the House Committee on Government Operations and the Senate Committee on Governmental Affairs not later than 60 days after the date of the report. A written statement must also be sent to the House and Senate Committees on Appropriations with an agency's first request for appropriations made more than 60 days after the date of the report.

We are also sending copies of this report to the Director, Office of Management and Budget; the Chairmen, Senate Committee on Governmental Affairs, House Committee on Government Operations, and the Senate and House Committees on Appropriations and on the Armed Services; and the Secretary of the Navy.

Sincerely yours,

for Frank C. Conahan
Director

IMPROVEMENTS CAN BE MADE TO THE NAVY'S SHORE FACILITIES PLANNING SYSTEM

The Naval Facilities Engineering Command (NAVFAC) is responsible for managing the Navy's shore activity land and facilities planning process. According to Navy instructions, the process should consider all requirements for land and facilities generated by current missions, projected base loadings[1] and relevant mobilization plans.

THE SHORE FACILITIES PLANNING SYSTEM

According to the Navy's Shore Facilities Planning Manual, facility resources of the Naval shore establishment are fundamental to the execution of assigned missions. The Navy recognizes that missions respond to changes in the characteristics of ships, aircraft, and other weapons systems which affect facility requirements. It developed the SFPS to assist activities in determining facilities requirements necessary to accomplish assigned missions. According to Navy officials, the Navy plans to use the system to identify facilities needed to accommodate fleet expansion in the future.

Facility planning criteria

NAVFAC has developed facility planning criteria which are used by activities to identify the facilities (i.e., piers, aircraft parking aprons, warehouses, administrative space, family services centers, etc.) needed to support their operations. These criteria are also used to ensure that existing and planned facilities are sized properly to accomplish mission objectives. Other uses include evaluating the adequacy of existing facilities, identifying facility deficiencies or excesses, and validating proposed construction projects.

The Navy has established planning criteria for about 75 percent of the facility types in its inventory, according to a NAVFAC official. However, for some facilities, it is impractical to develop specific planning factors because the requirements vary by location or the facility is one-of-a-kind. In such cases, the planners determine space requirements by considering information such as functions to be accommodated, space needed for each function, number and status of personnel, support space requirements, and an industrial engineering analysis of the operations.

According to the Navy's Facility Planning Criteria for Navy and Marine Corps Shore Installations, facility criteria are

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[1]Personnel, aircraft, ships, etc., assigned to an activity.

planning guides, and activities are not automatically entitled to facilities and maximum space allowances established by the criteria. Facilities should be sized to meet actual needs.

Facilities planning

The Navy developed the SFPS to determine facility requirements necessary for accomplishment of the assigned mission and to ensure the optimum use of existing assets. Basic facility requirements (BFR) is the title given to the listing of facilities required to perform the mission of a shore activity. Major claimants[2] inform their activities of the latest plans affecting mission, tasks and base loading proposed for the next 5 to 8 years so that BFRs may be kept current. This information identifies the ships, aircraft, and personnel to be assigned, and the functions to be performed to accomplish assigned missions. Activities then apply planning factors/criteria to identify the requirement for each type of facility needed to support their operations. A facility planning document (FPD) is a record of existing and proposed planning data for each type of facility at an activity.

OBJECTIVES, SCOPE, AND METHODOLOGY

Our objective was to evaluate the Navy's management of its shore facilities. In doing so, we evaluated the accuracy of BFRs and planning actions for selected facility category codes.

Our work was performed between December 1982 and August 1983 at DOD, the Office of the Deputy Chief of Naval Operations for Manpower, Personnel and Training, the Naval Facilities Engineering Command and its Northern, Atlantic, Chesapeake, and Pacific Divisions; the Naval Sea Systems Command, and the nine activities listed below:

Fleet Training Center, Norfolk, Virginia
Naval Ships Systems Engineering Station, Philadelphia, Pennsylvania
Naval Shipyard, Philadelphia, Pennsylvania
Naval Air Test Center, Patuxent River, Maryland
Naval Amphibious Base, Little Creek, Virginia
Naval Air Station, Oceana, Virginia
Naval Submarine Base, Pearl Harbor, Hawaii
Naval Station, Subic Bay, Philippines
Naval Air Station, Cubi Point, Philippines

We reviewed instructions, regulations, and correspondence related to facilities management. We also reviewed FPDs and

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[2]Those commands, such as the Naval Sea Systems Command, bureaus and offices designated by the Chief of Naval Operations as claimants responsible for the presentation and formulation of military construction programs for shore activities.

justifications for programmed and planned construction projects and held discussions with knowledgeable officials responsible for facilities management at activities and commands.

We selected activities which had programmed or planned construction projects. We did not select the activities on a statistical basis; therefore, we cannot project the results Navy-wide. Further, we did not identify all the weaknesses described in this appendix at all activities visited. However, because some of the identified problems result from application of criteria used by all Naval activities, we believe that similar situations could occur at other locations.

Our work was performed in accordance with generally accepted government auditing standards.

CRITERIA SHOULD BE REVISED

We found three cases where use of DOD and Navy criteria for sizing certain facilities could result in inaccurately sized facilities.

--The Navy criteria for sizing family services centers provide for centers larger than DOD criteria allow and are not based on local needs.

--DOD and Navy criteria for child care centers could be more accurate.

--Current Navy criteria for aircraft parking aprons do not direct activities to use the most efficient angle for parking aircraft.

The Navy programmed over $34 million to construct facilities in these category codes for fiscal year 1984 alone. Because the criteria used to develop the scopes of these projects may not be valid, we believe that the Navy is constructing projects which may exceed its needs.

Family services centers

The Navy's criteria for sizing family services centers differ from DOD's criteria, and center sizes are not based on local needs. Additionally, the Navy is planning to construct centers which exceed DOD space allowances without proper waivers.

Differing space allowances for family services centers

The family services center is the central point for the coordination of a full range of Navy and community resources and

services for Navy families, as well as single Navy personnel. The centers offer information and referral services for a wide array of personal and family matters such as financial counseling, marriage and family abuse counseling, child care advice, relocation assistance, career counseling, emergency services, assistance on military separation and retirement matters, and similar services.

DOD has imposed maximum space allowances for family services centers. These allowances are tied to the size of the military population supported. For example, the allowances provide for facilities ranging from 650 gross square feet for a military strength[3] of 1,000, to 4,100 gross square feet for a military strength exceeding 15,000.

The Chief of Naval Operations has established space allowances for family services centers for two standard center sizes--large and small--and has designated a particular size to be planned at a particular installation. The estimated sizes are 3,500 gross square feet for a small center and 5,000 gross square feet for a large center. The Navy's large center exceeds the DOD maximum allowance by 900 square feet, or about 22 percent.

DOD has asked a tri-service committee to evaluate the criteria and recommend changes by the end of calendar year 1984.

Local needs not considered

At the Naval Air Test Center, Patuxent River, Maryland, we found that the requirement for a family services center project was not based on local needs. The center had programmed construction of a 5,000 square foot family services center for fiscal year 1985. The activity established the project scope based on September 1980 guidance from the Chief of Naval Operations. As of March 1983, Patuxent River had 3,792 assigned active duty personnel and 1,892 dependents which resulted in a family services center requirement of 1,500 square feet, based on the DOD criteria.

A Patuxent River official stated that the activity may not need a large center because it differs from other activities. For example, its personnel generally are not subject to long-term separations from their families. As a result, the base has a lower demand for counseling services to help families deal with separations, compared to bases with personnel assigned to units which leave for extended lengths of time. Although Patuxent River had not identified services needed by assigned

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[3]In this case, military strength is the active duty personnel assigned to the installation, plus 25 percent of the dependents.

personnel, it planned to determine the services and facility size appropriate for the activity when project funds became available. We believe local needs are a valid consideration when determining the size of a family services center, especially when applying published criteria could result in either excessive or inadequate facilities.

According to a DOD official, an assessment made in April 1984, subsequent to our review, identified a requirement for a large-size family services center at Patuxent River.

According to an official of the Naval Military Personnel Command, the center sizes designated for particular locations were based on the Command's judgment. Although decisions on center sizes for individual activities were not based on any type of assessment, the official believed that the decisions would not result in construction of excess space. The official further pointed out that the Navy's concept of family services centers provided many more services than envisioned under the DOD criteria.

Because the September 1980 guidance, used by Patuxent River as authority to establish the scope of its family services center project, provided direction to 19 other activities (11 with small centers and 8 with large centers), we believe the potential exists for activities to program centers which may be too small or too large to meet their needs.

Waivers not obtained

The Navy criteria manual requires planners to compare their planned facilities to DOD criteria. If the requirements exceed DOD maximum space allowances, the activity must obtain a waiver from DOD prior to constructing a family services center. Because the Navy's concept of family services centers is different than DOD's, its space allowances for the centers exceed those established by DOD. However, an official of NAVFAC stated that while the Navy has not obtained any formal waivers for construction of the centers, DOD approval of Military Construction Project Data (DD-1391) constitutes a waiver.

A DOD official agreed that procedurally, approval of a DD-1391 would constitute a waiver; but, because of a lack of personnel, his office does not review DD-1391s to ensure that DOD construction criteria are followed. The official was unaware that the Navy was planning to construct family services centers in excess of DOD's maximum space allowances.

In commenting on a draft of this report, DOD stated that, when required, criteria waiver requests will be reviewed as part of the documentation supporting projects.

Criteria for sizing child care centers could be more accurate

The Departments of Defense and Navy have issued separate criteria for sizing child care centers. However, we believe that current criteria are not adequate, and therefore, the Navy has no assurance that the centers it plans to build will be properly sized to meet its needs.

According to the DOD Construction Criteria Manual, the number of children to utilize a child care center is to be based on local experience. When no previous local experience is available, the number of children to be provided for is based on one child for every five married military families receiving direct installation support. The Navy's criteria are more limited--allowing for one child for every ten married military families receiving direct installation support. In addition, the Navy further limits the maximum authorized space allowance (which is based on 75 gross square feet per child by both DOD and Navy) to 50 percent of the above, as consideration for past and expected utilization, effects of off-installation housing, and nearby civilian and military facilities.

Different approaches used

Two of the activities we visited used different approaches for sizing proposed child care centers. Officials at both activities used good judgement in applying criteria, but because of the inadequacy of the criteria, we believe that either undersized or oversized facilities may result.

The Naval Submarine Base, Pearl Harbor, has programmed a child care center to replace a semi-permanent quonset hut, built in 1943, which was being used as a center. The base computed its BFR for the center to be 5,625 square feet, using local experience based on 75 children either enrolled in the center or on the waiting list. On the other hand, the base could have used the number of married military families to justify an 8,100 square foot facility according to Navy criteria. Using past utilization to size the facility was a realistic basis for determining the child care center requirement, according to the base's facility planner. Enrollments were not expected to significantly increase when the new center replaces the existing one.

The Naval Amphibious Base, Little Creek, Virginia, also programmed a construction project to build a child care center. However, its child care center BFR of 12,300 square feet was computed based on the number of married military families. This center was also located in a World War II vintage building with known safety hazards. Little Creek officials believe that based on the 120 to 130 children using the facility daily (about 80 at

any one time), square footage requirements would not reflect actual child care center needs. The officials believe that the planned 12,300 square foot facility, which would accommodate 164 children, still would not be large enough. They believe parents are deterred from enrolling their children in the existing center because of its physical condition, and that the new center will increase interest in on-base child care.

Because active duty personnel are authorized to enroll their dependents in child care centers at their assigned station or other activities, the use of the number of married military families stationed at an activity may not identify the actual demand for child care services at a particular location. For example, we noted that 78 percent of the children enrolled in the center or on the center's waiting list at the Submarine Base were from other activities. At the Amphibious Base, about 47 percent of the children who were signed up to use the center were from activities other than the Amphibious Base or were dependents of personnel assigned to ships in the Norfolk area.

Use of local experience does not appear to be a valid means for activities to determine child care center requirements when there are unusual circumstances such as use of an old facility or use of the facility by personnel assigned to other activities. Moreover, use of the number of married military families to determine requirements can also be misleading, as this procedure does not recognize the fact that military personnel are not required to seek child care services at the activity to which they are assigned.

According to a DOD official, the military has recognized the problem with the criteria for sizing child care centers and has established a child care subcommittee as part of the Department of Defense Manpower, Welfare, and Recreation Committee. The Chairman of this subcommittee told us that the subcommittee has developed criteria for determining the number of children to utilize a center which includes use of a needs assessment. The assessment would involve determining (1) the needs of the sponsor population (i.e., Is demand for services seasonal? Do personnel from other activities seek services?); (2) the type of services desired (i.e., full-time, part-time, drop-in, etc.); and (3) the age groups of the children to be accommodated. We believe that such an assessment process, when approved and applied, will be an improvement over current criteria.

In commenting on our draft report, DOD stated that center requirements based on local experience and adjusted as necessary using good professional judgement can provide the optimum facilities to satisfy local needs. We agree. However, we noted that although Little Creek used criteria in Facility Planning Criteria for Navy and Marine Corps Shore Installations to size its child care facility, the base did not adjust the resulting

facility to recognize local needs. In fact, base officials do not believe the planned facility will be large enough to meet base needs (see p. 7).

Plans to clarify aircraft parking apron criteria

The Navy's criteria for computing BFRs for aircraft parking aprons indicate that the most efficient apron size results from parking jet aircraft at a 45 degree angle and propeller aircraft and helicopters at a 90 degree angle to the interior taxi lane. Although a NAVFAC official told us it is the Navy's intent for activities to use the most efficient parking angle whenever possible, the current criteria do not direct activities to use the most efficient angle for computing requirements.

We found that the Naval Air Station, Cubi Point, used 90 degree parking in all calculations in computing its aircraft parking apron requirements. We estimate that the activity's 602,165 square yard BFR for its parking apron is overstated by 109,589 square yards, because of the parking angle selected.

In another case we noted that the Naval Air Station, Oceana, Virginia, computed requirements for an aircraft parking apron addition, using 90 degree parking. It was later informed by NAVFAC that its aircraft parking apron requirements must be determined by preparing a detailed aircraft parking plan, rather than only using the broad planning factors provided in the Navy's criteria manual.

We discussed the Oceana project with a NAVFAC official who believed that through NAVFAC's review of aircraft parking plans, use of the most efficient parking angle is assured. He agreed, however, that the Navy's criteria allowed activities too much latitude in choosing between 45 degree and 90 degree parking, and stated that the Navy would clarify its intent.

In August 1984, the Navy advised us that it plans to revise its aircraft parking apron criteria by November 1984. The revised criteria will require activities to use the most efficient parking angles when computing requirements.

INACCURATE DATA USED TO SUPPORT PROJECTS

At two activities, we found that BFRs were not adequately supported because they were based on outdated or inaccurate data. At a third activity, improper use of factors for

converting net floor area to gross floor area[4] and classifying a facility wrong resulted in inaccurate BFRs.

Electronics shop BFR was based on inaccurate data

The industrial planning system, previously known as the shipyard modernization system, converts long-range workload projections into resource requirements in terms of facilities, equipment, and staff. According to Naval Sea Systems Command and Naval Facilities Engineering Command officials, the industrial planning system should provide current and accurate requirements data for production shops which should be incorporated into the SFPS.

The Philadelphia Naval Shipyard used a BFR of 258,500 square feet, which was identified in a 1974 shipyard modernization study, to justify construction of a $14.0 million electronics shop. This construction project involves completing the third and fourth floors of a building which was built in 1973.

When we observed that the electronics shop BFR was based on the 1974 shipyard modernization study, we recomputed the space requirements, using industrial planning system criteria and projected workload data from December 1982. We found current electronics shop requirements to be 72,305 square feet--186,195 square feet less than the 1974 requirements. As a result, Shipyard officials recomputed the electronics shop space requirements and found them to be about 112,000 square feet. The officials attributed the difference between the figure and our computation to inadequacies in the industrial planning system. The system did not recognize all functional shops (i.e., the paint and optics shops) included in the electronics shop nor did it base requirements on equipment currently used by the electronics shop. A Naval Sea Systems Command official agreed with this. Using the new requirement computed by the Shipyard, the BFR is overstated by 146,000 square feet.

In commenting on our draft report, DOD stated that (1) it did not know where the 258,500 square feet requirement came from; (2) it did not agree that the BFR was overstated by 146,000 square feet; and (3) a Shipyard analysis of the third and fourth floors of the building being outfitted as an electronics shop supported all but 26,000 square feet of the electronics shop production space.

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[4]Gross floor area is the total area of all floors measured between the exterior faces of outside walls. Net floor area excludes space taken up by outside walls, stair towers, elevator shafts, interior partitions, toilets, basement unsuited for specific use, permanent hallways, machinery or equipment for heating and/or ventilating the building, etc.

As stated on page 9, the 258,500 square feet requirement was based on a 1974 shipyard modernization study. Our conclusion that the BFR was overstated by about 146,000 square feet was based on the Shipyard's computation of the electronics shop BFR. We do not disagree with the Shipyard's analysis of space use in the building, but note that the electronics shop is only one of six types of space to be accommodated in that building. In a November 2, 1982, letter to GAO, the Shipyard Commander stated that the Shipyard's review of space use in the building indicated that there was a lack of attention in updating the SFPS to document the various functions to be supported in the building. As a consequence, the SFPS did not adequately reflect the actual requirement for the electronics shop project.

Additionally, DOD stated that the existing industrial planning system, when properly used, provides adequate estimates of shipyard industrial facilities requirements. DOD does not believe the system has to be revised, but plans to provide system users additional training on the applications of the system and equipment required to estimate shipyard industrial facilities requirements.

BFRs supporting proposed maintenance hangar and aircraft parking apron construction were not updated

Aircraft maintenance hangar and aircraft parking apron BFRs for the Naval Air Station, Cubi Point, Philippines, may be overstated because the station based the BFRs on (1) outdated base loading data, (2) aircraft not maintained by the base, and (3) other incorrect data. As a result of this, and improperly applying criteria for sizing aircraft parking aprons (see pp. 11 and 12), these BFRs, when corrected, may not support the Air Station's military construction program for maintenance hangars and parking aprons in their entirety. The station has planned projects for fiscal years 1985 and 1986.

Cubi Point computed its BFRs of 236,832 square feet for 9 type I and 2 type II maintenance hangar modules and 602,165 square yards for aircraft parking aprons in December 1980. However, we found that these BFRs may no longer be valid. For example, we found that

--Both BFRs do not reflect correct base loading data. A comparison between present base loading data for selected aircraft assigned to Cubi Point and the number of aircraft used to develop the BFR dated December 1980 disclosed a decrease of 11 aircraft.

--In calculating the BFR for aircraft parking space, the base used 2,790 square yards as the approximate parking area required for each SH-60B helicopter instead of 1,557

square yards, which is specified in the current Navy criteria manual. Since the Navy's criteria did not list this type of helicopter at the time the BFR was computed, the base selected the largest space allotment for helicopters parked at 90 degrees (i.e., 2,790 square yards) for use in calculating the BFR.

Further, we were informed by a Pacific Division, NAVFAC, official that the maintenance hangar BFR included space for two aircraft which should not have been included because they were maintained in contractor facilities. Using corrected data for the above examples reduces the requirement for type I maintenance hangars from 9 to 8 modules and the aircraft parking apron by about 25,000 square yards.

In commenting on a draft of this report the Navy informed us that subsequent to our review, the aircraft mix at Cubi Point was firmed up and the Station's aircraft parking apron requirements were recomputed using appropriate criteria.

Improper use of conversion factors

Improper use of factors to convert net floor areas to gross floor areas can result in inaccurate BFRs. The amount of gross floor area required for a facility is based on net floor area multiplied by a factor for converting net to gross. For example, the net floor area for a research facility may be determined by the use of a scaled floor plan which depicts a layout of equipment. Another method of developing net floor area is to determine the actual floor areas required by all items of equipment and the working area required around each item. The sum of all areas occupied by equipment and the surrounding working areas then represents the net floor area. The net floor areas, determined by either of the above methods, are then multiplied by conversion factors ranging from 1.35 for bench type labs in a building supported by a central heating/cooling plant, to 2.2 for one-of-a-kind specialized research facilities containing their own heating/cooling equipment.

At the Naval Ships Systems Engineering Station (NAVSSES), Philadelphia, Pennsylvania, we found that improper use of conversion factors could cause errors in BFRs.

Two functions included in the 328,474 square foot BFR for propulsion system laboratory space at NAVSSES resulted in the BFR being overstated by about 11,000 square feet. In both cases, the BFR was computed by inappropriately applying factors for converting net floor area to gross floor area for proposed facilities that were already measured in gross square feet. Consequently, the requirement for propulsion system laboratory space was overstated by about 10,000 square feet and for a distilled water plant by 1,312 square feet.

APPENDIX I

Wrong classification overstated ships and marine equipment laboratory space requirement

The 119,400 square foot BFR for ships and marine equipment laboratory space at NAVSSES included 52,620 square feet for an underway replenishment test facility. The test facility included replenishment stations which accounted for about 44,000 square feet of the BFR. Because the replenishment stations were inaccurately classified as ships and marine equipment laboratory space (measured in square feet) instead of ships and marine systems facilities (measured by the number of facilities) the stations were included in the computation of square footage, and the BFR was overstated by 44,000 square feet.

Some corrective actions taken

NAVSSES and Northern Division NAVFAC have taken actions to correct some of the discrepancies we observed. The propulsion system laboratory space BFR was adjusted to properly reflect the reduced facility requirements, and replenishment stations were reclassified as ships and marine systems facilities. However, Northern Division officials did not feel that improper use of conversion factors resulted in overstated BFRs. For example, they believe that a BFR of 3,936 square feet for the distilled water plant was satisfactory because it allowed for future replacement of the plant with a larger one. However, we believe that BFRs should be based on known and approved requirements. When it becomes necessary to replace or expand the plant, the BFR should be revised accordingly. Because one of the uses of the SFPS is to achieve optimum utilization of existing facilities, we believe that to include an unknown future requirement in the BFR will lessen the usefulness of the system.

APPENDIX II

THE ASSISTANT SECRETARY OF DEFENSE

WASHINGTON, D.C. 20301

MANPOWER,
INSTALLATIONS
AND LOGISTICS

10 SEP 1984

Mr. Frank C. Conahan
Director, National Security and
International Affairs Division
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Conahan:

This is the Department of Defense (DoD) response to the GAO Draft Report of July 9, 1984, titled "Department of Navy Can Improve Its Shore Facilities Planning System" (GAO Code No. 945617), (OSD Case No. 6549).

The DoD basically concurs with the report and the findings and recommendations contained therein. The report, in general, is a reasonable assessment of the situation at the time the survey was made. However, many of the planning figures criticized in the report were preliminary and subject to later study and review which resulted in their revision. These items are detailed in the enclosure.

One recommendation with which the DoD must disagree is that further planning, programming and, where practical, construction of child care center projects be deferred until the final child care center criteria are complete. It is intended that these criteria be completed in about three months. In the meantime planning and programming should continue. On-going construction projects could not be stopped without significant loss of funds by the Department. In general, as many facilities are undergoing study at any one time, a policy of stopping all work on any type of facility under study would be nothing short of disastrous. Delays of several years in the procurement of adequate facilities would occur each time it was decided to study those facilities in order to determine if improvements were possible.

Specific comments for each finding and recommendation in the draft GAO report are attached. DoD appreciates the opportunity to comment on the draft report.

Sincerely,

Jerry L. Calhoun
ACTG Assistant Secretary of Defense
(Manpower, Installations & Logistics)

Attachment

DoD Draft Comments on

GAO DRAFT REPORT - DATED JULY 9, 1984
(GAO CODE NO. 945617) - OSD CASE NO. 6549

"DEPARTMENT OF NAVY CAN IMPROVE ITS
SHORE FACILITIES PLANNING SYSTEM"

SUMMARY OF FINDINGS AND RECOMMENDATIONS

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FINDINGS

- FINDING A. Criteria For Navy Program Construction Projects Needs to be Clarified. GAO found that the Navy cannot accurately program construction projects because the criteria used to determine its requirements for facilities such as family service centers, child care centers and aircraft parking aprons are not clear. GAO also found that notwithstanding the lack of criteria, the Navy has programmed $34 million to construct these types of facilities in FY 1984. GAO concluded that because the criteria used to develop the scopes of these projects may not be valid, the Navy is constructing projects which may exceed its needs. (p. 4, Appendix, GAO Draft Report) (See app. I, p. 3, this report.)

  DOD Comments - Concur in part. See comments on individual recommendations.

- FINDING B: The Navy's Criteria For Family Service Centers Differs From DoD's. GAO found that DoD has imposed maximum space allowances for family service centers which are based on the size of the military population while the Navy has established centers in two standard sizes--large (5,000 gross square feet) and small (3,500 gross square feet). GAO pointed out that the Navy's large size exceeds the DoD's maximum (4,100 gross square feet) by 900 square feet. GAO further found that the Chief of Naval Operations (CNO) has the responsibility for designating the particular size of the center to be planned at a specific installation - and that at times, this determination is made without considering local needs. Using the example of the Naval Air Test Center, Patuxent River, Maryland, GAO showed that not considering the nature of the assigned duties of personnel resulted in a planned building of 5,000 square feet. On the other hand, had the DoD criteria been properly applied, it would have yielded a building 1,500 square feet. GAO concluded that local needs should be considered in determining the size of a family services center. GAO further concluded that applying the Navy's currently published criteria may result in either excessive or inadequate facilities (pp. 5-7, Appendix, GAO Draft Report) (See app. I, p. 3, this report.)

DOD Coments - Concur regarding the need to evaluate Navy criteria. Do not concur that requirement for NATC Patuxent River Center is ovrstated. A detailed assessment and needs study was accomplished by contract in April 1984 by DBH Assoc., Inc., of Silver Spring, Maryland which supports the full project scope.

o FINDING C: Formal Waivers Are Not Obtained For The Construction of Family Services Centers. GAO found that the Navy criteria manual requires planners to compare their planned facilities to DoD criteria, and to obtain a waiver from DoD if the requirements exceed DoD maximum space allowances. GAO also found that Navy's concept of family services centers is different than DoD's with space allowances for the centers exceeding those established by DoD. According to GAO, a Naval Facilities Engineering Command (NAVFAC) official stated that Navy has not obtained any formal waivers for construction of centers, but that DoD approval of Military Construction Project Data (DD-391), in fact, constitutes a waiver. GAO further reported that an OSD official agreed that procedurally, approval of a DD-1391 would constitute a waiver. GAO found, however, that due to a lack of personnel, the cognizant OSD office does not review DD-1391s to insure DoD construction criteria is followed. GAO noted that the OSD official was unaware that the Navy is planning centers in excess of DoD maximum space allowances. (pp. 7-8, GAO Draft Report) (See app. I, p. 5, this report.)

DOD Comments - Concur. When required, criteria waiver requests will be addressed as part of the supporting project documentation data.

APPENDIX II

- FINDING D: Current Criteria For Sizing Child Care Centers Are Not Accurate. GAO found that although both the DoD and the Navy have issued criteria for sizing child care centers, there is no assurance that the centers will be sized properly because these criteria are not accurate. GAO stated that the DoD Construction Criteria Manual requires that the number of children that will utilize a child care center is to be based on local experience and if this experience is not available, a ratio of one child for every five married families is to be used. On the other hand, the Navy's criteria is more limited and allows for one child for every ten married military families and is further limited by a maximum authorized space allowance. GAO found that at several sites visited, different approaches were used for sizing proposed child care centers which could have resulted in construction of either undersized or oversized facilities. For example, at the Naval Submarine Base, Pearl Harbor, a child care center of 5,625 square feet was programmed but the Base could have justified an 8,100 square foot facility according to Navy criteria. In another example at the Naval Amphibious Base, Little Creek, Virginia, a 12,300 square foot facility was programmed to accommodate 164 children based on the number of married military families. GAO noted that the present center only has 120 to 130 children using the facility daily (about 80 at any one time). According to GAO, Navy officials claim that even if the facility had been programmed for 164 children, it still would not be large enough. This is because it was thought that parents would be deterred from enrolling their children in the existing center due to its physical condition. GAO reported that it is likely the new center will actually increase interest in on-base child care. GAO further noted that the criteria problems for sizing child care centers have been recognized by DoD and a subcommittee has been established as part of the Department of Defense Manpower, Welfare, and Recreation Committee. This group has developed criteria for determining the number of children to utilize a center. GAO concluded that, when approved and applied, the new criteria will be an improvement over current criteria. (pp. 8-11, Appendix, GAO Draft Report) (See app. I, p. 6, this report.)

DOD Comments - Partially concur as noted below:

GAO indicates that, under certain conditions, local experience does not appear to be a valid means for activities to determine child care center requirements. We do not concur with this statement in the finding. As stated in NAVFAC P-80, Facility Planning Criteria for Navy and Marine Corps Shore Installations, criteria should be used as guides, which normally represent maximum requirements. The quantities obtained using criteria should be adjusted, using good professional judgement, to provide the optimum facilities to satisfy local needs.

o FINDING E. Clarification of Aircraft Parking Apron Criteria Is Needed. GAO found that the criteria being used for aircraft parking aprons indicate that the most efficient apron size results from parking jet aircraft at a 45 degree angle and helicopters at a 90 degree angle. GAO further found, however, that the same criteria does not direct activities to use the most efficient angle for computing requirements. Cited as an example was the Naval Air Station, Cubi Point, where 90 degree parking was used in all calculations resulting in an overstatement of 109,589 square yards of its parking apron. GAO reported that NAVFAC agreed that the Navy's criteria allowed too much latitude in choosing between 45 and 90 degree parking and that the Navy would clarify its criteria. (pp. 11-12, Appendix, GAO Draft Report) (See app. I, p. 8, this report.)

DOD Comments. Partially concur in finding as discussed below:

GAO states that the aircraft maintenance hangar and aircraft parking apron BFRs for the Naval Air Station, Cubi Point may be overstated and may not support current projects in the military construction program. We agree that the BFRs need adjustment but overscoped facilities will not be constructed. The BFR was returned to NAS Cubi Point prior to the GAO review in 1983, requesting additional supporting data. Revised data has been received and the requirement adjusted using approved projected base loading data. Construction of the projects mentioned by GAO will result in adequate assets still below the adjusted proposed requirements and the projects are now supported by the adjusted BFRs.

o FINDING F. Inaccurate Data Was Used To Support Facilities Projects. GAO found that at some activities, Basic Facilities Requirements (BFRs) were not adequately supported because outdated or inaccurate data was used. Cited as an example was the Philadelphia Naval Shipyard, where a $14 million electronic shop construction project was using data based on a 1974 shipyard modernization study to justify a requirement of 258,500 square feet. Using Industrial Plannng System criteria and projected workload data from December 1982, GAO found the current electronic shop requirements to be 72,305 square feet. After a recomputation by Shipyard officials and adjustments for some recognized inadequacies in the Planning System GAO concluded that the BFR was actually overstated by 146,000 square feet. GAO also found that the improper use of conversion factors in converting net floor areas to gross areas was a cause for errors in BFRs. At the Naval Ship Systems Engineering Station, Philadelphia, Pennsylvania, GAO reported two functions included in a 328,474 square foot BFR for a propulsion system laboratory that resulted in it being overstated by about 11,000 square feet because the architect/engineer inappropriately applied conversion factors. (pp. 12-16, Appendix, GAO Draft Report) (See app. I, p. 8, this report.)

DOD Comments - Concur in part. See Finding G for comments regarding the Naval Ship Systems Engineering Station (NAVSSES). In regard to the electronic shop requirements we do not know where the 258,500 square feet requirement comes from and we do not concur that the BFR was overstated by 146,000 square feet. The Philadelphia NSY, at GAO's request, recently completed a space analysis of the building's third and fourth floors which were constructed in 1973 as part of the initial project but more recently outfitted as an electronics shop. This analysis supported all but 26,000 square feet of the total 303,000 square feet production space or 8 percent above current criteria.

o FINDING G. Ships and Marine Equipment Laboratory Space Requirement Overstated. GAO found that underway replenishment test facilities were inaccurately classified as ships and marine equipment laboratory space which is measured in square feet instead of ships and marine systems facilities which is measured by the number of facilities. GAO concluded that, as a result of this misclassification the 119,400 square foot BFR for ships and marine equipment laboratory space at the Navy Ships Systems Engineering Station, Philadelphia, Pennsylvania, was overstated by 44,000 square feet. (GAO noted that some action has been taken to alleviate this and other observed discrepancies.) Despite some practices to the contrary, GAO also concluded that BFRs should be based on known and approved requirements, and revised accordingly when it becomes necessary to replace or expand a facility--i.e., the BFR should not include an allowance for possible expansion. In addition, GAO concluded that because one of the uses of the Shore Facilities Planning System is to achieve optimum utilization of existing facilities, inclusion of an unknown future requirement in the BFR would lessen the usefulness of the system. (pp. 17, 18, Appendix, GAO Draft Report) (See app. I, p. 12, this report.)

DOD Comments - Concur in part. GAO noted some discrepancies in the BFRs for the Naval Ships Systems Engineering Station, Philadelphia. BFRs were under development by contract and had not been reviewed by the EFD or NAVFAC Headquarters when GAO conducted their review. The BFRs were subsequently reviewed and corrected. The ships and marine equipment laboratory was reclassified to ship and marine equipment as recommended by GAO.

RECOMMENDATIONS

- RECOMMENDATION 1. GAO recommended that the Secretary of Defense (1) reevaluate DoD's criteria for determining the size of family services centers in light of the Navy's plans to construct larger facilities, (2) if DoD's criteria are considered reasonable, direct the Navy to adhere to the criteria or obtain necessary waivers, or (3) if not, revise the current family services center criteria. (p. 3, GAO Draft Report) (See p. 2, this report.)

  DOD Comments - The Navy's criteria will be evaluated in accordance with DOD Directive 4270.1. The procedure is that the Army as executive agent of the Secretary of Defense in developing new construction criteria will assign the task to a Tri-Service committee. The committee will compare/evaluate the exisitng DOD criteria vs. Navy criteria and recommend a standard to the ASD(MI&L) for adoption. Waivers will be required for facilities which vary significantly from the criteria.

- RECOMMENDATION 2. GAO recommended that the Secretary of Defense defer further planning, programming and, where practical, construction of child care center projects until DoD's child care center criteria for such centers are revised and projects are evaluated using that criteria. (p. 3, GAO Draft Report) (See p. 2, this report.)

  DOD Comments - Do not concur. In 1982, a GAO report, titled DOD CHILD CARE PROGRAMS: PROGRESS MADE AND IMPROVEMENTS NEEDED (OSD Case #5929), recommends that "To insure that the most urgent needs for child care facilities are met first and that resources are effectively allocated, GAO recommends that the Secretary of Defense require the services:

  -- To document and develop plans to overcome the problems of facilities which should be closed because it would not be feasible to correct unsafe or hazardous conditions.

  -- To determine where appropriate funds are needed for renovation or the construction of new facilities to correct unsafe or hazardous conditions.

  -- To use uniform building design guides for child care facilities construction where feasible."

  Child care facility criteria has been under study by a Tri-Service group since July 1981. However, the complications of widely varying populations to be served, widely varying sizes of facilities (20 children - 500 children) many and difficult safety decisions, handicapped design provisions and similar problems have prevented completion of work. We expect the work to be completed in the next three months and we will urge the military departments to reach consensus on any remaining problems. In the meantime, ongoing programming, design and construction work should not be halted pending the development of this "ideal" criteria since no significant cost or problems will result from continuing work. The problems, costs and loss of morale that would result from further delay far exceed any minor difficulties involved with proceeding.

- RECOMMENDATION 3. GAO recommended that the Secretary of the Navy direct the Commander, Naval Sea System Command, to revise the industrial planning system so that all functions and equipment in use are considered when detemining facilities requirements. (p. 4, GAO Draft Report) (See p. 4, this report.)

  DOD Comments - Do not concur. The industrial planning system, (IPS) in its present form, adequately provides for consideration of all functional work groups and equipment required to approximate the size of shipyard industrial shop facilities. It is used to develop (in part) the BFR and provides guidance for connecting and integrating various production shop requirements. No revision is necessary. However, additional training in the application of the IPS will be accomplished within resource constraints.

- RECOMMENDATION 4. GAO recommended that the Secretary of the Navy direct the Commander, Naval Sea System Command, to require activities using the system to periodically update the SFPS with current industrial planning system data. (p. 4, GAO Draft Report) (See p. 2, this report.)

  DOD Comments - Concur. Although NAVFACINST 11010.44D requires periodic updating of the SEPS system, Navy will reemphasize the particular need for shipyards to maintain current IPS data in the planning system.

- RECOMMENDATION 5. GAO recommended that the Secretary of the Navy direct the Commander, Naval Facilities Engineering Command, to revise the criteria for sizing aircraft parking aprons to require activities to use the most efficient parking angle when computing requirements. (p. 4, GAO Draft Report) (See p. 3, this report.)

  DOD Comments - Concur. This will be included in the next change to NAVFAC P-80, scheduled for issue in November 1984.

- RECOMMENDATION 6. GAO recommended that the Secretary of the Navy direct the Commander, Naval Facilities Engineering Command, to improve the accuracy of the data in the SFPS by requiring engineering field divisions to review facility planning documents to ensure that information in the documents is based on current base loading or industrial planning system data. (p. 4, GAO Draft Report) (See p. 3, this report.)

  DOD Comments - Concur. Procedures do exist to review planning documents at different stages and to revise periodically. The current six year update cycle will reemphasized to the degree that resources permit.

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