

June 1997

# MILITARY CONSTRUCTION

## Renovation Plans at the Portsmouth Naval Medical Center



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**National Security and  
International Affairs Division**

B-276792

June 12, 1997

The Honorable Conrad Burns  
Chairman  
The Honorable Patty Murray  
Ranking Minority Member  
Subcommittee on Military Construction  
Committee on Appropriations  
United States Senate

As you requested, we are providing information on the Department of Defense's (DOD) plans to renovate building 215 at the Portsmouth Naval Medical Center in Portsmouth, Virginia. Building 215 has 18 stories and is currently an operating hospital. A replacement hospital, under construction adjacent to building 215, is expected to be occupied in July 1998. As part of this construction project, DOD received funding to renovate portions of the first six floors in building 215 (about 40 percent of the building's total space) for a range of health care and medical support services. DOD intends to request additional funds to renovate the remaining floors. Without the additional funds, these floors may be unoccupied in the future. This report addresses whether (1) the actual workload at Portsmouth affects its requirements for facility space, (2) the planned occupants of the bottom six floors of building 215 could move into the replacement hospital, and (3) alternative uses exist for the top floors in building 215.

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**Background**

The Portsmouth Naval Medical Center is a teaching hospital that provides comprehensive health care services to active duty forces and, when space is available, provides medical services to other DOD beneficiaries (i.e., dependents of active duty members and retirees and their dependents) in the Norfolk, Virginia, area. When space is not available, beneficiaries receive health care in civilian hospitals and clinics under DOD health plans. Currently, Portsmouth provides medical care primarily in two hospitals (building 1 and building 215) and seven outpatient clinics located throughout the Norfolk area. The two buildings have a total of 348 inpatient beds and about 700,000 gross square feet of facility space. Building 1 is used primarily for psychiatric, pediatric, and obstetrics and gynecological services. Building 215 contains about 500,000 gross square feet of space on floors 1 through 15; floors 16 through 18 are mechanical support spaces and therefore are not available for occupancy. Building 215 is currently used to provide a range of inpatient and outpatient services.

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Appendix I shows the Portsmouth Naval Medical Center, as of August 1996.

To modernize the Center's medical facilities and correct numerous safety code violations, the Congress authorized DOD, in the National Defense Authorization Act for Fiscal Years 1990 and 1991 (P.L. 101-189), to spend \$330 million to construct and renovate 1.5 million square feet of space. This project includes construction of a new hospital with 464 inpatient beds (approximately \$141.8 million); renovation of building 1 for administrative purposes (approximately \$12.1 million); renovation of 40 percent of building 215—portions of floors 1 through 6—to provide clinical health care and medical support (approximately \$12.5 million); and construction of a new parking garage, gymnasium, and central energy plant. According to Portsmouth officials, the project was about 90 percent complete as of February 1997, and the remaining work is expected to be finished by January 2001.

The Navy had also planned to spend about \$19 million to renovate the top floors of building 215 under a separate project that would convert about half of the space to housing for unaccompanied enlisted servicemembers, that is, those without spouses or dependents. In 1994, the Navy canceled these plans and decided to use the space for additional medical and administrative functions.<sup>1</sup> The prospective tenants for this additional space include medical and support personnel who currently occupy leased space in the Norfolk area and space at the Center that the Navy has determined is substandard. Navy officials estimate that \$34.6 million will be required to renovate about 300,000 square feet of additional space in building 215.

Partially because of concerns that the additional renovation may not be needed, the DOD Comptroller deferred the funding request for this project from fiscal year 1998 to 1999, pending further analysis and validation of need. In January 1997, the Office of the Assistant Secretary of Defense for Health Affairs contracted for a study of total workload and space requirements for Portsmouth. A final report on the study's findings is expected in June 1997.

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## Results in Brief

The assumptions used to design and size the Portsmouth Naval Medical Center have not materialized as expected. In some instances, the actual

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<sup>1</sup>The Navy requested and the Congress funded two additional military construction projects totaling \$16.1 million to provide housing for unaccompanied servicemembers.

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workload today is significantly less than anticipated. All indicators of inpatient workload are over 50 percent lower than the figures that were used to size the facility space. Reported outpatient visits nearly doubled. Theoretically, such overstated inpatient requirements might result in excess space that could be used for other purposes, such as accommodating functions planned for building 215.

Reusing inpatient space for other purposes would not be practical because the new hospital is nearly complete and costs to redesign and rebuild it could be significant. In 1995, project officials authorized the redesign and finishing of about 38,000 square feet of space for \$4 million, or about \$105 per square foot. In addition, the functional use of space in the new hospital is severely constrained. Inpatient beds are distributed throughout the hospital according to medical function, so that maternity beds are located near the nursery and intensive care beds are located near the operating rooms. Although inpatient workload has decreased by over 50 percent, the distribution of this decrease across various medical functions is not even and could result in only small numbers of beds being eliminated from each function.

Our analysis indicates that fully renovating building 215 is a practical option because some renovation of that building is unavoidable. Portsmouth officials have identified tenants to fully occupy the top floors, which they estimate will offset about \$1.6 million in annual costs to lease space and may avoid \$10 million to renovate other substandard space.

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## Original Workload Assumptions Have Changed

DOD designs its hospitals based on assumptions about the beneficiary population to be served, expected inpatient and outpatient workloads, and staff needed to provide medical care. However, several assumptions made by DOD that were used to support the modernization project at Portsmouth Naval Medical Center have not materialized as expected. For example, DOD estimated in 1988 that a modernized center would serve a beneficiary population of about 306,000 people in 1994—when the hospital was initially planned to open. At that time, about 35 percent of the beneficiaries were expected to be active duty personnel. Due to military downsizing and other factors, DOD now projects that the hospital, when it opens in 1998, will serve about 302,500 beneficiaries, of which about 30 percent will be active duty members.

Also, significant changes over the past few years in health care delivery practices, such as the shift from inpatient to outpatient care, have affected

facility use and size. As table 1 shows, all indicators of inpatient workload are significantly lower than the original projections used in Portsmouth's design.

**Table 1: Projected and Actual Inpatient Workload at the Portsmouth Naval Medical Center**

Inpatient indicator	Projected workload for FY 1994	Actual workload			Percent change projected 1994 and actual 1996
		FY 1994	FY 1995	FY 1996	
Number of days available beds are occupied	158,540	78,100	77,769	75,723	-52
Average number of patients each day	393	214	213	194	-51
Average length of stay (in days)	5.7	3.3	3.2	2.8	-51

Source: Naval Medical Center, Portsmouth and Defense Medical Facilities Office, IBM Mainframe Biometrics Files (as of Feb. 1997).

In contrast to the decline in inpatient workload, reported outpatient visits doubled from 425,000 in 1988 to nearly 900,000 in 1996. Some of the increase can be attributed to medical functions currently performed at Portsmouth that were not included in the 1988 data, including pediatrics, family practice, and dermatology services. Some of the increase may be caused by changes in the way the data is collected and reported. For example, telephone calls that providers make to patients in their homes were not included in the design assumptions, but these calls have been included in outpatient workload since 1995. However, available data did not distinguish telephone calls from actual outpatient visits, and hospital officials could not estimate the number of calls.

Another important assumption used to estimate facility size is the number of health care providers (i.e., the number of physicians and other providers who examine patients, such as nurse practitioners, physician assistants, and independent medics). According to current DOD medical standards, each practicing physician or provider should have a 100-square foot office plus two 100-square foot examination rooms. The Navy originally assumed that Portsmouth would have 471 physicians when the new hospital opens. In 1996, however, 455 providers were assigned to the facility, and the Navy projects that 530 providers will be assigned in fiscal year 1998.

One additional assumption that may not materialize is the size of the graduate medical education program. The original design projections increased the total square footage of the Portsmouth facility by nearly one-third in part to accommodate the facility's graduate medical education

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programs. However, in February 1997, the Navy Surgeon General announced plans to eliminate 7 of Portsmouth's 12 graduate medical education programs. If these plans are implemented over the next 5 years, 87 physician training positions, or 20 percent of the total health care providers, will be cut. Portsmouth officials told us these changes will not affect the demand for medical care. Therefore, these officials have requested the Navy Surgeon General to provide additional physicians to handle the workload, but a final decision is on hold.

Determining the exact square footage requirements for any major medical center is not a precise calculation but is instead based on subjective decisions by the designers and facility managers. For DOD, this process is further complicated because of its dual mission to prepare active duty members for military operations and ensure the availability of peacetime health care for other beneficiaries. The teaching mission at Portsmouth also adds other considerations into decisions about facility space.

In addition, the Office of the Assistant Secretary of Defense for Health Affairs contracted for a revalidation study of the workload and space requirements at Portsmouth in January 1997. For these reasons, we did not make definitive conclusions about the impact of workload changes on the need for additional space in building 215. However, to gauge the correlation between total workload and facility space, we compared the Portsmouth facility with DOD's nine other medical centers. This analysis shows that Portsmouth compares favorably with other centers in the indicators that determine facility space. For fiscal year 1995, the last year complete data were available, Portsmouth served the largest DOD beneficiary population and was the second largest facility. Compared with the nine other facilities, Portsmouth ranked third in the number of outpatient visits, sixth in the number of days inpatient beds were occupied, and seventh in the number of beds.

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## Some Renovation of Building 215 Is Unavoidable

In addition to our review, two prior DOD studies identified a decrease in Portsmouth's inpatient workload that could result in some excess space in the new hospital being used for other purposes. However, potential reuse of this space is not practical at this point in the project because the new hospital is nearly complete. Therefore, a portion of building 215 must be renovated to accommodate the patient care functions that cannot be relocated to the new hospital.

In a 1993 audit, the DOD Inspector General raised questions about excess capacity in the proposed new hospital and recommended a complete redesign of the project.<sup>2</sup> In 1992, Health Affairs identified a one-third decline in inpatient care and recommended that the facility be redesigned.<sup>3</sup> The Navy and DOD reached a compromise solution that reduced the number of inpatient beds by 101 but did not affect the size of the facility. The rationale for this compromise was that redesign of the space would delay the project several years and increase costs. At the time, the Navy estimated redesign costs to be \$11 million, and facility construction had not begun.

This situation is worse now because construction of the new facility is nearly 85 percent complete. The new hospital is designed in distinct sections, called pods, by facility engineers. Related medical functions are collocated in various pods to improve health care delivery. For example, the maternity space is located near the delivery rooms, nursery, and neonatal intensive care unit. Similarly, the intensive care and the coronary care units are located near the operating rooms. This dispersion of inpatient space does not allow easy reuse of portions of the space that is commensurate with a 50-percent decline in aggregate inpatient workload because the decline is not concentrated in one medical specialty, which would allow redesign of only one section of the hospital.

According to facility engineers, the inpatient space is not modular construction and cannot be easily changed. A Navy official said that the costs to redesign the space could range from 10 to 12 percent of the costs to make the physical change, but this official could not provide a definite estimate without having specific parameters for a change. However, a recent change in the new hospital that moved some obstetrics functions, occupying about 38,000 square feet of space, from one floor to another cost \$4 million, or about \$105 per square foot.

## Other Alternatives Are Not Feasible and Cost-Effective

Alternatives that we examined to use the additional space in a renovated building 215 are not feasible and cost-effective. One alternative would be to limit the renovations to those necessary to correct known building code violations, such as a lack of adequate fire protection and removal of life-threatening asbestos. Portsmouth officials estimated this option would

<sup>2</sup>Medical Facility Requirements—Naval Hospital Portsmouth, Va., DOD Office of the Inspector General, Report No. 93-160, September 2, 1993.

<sup>3</sup>Naval Hospital Portsmouth, Va., Revalidation of Requirement, Office of the Assistant Secretary of Defense for Health Affairs, August 13, 1992.

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cost about \$19 million in construction funds, or \$15 million less than the current proposal. In a 1995 economic analysis, DOD concluded that the net present value of life-cycle costs, over a 30-year period, for the full renovation would be less than comparable costs of a safety upgrade.<sup>4</sup> This conclusion was reached because the upgrade option does not include any improvements to the heating and ventilation system, which is very inefficient. Portsmouth officials estimate that about \$1.2 million each year is wasted in energy costs because of the inefficient heating system. Also, the interior space, which is currently designed for inpatient hospital care, will not be modified into more efficient space. Without these changes, Portsmouth officials estimate that about \$1.6 million will be incurred each year to provide space for staff that cannot move into the building.

We performed a net present-value analysis and also concluded that a full renovation is more cost-effective over a 30-year period. Like the DOD analysis, we included the additional costs of the inefficient heating system. We also considered costs that are required to provide space for prospective tenants of building 215, as described below.

- According to Navy data, the life safety upgrades would not provide as much useful space as a full renovation because the interior building design would not be reconfigured. According to Portsmouth officials, building 215 has an unusual floor configuration that limits efficient use. Without a full renovation, Portsmouth officials estimate that the building will have 25 percent less usable floor space, which will not accommodate several functions currently located in leased space in surrounding areas. For example, the Naval Environmental Health Center and the administrators for DOD's new managed health care program currently lease about 43,000 square feet of space at an annual cost of nearly \$800,000 each year. By consolidating these and other off-site functions into 120,450 square feet of renovated space in building 215, the Navy can avoid paying about \$1.6 million per year in lease costs and maintenance expenses at other locations.
- Fully renovating building 215 will allow Portsmouth officials to relocate personnel from substandard on-site space at the Center and avoid the cost of renovating this space. Although Portsmouth officials have not done a thorough evaluation, they estimate that renovating this space to an acceptable level would cost nearly \$6 million. These officials also estimate that they would have to spend another \$4 million to renovate some of the off-site space. The total costs are estimated to be approximately

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<sup>4</sup>Naval Medical Center Portsmouth, Va., A Revalidation Assessment, \$33 Million Alteration and Life Safety Upgrade, Building 215, Office of the Assistant Secretary of Defense for Health Affairs, May 1995.

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\$10 million. We did not independently validate these costs; however, our review of recent renovations on the sixth floor of building 215 indicates that these estimates appear reasonable.

Another option involved relocating the administrative office space from building 1 to building 215. This option could avoid \$11 million in renovation costs for building 1. However, the option is not feasible because building 1 is on the National Registry of Historic Landmarks and must be maintained in a manner that considers preservation of its historical integrity. Although the National Historic Preservation Act (16 U.S.C. 470h-2) allows some exceptions, Portsmouth and DOD officials support the historical restoration of this building and have not sought exceptions. Also, relocating personnel from building 1 to building 215 would leave other personnel in substandard on-site facility space or require Portsmouth to renovate other facilities.

An additional option would be to discontinue using the building or to use only portions of it. However, Portsmouth and DOD officials believe building 215 is a valuable asset that should be used, and thus do not believe that total abandonment of the building or a partial renovation is reasonable. The officials are concerned that a vacant building 215 would eventually deteriorate and become a safety hazard to the Medical Center. A DOD official estimated that it would cost between \$15 million and \$20 million to raze the structure because of environmental controls needed to protect against asbestos contamination. In addition, the Navy has invested over \$7 million to design a full renovation of building 215, build connecting bridges to the new hospital and parking garage, and renovate some of the clinical space on the sixth floor, and this investment would be lost. As with the situation concerning the historical building, total abandonment would leave some support personnel in substandard space that the Navy would have to renovate.

Regarding a partial renovation, Portsmouth officials would not estimate how much it might cost to seal the upper floors because the officials do not believe that this option is viable. They told us that the asbestos must be removed from the entire building. In a prior study, asbestos removal was estimated to cost about \$11 million. Although fewer initial funds would be invested, our economic analysis indicated that sealing the building would not be cost-effective over a 30-year life cycle.

DOD and Portsmouth officials involved with this project believe it has progressed to the point at which the only feasible option is to finish it as

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planned, although they acknowledge that, if they were designing this facility today, they would do some things differently. Project officials have expressed concerns that delaying the \$34.6 million until fiscal year 1999, as currently required by the DOD Comptroller, would cause DOD to incur unnecessary costs, such as \$1.6 million per year in lease costs and \$1.2 million in wasted energy costs. An official from the DOD Comptroller's Office maintains that the most appropriate time frame to fund this project is fiscal year 1999. This official said the 1998 funding request was not delayed solely because of concerns about facility size and the need for a revalidation. The decision was also based on an analysis of the project's spending patterns. The official said the 1999 budget request would recognize potential additional inflation costs. DOD officials told us that building 215 will be completely designed and ready to renovate in October 1997.

In addition, two assessments of the Defense Health Program, which could impact Portsmouth, are still underway. In August 1995, the Deputy Secretary of Defense directed DOD to reexamine its wartime medical personnel requirements. An original study concluded that 50 percent of active duty physicians were in excess of the minimum number needed to meet essential wartime medical demands. If the reexamination reaches similar conclusions, personnel assigned to all DOD hospitals, including Portsmouth, could be significantly impacted. The first of three phases of this wartime medical requirements study is expected to be completed this year.

Also, the May 1997 Report of the Quadrennial Defense Review identifies several DOD initiatives to reduce defense infrastructure personnel and costs, including outsourcing selected patient care, medical training, and installation support in the Defense Health Program. In addition, the Secretary of Defense commissioned a Task Force on Defense Reform to further examine the Office of the Secretary of Defense and other defense agencies. This panel will review the history, missions, resources, operations, and requirements of these organizations to reengineer the way they operate. The panel is expected to report its findings by November 1997.

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## Agency Comments and Our Evaluation

In commenting on a draft of this report, DOD generally concurred with our findings (see app. II). DOD officials described some of the findings from their 1997 revalidation efforts, which also concluded that a full renovation of building 215 is more cost-effective than other alternatives. DOD officials

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believe that we implied that the project was not planned properly because we did not state in the results in brief section that dramatic changes in the U.S. healthcare delivery caused the assumptions used for the Portsmouth facility to not materialize.

We believe we have appropriately discussed in the body of the report that a shift from inpatient to outpatient care has occurred. However, this changing trend was acknowledged as early as 1983 in an economic analysis prepared for DOD that served as the starting point for the renovation of the Medical Center. At that time, the consultants who assessed the medical care demands at Portsmouth recommended that DOD build a new outpatient clinic and renovate the existing hospital for inpatient care rather than construct a new inpatient hospital. We did not pursue these issues in this report because we believe the project is too far along in the construction cycle to cost-effectively redesign the inpatient space in the new hospital to accommodate a significant increase in outpatient workload or other functions.

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## Scope and Methodology

To identify workload changes, we gathered information on the inpatient and outpatient workload projections in the Navy's 1988 economic analysis for the Portsmouth project and the most recent workload data available. We compared projections for fiscal year 1994 with actual data for fiscal years 1994 through 1996 in the following areas: (1) total inpatient and outpatient workload, (2) beneficiary population by category of beneficiary, and (3) staffing by category of provider. We also compared workload and space requirements from the economic analysis with the 1990 program design and the 1996 actual space layout to identify potential excess space resulting from changes in workload. Further, we assessed the consistency of Portsmouth's workload and other characteristics by comparing the data with similar data from the other nine military medical centers.

To identify potential opportunities to consolidate clinical space in the new hospital, we reviewed all prior assessments of the project. We also compared the suggested changes from these studies with the actual actions taken. We compared relevant costs of possible alternative uses for the additional space in building 215 with their potential benefits to assess the cost-effectiveness of each alternative. In making these comparisons, we relied on the estimates provided by DOD and Portsmouth officials. We did not independently verify the cost estimates; however, we compared the actual costs of recent renovations with the estimates to assess their reasonableness. To consider the time value of money for the different

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alternatives, we performed a net present-value analysis. In doing so, we considered both the costs and savings of the different alternatives. We assumed that renovations funded by military construction funds would be accomplished over a 2-year period and that renovations funded through the operation and maintenance appropriation would be funded at \$1 million per year.

We interviewed responsible agency personnel and reviewed applicable policies, procedures, and documents at the Portsmouth Naval Medical Center, Portsmouth, Virginia; Atlantic Division, Naval Facilities Engineering Command, Norfolk, Virginia; Office of the Assistant Secretary of Defense for Health Affairs, Arlington, Virginia; Defense Medical Facilities Office, Falls Church, Virginia; and Navy Bureau of Medicine and Surgery, Washington, D.C.

We performed our review between October 1996 and March 1997 in accordance with generally accepted government auditing standards.

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We are sending copies of this report to the Secretaries of Defense and the Navy and the Director of the Office of Management and Budget. Copies will also be made available to others on request.

Please contact me on (202) 512-5140 if you or your staff have any questions concerning this letter. Major contributors to this report are listed in appendix III.



Mark E. Gebicke  
Director, Military Operations  
and Capabilities Issues

# The Portsmouth Naval Medical Center as of August 1996



Source: Portsmouth Naval Medical Center.

# Comments From the Department of Defense



HEALTH AFFAIRS

THE ASSISTANT SECRETARY OF DEFENSE

WASHINGTON, D. C. 20301-1200

JUN 2 1997

Mr. Mark E. Gebicke  
Director, Military Operations and Capabilities Issues  
National Security and International Affairs Division  
U.S. General Accounting Office  
Washington D.C. 20548

Dear Mr. Gebicke:

This is the Department of Defense (DoD) response to the General Accounting Office (GAO) draft report "MILITARY CONSTRUCTION: Plans to Renovate and Use Space at Portsmouth Naval Medical Center Are Practical," dated May 1, 1997 (GAO Code 703184/OSD Case 1348).

The DoD generally agrees with the draft report conclusions to continue the construction of Phase IX of the Hospital Replacement at Portsmouth, VA. The preliminary draft report, "Revalidation of Medical MILCON Project Requirements," commissioned by my office confirms the need for continuance of the construction of this project. An annotated copy of the technical corrections was provided to your staff during oral presentation of DoD comments on 16 May 1997.

Please note that the starting paragraph under section, "Results in Brief," must be changed as follows to reflect the shift from inpatient to outpatient environment. Current write up skews the reader to think that the project was not planned properly in 1988 or during 1992 revalidation.

**"Dramatic changes in U.S. Healthcare delivery from inpatient to outpatient services are reflected in the fact that the assumptions used to design and size the Portsmouth Naval Medical Center have not materialized as expected. ...."**

The Department appreciates the opportunity to comment on the draft report.

Sincerely,

*Edward D. Martin*  
Edward D. Martin, M.D.  
Acting Assistant Secretary of Defense

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