

GAO

Report to the Chairman, Subcommittee  
on Military Readiness, Committee on  
National Security, House of  
Representatives

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# NAVY REGIONAL MAINTENANCE

## Substantial Opportunities Exist to Build on Infrastructure Streamlining Progress



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**National Security and  
International Affairs Division**

B-276587

November 13, 1997

The Honorable Herbert H. Bateman  
Chairman, Subcommittee on Military Readiness  
Committee on National Security  
House of Representatives

Dear Mr. Chairman:

Navy force structure reductions since the end of the Cold War have substantially reduced ship, aircraft, and other weapon systems maintenance requirements. In line with those reductions, the Navy closed several maintenance facilities during four rounds of base closures, which concluded in 1995. The Navy recognized the need to improve efficiency in maintenance operations and further reduce maintenance costs,<sup>1</sup> and in 1994, established the Regional Maintenance (RM) Program. In its 1995 program review,<sup>2</sup> the Navy reduced its planned operations and maintenance budgets for fiscal years 1995-99 by \$1.28 billion in anticipation of RM Program savings. At your request, we reviewed the RM Program to identify (1) the progress made in implementing the program, (2) savings that have been achieved, (3) opportunities for additional savings, and (4) barriers that inhibit full implementation of the program and achievement of projected savings. Since the program's principal efforts thus far have been on reducing infrastructure, we focused our work on that objective.

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**Background**

The Navy has reported that more than \$8.5 billion of Navy resources was applied in fiscal year 1996 to maintenance programs in support of fleet ships and aircraft. Each type of "platform,"—surface ships, submarines, aircraft carriers, and aircraft—has a separate maintenance infrastructure. Maintenance is done at three different levels—organizational, intermediate, and depot—depending on the nature and complexity of the work required. Organizational maintenance is done by military personnel on board ships or at aircraft squadrons. While at sea, intermediate maintenance on large ships such as aircraft carriers and tenders is done by military personnel; ashore, intermediate maintenance is done by military

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<sup>1</sup>We have identified the defense infrastructure as a high-risk area. High-risk areas are those critical government operations that are highly vulnerable to waste, fraud, abuse, and mismanagement. High Risk Series: Defense Infrastructure (GAO/HR-97-7, Feb. 1997) provides further discussion of our assessment of the defense infrastructure.

<sup>2</sup>The Navy's fiscal year 1995 program review was conducted in 1994, and updated the fiscal years 1994-99 Future Years Defense Program.

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and civilian personnel at submarine refit facilities and aircraft and shore intermediate maintenance activities. Depot-level maintenance is done mostly by civilian personnel at aviation depots and shipyards. In 1996, the Navy had over 21,000 military and 42,000 civilians participating in maintenance activities at the intermediate and depot levels. In addition, the Navy has reported that up to 40 percent of depot-level maintenance is outsourced to private companies.

In response to force structure reductions since the mid-1980s and subsequent defense planning guidance to reduce excess maintenance infrastructure, the Chief of Naval Operations (CNO), early in 1993, tasked the commanders of the Atlantic and Pacific Fleets to develop a strategy for streamlining and consolidating maintenance functions. This led to the Navy establishing the RM Program in March 1994. The Navy's RM Program efforts have been focused on reducing excess maintenance infrastructure. However, the program has other objectives such as improving maintenance processes, integrating supply support and maintenance functions, and providing compatible data systems across the three maintenance levels. The program was to be implemented in three overlapping phases during fiscal years 1995-99.

Since the RM Program began, the number of Navy ships and aircraft has continued to decline. For example, the Navy projects that by the end of fiscal year 1999, it will have 186 fewer aircraft and 22 fewer ships to maintain than in 1996. During the same period, the maintenance budget for ships and aircraft is also expected to be reduced to about \$7.5 billion (in fiscal year 1996 dollars), a decrease of about \$1 billion.

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## Results in Brief

While the Navy has made progress in achieving its infrastructure streamlining objective, thus far this progress has not been as great as anticipated and challenges remain for accomplishing future plans. For example, the Navy has made substantial progress establishing a management structure and process for realigning and reducing its maintenance infrastructure and has identified and started some specific initiatives. However, many initiatives identified have not been completed and savings are not being achieved as projected. More specifically, our work shows that:

- To implement the infrastructure streamlining objective, the Navy established steering committees, initiated a phased execution plan, identified a regional structure, and developed business plans. Through

fiscal year 1996, the Navy also identified 102 initiatives, 55 of which had been started by the end of fiscal year 1997, and 47 of which are to be implemented between fiscal year 1998 and 2001. The 55 initiatives mainly represent the less controversial projects that are easier to implement, though a few complex consolidations have occurred; for example, three shore intermediate-level maintenance activities were combined into one organization. Implementation of the program has taken longer than expected, however.

- Regarding savings estimates, the Navy projected that its 102 initiatives would save about \$944 million, of which \$198 million was expected to accrue during fiscal years 1994 to 1997 and \$746 million was expected to accrue during fiscal years 1998 to 2001. Some of the initiatives are not progressing as projected, however. For example, one initiative to consolidate planning and engineering functions for ship repairs is not occurring as planned, delaying planned reductions-in-force actions and affecting up to \$92 million in savings projected between fiscal year 1998 and 2001. Also, the Navy cannot identify actual savings achieved because its accounting system does not track RM Program costs and related savings and the Navy did not establish an independent system to track these costs and related savings. The Office of the Secretary of Defense (OSD), Comptroller, stated that the program has not progressed enough to reap projected savings, Navy budgets recently submitted to Congress did not reflect the expected savings, and the Navy recently requested additional funding for depot maintenance. Since the Navy decreased its planned budgets for operations and maintenance in anticipation of savings from the RM Program and savings have not materialized as anticipated, the reductions will have to be made up in other ways or fleet readiness may be adversely affected in the future.
- The Navy has opportunities to build on its progress by working to achieve the \$746 million in expected savings during fiscal years 1998 to 2001, moving more quickly to implement initiatives for savings that have been identified, and pursuing other opportunities with high potential for significant savings not already in its plans. For example, we identified three opportunities to achieve potential annual savings of up to \$26 million and one-time savings of \$22 million through selected intermediate- and depot-level consolidations of common industrial shops in the Northwest and Hawaii regions that were not in current plans.
- Accomplishing the infrastructure streamlining objective will be difficult. The Navy identified many of its initiatives to achieve savings as high risk because of barriers to implementation. The Navy faces parochial and institutional resistance to the RM Program's objectives and has other complex issues to resolve. The biggest hurdle to overcome may be

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resistance to initiatives that eliminate organizations, reduce jobs and promotions, and/or reduce a command's or organization's control over resources. Other barriers are (1) the lack of management visibility over all maintenance related costs; (2) multiple, unconnected management information systems that do not provide adequate data for regional maintenance planning and decision-making; and (3) the large number of shore positions desired to support the sea-to-shore rotation program compared to the smaller number needed to perform the intermediate maintenance workload. Many commands involved in the RM Program have chains of command that are independent of each other up to the CNO; therefore, visible commitment by the CNO is critical to overcome resistance, accelerate decision-making, and provide the necessary resources and coordination needed for efficient and effective program implementation.

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## RM Program's Implementation Progress

The Navy has made substantial progress in implementing the infrastructure streamlining objective of the RM Program through such efforts as establishing a management structure, a phased execution plan, and a process for realigning and reducing its maintenance infrastructure. It also identified 102 initiatives aimed at regionalizing, consolidating, and streamlining the maintenance infrastructure and achieving savings. Implementation of the program has not been as rapid as predicted, however, and milestones may not be met.

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## Detailed Management Structure and Phased Execution Plans Were Developed

The Navy has established a management structure for planning and implementing the RM Program. The structure is linked at the CNO level and includes committees, systems commands, the fleets, and various quality boards and other groups. For example, the management structure within the CNO includes an Executive Steering Committee that provides overall program guidance and direction. This committee chartered the Fleet Support Quality Management Board to develop the transition strategy for moving to regional maintenance.<sup>3</sup> Through this Board, regional maintenance was planned and developed using focused working groups. A Regional Maintenance Implementation Board (RMB) was established to coordinate among the Pacific and Atlantic Fleets, the systems commands, and CNO-level units. The Board is co-chaired by the Fleet Maintenance

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<sup>3</sup>The Fleet Support Quality Management Board is comprised of representatives of both fleets, the Naval Sea Systems, Naval Air Systems, Naval Supply Systems, Space and Naval Warfare Systems, Naval Facilities Engineering Command, the Military Sealift Command, the CNO, and other Navy organizations.

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Officers,<sup>4</sup> who have key leadership responsibilities to implement regional maintenance. This Board meets on a regular basis to address regional maintenance and other issues. Each of the systems commands, the Atlantic Fleet, and the Pacific Fleet report separately to the CNO.

Through this management structure, the Navy has developed concepts, guidance, fleet business plans, and milestones for the RM Program infrastructure streamlining objective. For example, the fleets developed program guidelines for establishing regional repair centers, adopted a business-case analysis approach for evaluating candidate activities for consolidation, and formulated cost templates for measuring the monetary impacts of consolidations. In March 1994, the CNO approved a three-phased execution plan that assigned the following primary tasks in each phase:

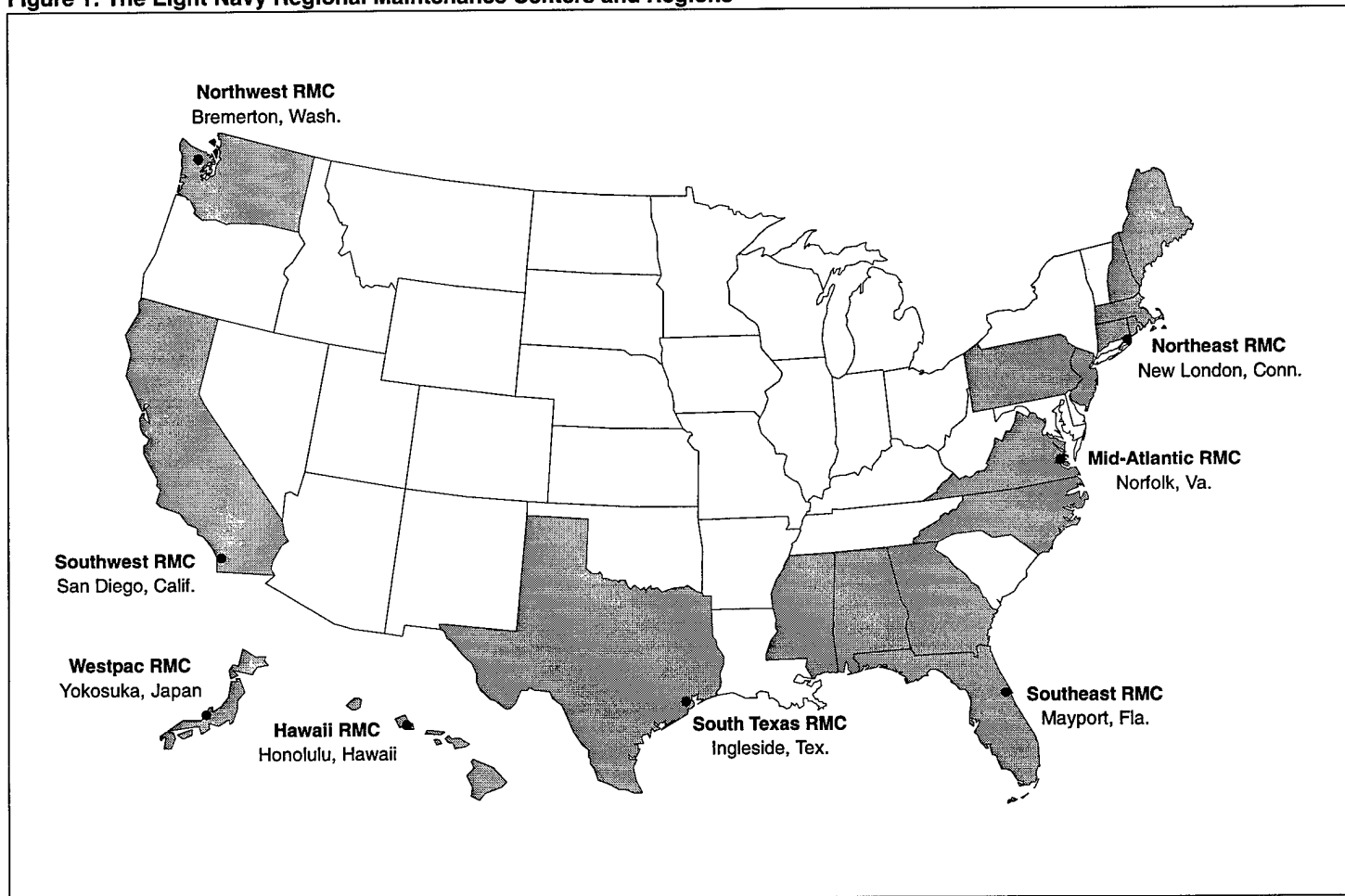
- Phase 1: Minimize intermediate-level redundant capacity through process improvements and resource sharing, and develop prototype centers of excellence, called Regional Repair Centers. Implement phase during fiscal years 1995-99.
- Phase 2: Integrate intermediate- and depot-level activities and establish Regional Maintenance Centers (RMC), consisting of a confederation of Regional Repair Centers. Implement phase during fiscal years 1996-99.
- Phase 3: Conduct fleet maintenance using a single maintenance process supported by common business and production practices. Implement phase during fiscal years 1997-99.

As part of phase 2, the Mid-Atlantic and Northwest RMCS, and later six others, were established—a total of four in each fleet. The Navy has included one or more of the states around where the centers are located and where there are Navy maintenance activities into areas it refers to as RM regions (see fig. 1).

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<sup>4</sup>The Navy has two Fleet Maintenance Officers, one for the Atlantic Fleet and one for the Pacific Fleet.

Figure 1: The Eight Navy Regional Maintenance Centers and Regions



Note: Regions are shaded.

Each RM region established an executive steering committee for maintenance, comprised of the commanders and maintenance managers of activities in the region and chaired by the region's RMC commander. These committees have chartered process action teams to identify which activities in the region should be evaluated for consolidation. The two fleets have developed regional maintenance business plans, including initiatives and estimates of savings to be achieved in each of their respective regions, and the systems commands have added their own initiatives with estimates of savings.

## Navy Has Experienced Delays in Implementing Regional Maintenance

Although the Navy began implementation as planned, phase 2 has been redefined, and phase 3 has been delayed. As a result, implementation is taking longer than anticipated. Full implementation, initially projected for fiscal year 1999, is currently projected for fiscal year 2000 and could take longer.

According to Navy officials, there have been delays in implementing the program because many of the issues involved are complex and require extensive studies and approvals. For example, the possible consolidation of calibration laboratories in the Northwest region was identified as an initiative in 1994, but it has taken 3 years and multiple studies to determine which activity would do the calibration work and whether it would be done using government or contract employees. Also, implementation among the regions has been uneven. While all regions have made some progress, the Mid-Atlantic region has led the way in establishing the program and piloting regional maintenance initiatives to achieve savings. For example, the Mid-Atlantic region has 18 (33 percent) of the 55 initiatives being implemented from 1994 to 1997, including consolidating three shore intermediate maintenance activities (SIMA) into one organization, consolidating calibration and material testing laboratories, and establishing other regional repair centers. It also initiated the fleet business plans and guidance for regional repair centers later used by other regions. By contrast, the Hawaii and Northwest regions had implemented eight initiatives each. The Northwest region established regional repair centers for pumps, periscopes, gas turbine engines, and eliminated a military construction project; and both the Northwest and Hawaii regions have consolidated nuclear regional maintenance work.

Because of problems with the Navy's financial information system and other coordination issues, in 1996 phase 2 of the execution plan was divided into a three-step process. During the first step, ship intermediate- and depot-level maintenance were to be consolidated; aircraft intermediate- and depot-level maintenance activities were to be collocated; and ship and aircraft maintenance consolidations were to take place where logical. During the second step, ship intermediate- and depot-level maintenance planning and engineering functions were to be consolidated into ship-planning and engineering centers,<sup>5</sup> reducing the number of planning and other positions needed. As of July 1997, the third

<sup>5</sup>All scheduled ship repair engineering, planning, and material support activities were to be consolidated and done by personnel located mainly at the naval shipyards. However, in November 1997, OSD officials told us the Navy is significantly revising plans for this initiative in ways that could negatively affect the amount of estimated savings.

step had not been approved, and delays in phase 2 have postponed the approval of phase 3.

In a regional maintenance briefing in May 1997, the Deputy Chief of Naval Operations (Logistics) briefed the CNO that execution of the RM Program would be completed in fiscal year 2000. Since then, in July 1997, the CNO noted that although phase 2 was on track, challenges remained, much still had to be done, and efforts must be accelerated. According to Navy officials, the tendency is to be optimistic in establishing milestones for such programs and organizational realignments are particularly difficult to accomplish. They also said that developing regional maintenance will not be completed in 1999 as planned, but will be a continuous process long after fiscal year 2000 as new initiatives and refinements to existing maintenance processes are identified.

## Savings Have Not Been Achieved at Projected Levels

Through fiscal year 1996, 102 initiatives with projected savings of \$944 million<sup>6</sup> had been identified for the program. Of the 102, the Navy estimated that it would achieve net savings of \$198 million through implementation of 55 initiatives during fiscal years 1994-97 and that these projects would continue to provide savings in fiscal years 1998-2001 amounting to \$272 million, or a total of about \$470 million (see table 1). It planned to implement 47 more between 1998 and 2001.<sup>7</sup>

**Table 1: Navy Estimates of Net Savings to Be Achieved From 55 Regional Maintenance Initiatives Started During Fiscal Years 1994-97**

Dollars in millions

Source of savings	Estimated savings		Total
	Fiscal years 1994-97	Fiscal years 1998-2001	
Atlantic Fleet	\$28.4	\$148.5	<b>\$176.9</b>
Pacific Fleet	60.5	7.6	<b>68.1</b>
Systems commands and other initiatives	109.1	116.0	<b>225.1</b>
<b>Total</b>	<b>\$198.0</b>	<b>\$272.1</b>	<b>\$470.1</b>

<sup>6</sup>The \$944 million is a combination of savings derived from initiatives identified by the fleets, the naval system commands, and Navy operations staff. It is actually savings and cost avoidances (about \$1.367 billion) less funds used to implement these initiatives (about \$423 million).

<sup>7</sup>Other information indicated some fleet initiatives may have started earlier than the Navy reported to us. Thus, some of the investments and savings would begin to occur earlier as well. Headquarters program officials who provided the data said they were aware of some problems but that it was generally accurate and would not be updated for some time.

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Program savings are not being achieved at the levels the Navy originally estimated. According to fleet maintenance officials, initiatives that have been implemented are mostly the less controversial projects that are easier to implement and a few complex consolidations. They said they are proceeding slowly because they believe Navy managers should be encouraged, rather than forced, to accept regional maintenance.

The Navy has also reduced its estimates of savings for a number of initiatives. For example, the savings estimate for an initiative to reduce the overhaul for certain diesel engines was reduced from \$5.4 million annually to \$1.2 million in fiscal year 1996 and \$900,000 in fiscal years 1997-99. According to officials at the maintenance facility responsible for the repair of these engines, overhauls have not occurred at the anticipated rate per year because a maintenance process change reduced the requirements. In the Northwest region, a delay in a project to consolidate calibration functions has delayed the realization of potential savings. Also, an initiative to consolidate ship repair planning and engineering functions at the Naval Sea Systems Command is not occurring as expected, delaying planned reductions-in-force actions and affecting up to \$92 million in RM Program savings projected to accrue between fiscal year 1998 and 2001.

Although the Navy has incorporated its \$944 million in estimated savings from the RM Program into its projected maintenance budget, actual RM costs and related savings are not systematically tracked to determine whether they have actually been accrued. The Navy's accounting system, like all Department of Defense (DOD) accounting systems, tracks expenses and disbursements but not savings, and the Navy did not establish an independent system to track RM costs and related savings. CNO officials told us they recognized the need for such RM Program data but that efforts to collect it can involve many Navy activities and would be so labor intensive that there are no current plans to do so.

The Navy Audit Service said it is in the process of evaluating RM savings through baseline studies of initiatives and follow-up studies 1 year after implementation. Only one of the studies has been completed. It showed that savings achieved through the consolidation of activities in an electric motor rewind shop in the Mid-Atlantic region was about \$4.4 million a year, or about 44 percent of the \$9.9 million baseline cost each year prior to consolidation.<sup>8</sup> Baseline costs were being evaluated for some other

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<sup>8</sup>Subsequent to the completion of our audit work, the Naval Audit Service informed us that it had completed two other studies dealing with the consolidation of nuclear propulsion and nuclear maintenance activities in the Hawaii region. These studies identified first year savings attributable to RM consolidation of \$4.8 million and \$2.0 million, respectively.

selected projects so that post consolidation studies could be done. While the Naval Audit Service is looking at costs before and after consolidation, it is not tracking RM savings into budget and accounting records to determine if they have actually been accrued.

Actual savings achieved through the RM Program have been questioned within OSD. An OSD Maintenance Policy, Programs, and Resources office study of the RM Program concluded that savings had been achieved from the restructuring of maintenance activities, but that some of the savings might have been the result of the four base realignment and closure rounds and other actions. The OSD Comptroller has gone further and concluded in 1996 that savings projected from the RM Program for fiscal years 1994 through 1997 have not materialized as anticipated and are not evident in actual Navy budgets submitted to Congress each year.

### Potential Maintenance and Budget Impacts If RM Savings Are Not Achieved

In a program review for fiscal year 1995, the Navy decreased its planned fiscal year 1995-99 budgets for operations and maintenance by \$1.28 billion, anticipating that savings from regionalizing maintenance would offset the impact of the reductions (see table 2). According to Navy officials in each fleet and in the CNO's Supportability, Maintenance, and Modernization Division, RM savings did not materialize to cover the amounts taken from the programs, and the reductions had to be made up in other ways. While program budgets were reduced by \$1.28 billion, the commands and fleets did not have records available showing how the reductions were finally absorbed. According to the OSD Comptroller, evidence indicates that other factors such as base closures, force structure reductions, directed civilian drawdowns and the general reduction in depot workloads resulting from force structure cuts during fiscal years 1992-97, have accounted for the actual reductions in costs.

**Table 2: Navy Program Reductions in Operations and Maintenance Budgets Taken in Anticipation of Regional Maintenance Savings**

Command	Fiscal year					Total
	1995	1996	1997	1998	1999	
Naval Sea Systems	\$92	\$117	\$121	\$139	\$163	<b>\$632</b>
Naval Air Systems	56	71	94	106	87	<b>414</b>
Space and Warfare Systems	22	20	21	21	23	<b>107</b>
Atlantic Fleet	8	10	10	9	10	<b>47</b>
Pacific Fleet	22	12	14	15	17	<b>80</b>
<b>Total</b>	<b>\$200</b>	<b>\$230</b>	<b>\$260</b>	<b>\$290</b>	<b>\$300</b>	<b>\$1,280</b>

The OSD Comptroller stated in a November 1996 budget memorandum that the RM Program has not progressed enough to reap projected savings and that further review of regional maintenance might be in order to ensure savings occur and readiness is not degraded as a result of the reductions. In August 1997, OSD Comptroller officials said that savings anticipated from the RM Program have not materialized; in fiscal years 1995 and 1996 regional maintenance did not progress much past isolated, small and informal tests; and in fiscal years 1997 and 1998, savings were offset by the need to finance construction of new facilities in Navy SIMAS. The officials noted that the Navy has recently requested additional funding for depot maintenance and that more requests for additional funding were anticipated. They further noted that depot maintenance budgets in a number of areas have had to be increased over the Navy's proposed budget levels. For example, in fiscal year 1995, rates were increased significantly over the Navy's proposed budget levels to ensure full costs were recouped; and in fiscal year 1998, Navy air depot budgets were increased each year in the Future Years Defense Program, with over \$200 million added in both fiscal years 1998 and 1999.

According to Atlantic Fleet officials, they have thus far been able to absorb the reductions in planned budgets for ships with no impact on readiness. They said this is because they are focusing on fixing specific problems, which reduces the total amount of maintenance to be done, rather than performing entire scheduled depot-level maintenance overhauls. They also said that an initiative started in fiscal year 1995, to better balance expected naval shipyard workloads with the available workforce, has resulted in improved operating results for naval shipyards. CNO officials acknowledged that fixing specific maintenance problems rather than overhauling entire components would likely result in maintenance cost reductions. However, they were concerned that by using this approach the overall material condition of ships might be adversely affected over the long term, but noted that the Navy currently does not have adequate measures of material condition and its relationship to readiness.

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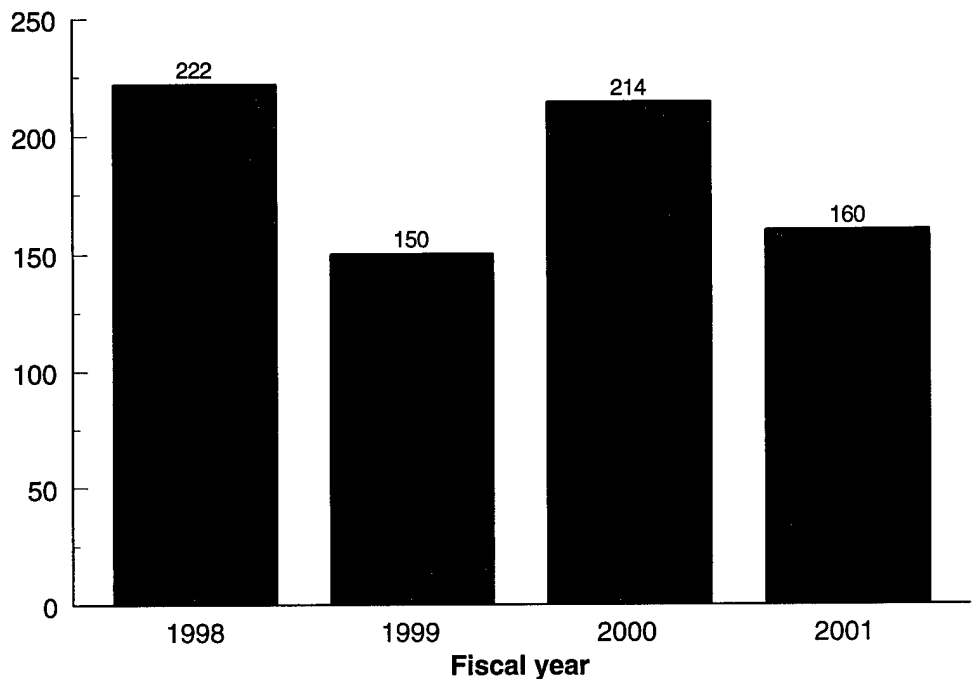
## Additional Opportunities for Future Substantial Savings

The Navy has many opportunities to build on its maintenance infrastructure streamlining progress. The Navy anticipates that the largest savings will accrue during fiscal years 1998-2001 (see fig. 2); that is, of the estimated \$944 million its 102 initiatives are projected to save, \$746 million would accrue during that period. The Atlantic and Pacific Fleets have identified additional opportunities for savings, and in 1997 added 34 more initiatives to their regional maintenance business plans. They have not

estimated the amounts of savings from many of these initiatives, however. During our review, we identified additional opportunities for infrastructure reductions in two regions with potential savings of up to \$48 million. These included potential annual savings of \$26 million based on maintenance infrastructure consolidations in the Hawaii and Northwest regions, and \$22 million in one-time savings by transferring work at the SIMA, Everett, Washington, to other existing shops and eliminating a military construction project and two barge overhauls.

**Figure 2: Navy Projections of \$746 Million in Regional Maintenance Program Savings to Be Achieved During Fiscal Years 1998-2001**

Dollars in millions



The Navy has identified other potential regional maintenance opportunities that need to be studied. In the regions we reviewed, for example, the Northwest region in June 1994 identified 41 areas of redundant capabilities, but still has not studied many of them to determine whether initiatives could be developed to reduce unnecessary infrastructure and achieve savings. In a February 1997 Regional Maintenance Implementation Board meeting, in an effort to spur progress,

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the fleets were tasked to identify regional maintenance consolidation initiatives that could be considered. In May 1997, the RM Program manager for the Hawaii region told us his region had followed the lead of the earlier Northwest region project and compiled a comprehensive inventory of regional maintenance capabilities to be used to help identify future initiatives.

In addition, the Mid-Atlantic region, in its 1997 update to the fleet business plans, identified 29 new savings initiatives. The update did not determine when about half of them would be implemented or estimate the savings that could be achieved. These initiatives include establishing two regional repair centers—one for special tool design and manufacture and another for sheet metal component fabrication—and a regional training support center. Other regions identified a total of five additional initiatives.

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### Opportunities for the Hawaii and Northwest Regions to Reduce and Consolidate Additional Maintenance Activities

In the Hawaii and Northwest regions, we identified three examples of opportunities to consolidate intermediate- and depot-level maintenance activities that were not in current business plans. We observed common industrial facilities, called backshops, at six activities.<sup>9</sup> The backshops consisted of electrical and electronic, machining and metal-forming shops and material testing laboratories. At most of these backshops, we were provided estimates showing unused infrastructure—facilities and equipment. We estimated that consolidating and reducing excess capacity in these shops could save up to \$48 million—from about \$2 million to \$26 million annually and about \$22 million in one-time savings. (See apps. I and II for details of our analysis.) These are not budget quality estimates, however, because complete and compatible data on the facilities were not available, alternative consolidation arrangements are possible, and there was no consensus on what workforce savings could be achieved.

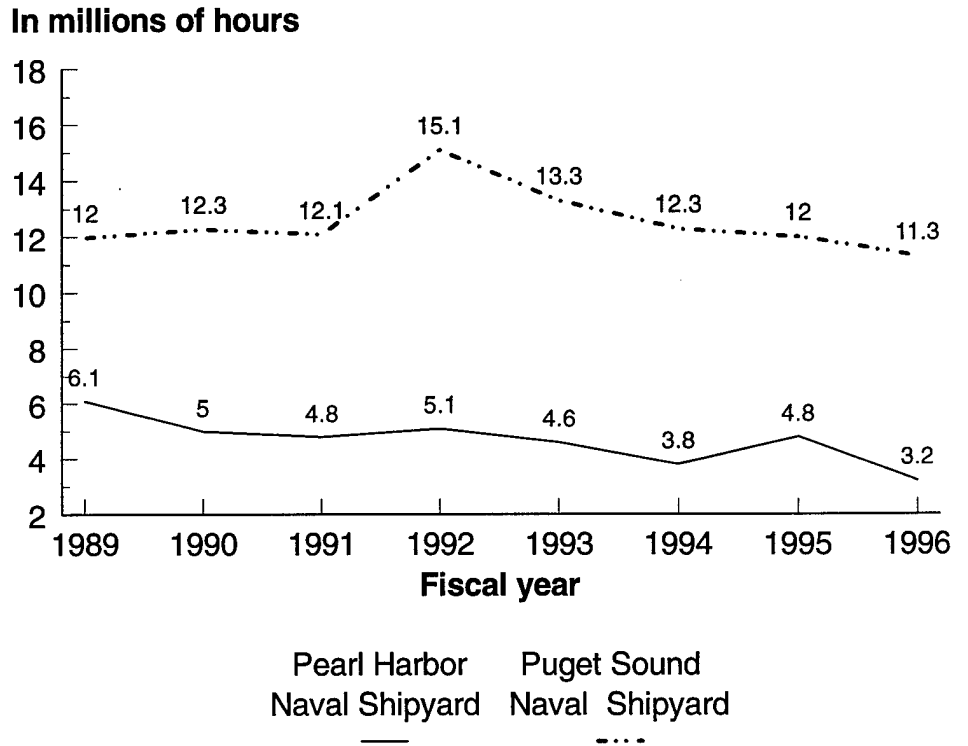
Both regions had considerably more maintenance capacity than workload, particularly at the shipyards. For example, we observed first shift operations in a total of 25 backshops at 6 activities in the 2 regions. Although usually the busiest shift, supervisors estimated that on average, this shift was operating at about 30-percent utilization, with a range of between 4 and 70 percent. Of the 25 shops, 16 had a second shift and only 7 had a third shift. Estimates of utilization during second shifts were markedly lower, an average of 12 percent and a range of from about 1 to

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<sup>9</sup>Work takes place on the ships, and in supporting shops and laboratories called “backshops” where removed parts and components are sent for test and repair, overhaul or replacement. For purposes of these examples, we limited our analysis to the backshop work because RM Program and fleet maintenance officials identified backshop consolidations as less controversial.

39 percent. Some shop supervisors noted their shops had supported several times the number of workers in the 1980s than were currently employed. Navy data indicated that excess facilities and equipment capacity were due to reductions in labor hours and numbers of employees at these shipyards. For example, Navy data on direct labor hours at the Pearl Harbor Naval Shipyard showed a reduction from about 6.1 million to 3.2 million (48 percent), and the Puget Sound Naval Shipyard showed a reduction from 12.0 million to 11.3 million (6 percent) between 1989 and 1996. (See fig. 3.) At the same time, employment was reduced from 6,044 to 2,879 ( 52 percent) at the Pearl Harbor Naval Shipyard, and from 12,240 to 9,424 (23 percent) at the Puget Sound Naval Shipyard.

**Figure 3: Direct Labor Hour Trends at the Pearl Harbor and Puget Sound Naval Shipyards** (fiscal years 1989-96)



Our specific findings, suggestions for consolidations, and estimated savings for the Hawaii and Northwest regions are summarized in

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appendix I, with detailed data on labor, facilities, and costs provided in appendix II.

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## Barriers to Achieving Infrastructure Reductions and Savings

The Navy has barriers to overcome before it can fully achieve expected infrastructure reduction savings and other RM Program objectives. According to the Navy, in May 1996, 54 percent of the \$944 million in projected savings would come from projects considered high risk. Initiatives were considered high risk to achieving expected savings when a large number of organizations and funding accounts were involved and/or they required significant manpower reductions. For example, 1 high-risk initiative, to save \$4 million a year by consolidating the calibration functions in the Mid-Atlantic region, involved 22 activities and 3 funding sources.

The Navy recognizes that parochial and institutional resistance to the RM Program's objectives and other issues will be difficult to resolve. The biggest barrier to overcome may be resistance to initiatives that eliminate organizations, reduce jobs and promotions, or reduce control over resources. Other barriers to integrating intermediate- with depot-level capabilities are (1) the lack of management visibility over all maintenance-related costs; (2) multiple, unconnected management information systems that do not provide adequate data for regional maintenance planning and decision-making; and (3) the large number of shore duty intermediate-level maintenance positions needed to support the Navy's sea-to-shore rotation program compared to a lesser number needed to perform the work.<sup>10</sup> The Navy has RM Program working groups and committees in place to address some of these issues. According to Navy officials, these issues are intertwined and some planned resolutions would be subject to legal and congressional review.

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## Resistance to Downsizing and Loss of Control Are Major Barriers to Implementing the RM Program

The RM Program requires managers to forgo the traditional platform-oriented structure and substantially reduce or close some maintenance activities as work is eliminated or reassigned. Many commands involved in the RM Program have chains of command that are independent of each other, and visible commitment by the CNO is critical to program implementation. For example, reductions will result in fewer commands and promotion opportunities and a need to share resources,

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<sup>10</sup>In another assignment, we are reviewing opportunities for Navy personnel returning from sea duty to work in comparable positions during their stateside tours.

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prioritize work, and reassign responsibilities. According to fleet officials, this organizational resistance may be the greatest inhibitor to RM progress.

According to fleet maintenance officials, overcoming resistance to organizational changes is difficult. The fleets' type commanders—shore-based commanders responsible for supporting the fleet, including providing maintenance for aircraft, surface ships, and submarines—did not fully support the proposed changes. These fleet officials told us that since the type commanders are responsible for the intermediate maintenance facilities for their respective platforms, they may view the regionalization of maintenance as a loss of control or responsibility, including a potential loss of their ability to assure readiness of their assigned units. These officials also noted that the Fleet Maintenance Officers' influence over the type commanders is limited. More progress has been made in the Mid-Atlantic region, where (1) the fleet command, type commanders, and regional maintenance officials are collocated; (2) the program has had strong support from the fleet commander; and (3) the Fleet Maintenance Officer initially started regional maintenance.

Also, according to CNO and fleet officials, RM initiatives that cut across major commands may prove difficult to achieve, particularly if they involve loss of control or responsibility. Initiatives to integrate and consolidate depot-level maintenance activities with intermediate-level maintenance activities require the cooperation and support of most of the Navy's major commands and the CNO. Naval Air Systems commanders, Naval Sea Systems commanders, and fleet and their subordinate type commanders all have a stake in how RM initiatives are implemented and how the initiatives will affect their particular activities and staffing. Various representatives of the activities, regions, fleets, and headquarters offices expressed concern that CNO-level managers had not decisively endorsed regional maintenance and this had caused problems in participation, particularly outside the surface ship community. Fleet and headquarters officials also noted that the Naval Air Systems command activities have had limited involvement in the program primarily because they consider their maintenance systems different and airworthiness a critical criterion that surface ship maintenance activities are not used to. Similarly, submarine platform officials voiced their concerns to us about their strict maintenance requirements and safety standards.

Fleet and headquarters officials further noted that many commands involved in the RM Program have chains of command that are independent

of each other up to the CNO. Therefore, visible commitment by the CNO is critical to implementing the RM Program, as this involvement accelerates the provision of resources and the coordination needed for efficient and effective program implementation. For example, there was a significant increase in activity after the CNO directed the Hawaii region to implement a pilot project to study the consolidation of the Pearl Harbor shipyard with the naval intermediate maintenance facility and to complete the integration by September 30, 1998. In another streamlining effort, regionalizing base operations, the CNO has provided crucial support. For example, in September 1995, the CNO approved a major Navy-wide infrastructure reduction initiative to (1) reduce the number of activities that own and manage shore installations, (2) regionalize installation management functions where it makes sense, and (3) find excesses, duplications and redundancies among the numerous tenants on bases, using San Diego and Jacksonville as pilot locations. The San Diego project is to be completed as soon as possible, but no later than fiscal year 1999. According to these officials and the information provided, this effort has affected many activities, commands and the way business is conducted; therefore, the support of the CNO was crucial for accomplishing the components of the initiative.

### Existing Navy Financial Systems Do Not Provide Adequate Data on Costs of Depot- and Intermediate-Level Maintenance

The Navy has identified the need to provide visibility over all maintenance-related costs as an issue in implementing the RM Program. The Navy has also identified a need for a flexible and responsive managerial accounting system because the Navy's current financial system does not provide the data needed for informed decision-making. For example, the Navy has in some cases increased capacity in its shore intermediate activities' backshops without regard to the fact that a nearby shipyard had excess capacity in similar backshops. Fleet maintenance officials said efforts to develop full cost visibility and the necessary financial system are underway.

According to OSD Comptroller officials, a central issue is that Navy depot-level maintenance activities are funded under the Navy Working Capital Fund (formerly the Defense Business Operations Fund),<sup>11</sup> and intermediate-level maintenance facilities are funded directly from the appropriations accounts. One of the basic tenets of the Working Capital

<sup>11</sup>The 1997 Defense Authorization Act required DOD to conduct a comprehensive study of the Defense Business Operations Fund. Pending the results of this study, the Defense Comptroller dissolved the Fund in December 1996 and created four working capital funds: Army, Navy, Air Force, and Defense-wide. The four funds continue to operate under the revolving fund concept and charge customers the full costs of providing goods and services to them.

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Fund financial structure is to focus on total cost visibility and full cost recovery for depot-level maintenance activities. Operating under this tenet, managers of the fund's activities are to be held accountable for the costs of all the resources that they manage, and military customers are to pay the full costs of the maintenance work performed.

In contrast to the full costing visibility of the Navy's depot-level maintenance, intermediate-level maintenance activities are not operated using the Working Capital Fund concept. Military customers at the intermediate activities are usually only charged the incremental costs of the work performed, such as the costs of materials. Most of their other costs are subsumed in the mission funded operating budget and have little to no visibility. The mission funded operating budget includes the costs of civilian personnel and all overhead type costs to include real property maintenance and utilities. In addition, these intermediate maintenance activities are manned with military personnel, and their personnel costs are directly borne by the Military Personnel Appropriation and are not costed as part of the repair work they perform. By excluding these costs, the full costs of products and services are concealed, and customers see the work done at the intermediate activities as significantly less expensive than the work done at the shipyards. As a result, there is an incentive for customers to use intermediate facilities to the maximum extent possible. For example, according to officials in the Northwest region, sailors from the aircraft intermediate-level maintenance activity at Whidbey Island Naval Air Station fabricated components at Whidbey Island and traveled to the shipyard, a distance of 35 miles, to install the components on a ship when the fabrication work could have been done at the underutilized shipyard sheet metal shop.

According to OSD Comptroller officials, until the Navy can accumulate complete, comparable, and reliable data on the costs of its intermediate and depot-level maintenance facilities, decisions on how best to use and integrate these facilities will continue to be impaired. Fleet officials told us the Navy has recognized this problem and has pilot projects underway to obtain total cost visibility data at the job-order level in regional repair centers. They said that experience with regional repair centers that have been established under the RM Program has shown that such efforts are complicated, particularly by the problems associated with obtaining the required data from multiple systems. As a result, accumulating reliable cost data will be difficult, and require dual systems for some time, thereby reducing potential savings.

## Multiple Unconnected Information Systems Do Not Provide Adequate Data for Regional Maintenance Planning and Decision-making

The Navy does not have well-defined and consistent data on its maintenance shops' capacity, capability, workforce, and current and projected workloads. Without such data, the Navy cannot systematically identify potential regional consolidations and related savings estimates. The Navy has recognized that it lacks compatible and interconnected maintenance information systems that could identify similar maintenance capabilities across activities. Although the Navy has made some attempts to address this issue, its systems do not yet collect the critical information needed to identify excess capacity.<sup>12</sup>

In the Northwest and Hawaii regions, incomplete and unreliable data has hindered the Navy's ability to identify excess maintenance capacity. For example, data is not available or compatible within and among activities in such areas as shops' capacity, productivity, labor efficiency, workloads, and equipment utilization rates. According to the fleet business plans, having separate maintenance infrastructures for ships, submarines, aircraft carriers, and aircraft has fostered the development of unique maintenance management information systems for the different platforms and levels of maintenance. A Northwest region process action team has studied the issue and found a wide disparity in the information available among its regional activities. It developed a strategic implementation plan to establish, first, an interconnection among information systems; second, an ability for these systems to exchange data; and third, the ability to manage, control, and use the data. Although phases 1 and 2 were to have been implemented by fiscal years 1995 and 1996, respectively, as of August 1997, the team was still in phase 1.

According to CNO and fleet officials involved in the establishment of an automated information system, it is critical to have a system that allows for the exchange of technical and management data among various maintenance activities. In one instance where several databases were evaluated, none provided sufficient common data to determine capabilities across activities. Although the Navy contracted for the development of a concept model that would recognize capabilities among activities in two regions, it concluded that the model developed required intensive data collection and was not cost-effective to implement. Navy fleet officials said that some progress has been made in providing access and linkages of data among platforms and RM regions, but efforts have been delayed because activities have not made it a priority or do not have the computer equipment needed.

<sup>12</sup>Our report, *Defense IRM: Poor Implementation of Management Controls Has Put Migration Strategy at Risk* (GAO/AIMD-98-5, Oct. 20, 1997), addresses the status and progress of DOD's efforts to deploy standard information systems to support common business practices.

## Sea-to-Shore Rotation and Other Needs Are Barriers to Workload-Based Reductions in Intermediate-level Maintenance Positions

The Navy's need to support requirements other than workload at shore intermediate-level maintenance facilities can hinder RM regions' efforts to reduce military positions. For example, these facilities need positions to support maintenance workload, the Battle Force Intermediate Maintenance Activity (BFIMA) program<sup>13</sup> and sea-to-shore rotation requirements. These facilities' positions are also used for personnel identified as excess to the requirements or on limited duty. According to the Navy, however, the number of shore intermediate-level positions should not be less than BFIMA program requirements and should not exceed sea-to-shore rotation requirements.

As of March 1996, the Navy had 12,668 shore intermediate-level positions. The Navy needed only 11,704 of these positions to support the maintenance workload. Thus, it had an excess of 964 positions. Also, the workforce is unevenly distributed across the regions. For example, three regions had 1,409 positions that exceeded their maintenance workload requirements, while four regions had 445 positions less than their projected maintenance workload requirements. The Navy identified a need for 4,649 positions to support the BFIMA program; thus, the 12,668 existing positions far exceed BFIMA requirements.

On the other hand, the number of intermediate-level maintenance positions desired to support the sea-to-shore rotation program<sup>14</sup> far exceeds the number needed to support the maintenance workload. In March 1996, the Navy reported to the CNO that 19,819 shore intermediate-level positions were desired to support sea-to-shore rotation. Thus, it had a shortfall of 7,151 positions. This shortfall acts as a disincentive for the Navy to reduce the number of shore intermediate-level positions.

The Navy also uses positions at intermediate-level maintenance facilities for personnel awaiting reassignment or on limited duty. This practice further hinders efforts to reduce excess maintenance capacity. For example, the Navy indicated that of the Southwest region's 753 excess positions, 335 were positions for sailors displaced by the decommissioning of a Navy tender. Sailors affected by this decommissioning are typically waiting for funding for permanent changes of station or reassignment.

<sup>13</sup>In order to promote combat readiness and sustainability, each deployed battle force, battle group, and amphibious readiness group operating independently is to establish its own intermediate maintenance activity capable of providing this level of maintenance.

<sup>14</sup>The CNO's goal for sea-to-shore rotation is a maximum of 3 years of sea duty, followed by a minimum of 3 years of shore duty for all career (E5-E9) enlisted personnel.

Also, in June 1997, the intermediate-level maintenance facility at Everett, Washington, and its detachment at Bremerton, Washington, reported a workforce of 521, of which 84 (over 16 percent) were on limited duty. The facility had recommended a reduction of its detachment workforce of 91 positions—from 197 to 106. An efficiency review to determine the appropriate number of staff has been done but was not finalized during our review.

## Conclusions

Although the Navy has made substantial progress in establishing a structured RM Program to achieve its infrastructure streamlining objective, it has reported only limited progress in accruing savings from the program. Thus far, the reported savings have not materialized as anticipated because projects have been changed and delayed. Further, the accuracy of claimed savings is questionable because they are not tracked and verified. Consequently, the Navy's actual savings may be far less than the \$944 million it originally projected. They also may be achieved much later than expected. These conditions could negatively affect maintenance programs, the overall material readiness of ships and aircraft, or future fleet readiness, since reductions have already been made to spending plans in anticipation of savings.

Nonetheless, the Navy can still achieve significant savings by studying and, where appropriate, implementing other initiatives that can yield savings without impacting readiness. To implement such initiatives, it must also resolve difficult organizational, financial, management information system, and sea-to-shore rotation issues that have slowed the RM Program's progress. Further, overcoming resistance to change, perhaps the greatest inhibitor to RM Program implementation, will require continued high-level commitment, cooperation, and coordination from the CNO, the fleet, and type and systems commanders, to ensure that regional initiatives reach fruition and achieve the savings projected.

The Navy's RM Program is extremely important to improving the effectiveness and efficiency of its maintenance activities and we encourage DOD to move forward as quickly as possible. If successful, the program can result in a more streamlined, regionalized maintenance program. As we stated in our high-risk report on the defense infrastructure, breaking down cultural resistance to change, overcoming parochialism, and setting forth a clear framework for a reduced infrastructure are key to effectively achieving savings.

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## Recommendations

We recommend that the Secretary of Defense direct the Secretary of the Navy to annually report on the RM Program initiatives identified, savings achieved that have been verified in Navy budget and accounting records, and the progress made to overcome the barriers to achieving infrastructure reductions and savings. We also recommend that program implementation plans be established and tied to milestones, with regular reporting to the CNO.

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## Agency Comments and Our Evaluation

DOD's written comments on the draft of this report are presented in appendix IV. DOD stated that the Navy has many actions underway to address the issues contained in this report. Specifically, DOD noted that the RM Program was started to help the Navy perform maintenance more efficiently, not to offset specific budget reductions. We agree that the program was designed to generate greater efficiencies; however, as noted in our report, it was also expected to generate significant cost savings. We revised our report to clarify that our work focused on the infrastructure streamlining objective, which has been the program's principal focus thus far and to which savings projections are linked.

DOD also stated that the Navy varied from the original plans for achieving efficiencies, because it wanted to ensure that its operational commitments would continue to be met while efforts to reduce its infrastructure were being implemented. We agree that achieving savings through regional maintenance should not be done at the expense of meeting operational commitments. However, our work indicates the greatest impediments to progress are nonoperational issues, such as resistance to initiatives that eliminate organizations, reduce jobs and promotions, and reduce control over resources.

DOD concurred in principle with our recommendation that the Secretary of Defense direct the Secretary of the Navy to annually report on the RM Program initiatives identified, savings achieved that have been verified in Navy budget and accounting records, and the progress made to overcome the barriers to achieving infrastructure reductions and savings. DOD stated that the Navy, through the staffs of the CNO, Naval Sea Systems Command, and the Atlantic and Pacific Fleet Maintenance Officers are already in regular communication with the OSD staff on all matters relating to the Navy's RM Program. We agree that there is communication between the OSD staff and the Navy on various program matters. However, we believe that the communication needs to be more formal and comprehensive and

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cover such items as savings achieved and verified and progress made to overcome barriers to program implementation.

DOD also agreed with our recommendation that program implementation plans be established and tied to milestones, with regular reporting to the CNO. DOD commented that the Navy has a management structure in place that provides unfettered information to the CNO on relative merits of potential initiatives as well as the success or failure of ongoing initiatives. While we agree that the CNO does get program information, the program lacks a strategic plan that identifies the Navy's ultimate goal for the program and provides a baseline and a roadmap, with milestones, for achieving the goal. Such a plan is needed to show the Navy has made a high-level commitment to the program and to increase the likelihood of successful program implementation.

DOD had several suggested technical and editorial changes; we considered them and made changes as appropriate.

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We are sending copies of this report to the Ranking Minority Member, Subcommittee on Military Readiness, House Committee on National Security; the Chairmen and Ranking Minority Members of the Subcommittee on Defense, Senate Committee on Appropriations; the Senate Committee on Armed Services; and the Subcommittee on National Security, House Committee on Appropriations. We are also sending copies of the report to the Secretaries of Defense and the Navy; the CNO; and to the Director, Office of Management and Budget. We will make copies available to others upon request.

If you or your staff have any questions concerning the report, please contact me on (202) 512-8412 or my Assistant Director, George A. Jahnigen, on (202) 512-8434. Major contributors to this report are listed in appendix V.

Sincerely yours,



David R. Warren, Director  
Defense Management Issues

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**Abbreviations**

BFIMA	Battle Force Intermediate Maintenance Activity
CNO	Chief of Naval Operations
DOD	Department of Defense
OSD	Office of the Secretary of Defense
RM	regional maintenance
RMC	Regional Maintenance Center
RMIB	Regional Maintenance Implementation Board
SIMA	shore intermediate maintenance activity

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# Estimated Savings From Potential Consolidations Not in Current Business Plans

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We identified examples of opportunities for consolidation of activities with potential annual savings of up to \$26 million based on infrastructure reductions in the Pacific Fleet's Hawaii and Northwest regions. Depending on the extent to which operations are consolidated in Hawaii, we estimate the range of annual savings to be from about \$1 million to about \$14 million. In the Northwest region, again depending on the extent of the consolidation, we estimate the range of annual savings to be from about \$1 million to about \$12 million. In addition, work at the Shore Intermediate Maintenance Activity (SIMA) at Everett, Washington, might be transferable to other existing shops, eliminating the need for a military construction project estimated to cost about \$17 million and two barge overhauls planned at an estimated cost of about \$5 million.

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## Opportunities for Savings in the Hawaii Region

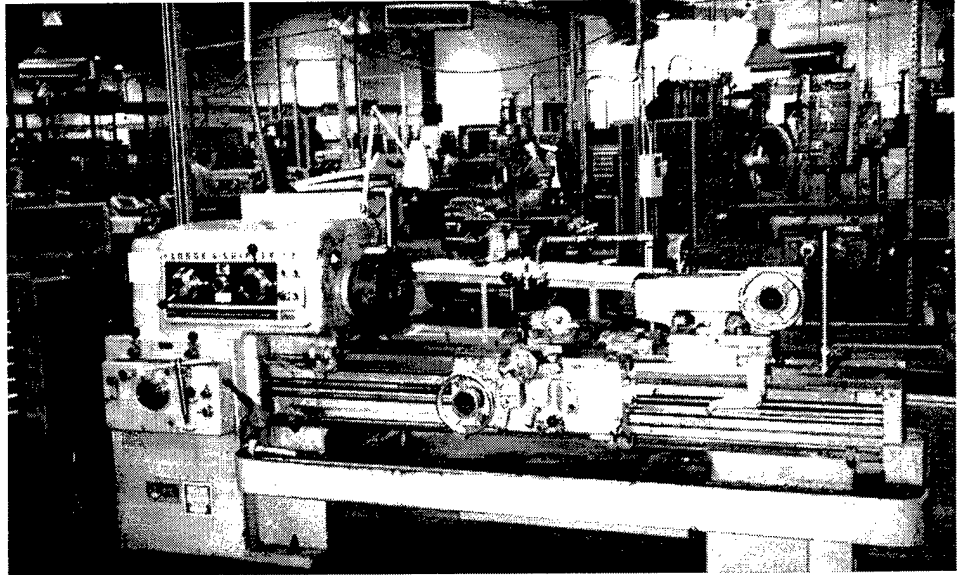
In the Hawaii region, the Pearl Harbor Naval Shipyard and the Naval Intermediate Maintenance Facility are adjacent to each other, and the Public Works Center is about 1 mile away. At all three locations, the backshops have excess facilities and equipment. At the shipyard, for example, one electrical shop was not in use during the first shift at the time we observed operations. Also, a separate machine shop for tool-making supported the machine shop that did the repair work. Maintenance managers said this separate tool-making shop was unnecessary. (See fig. I.1 for pictures of machine shop capabilities in this region.)

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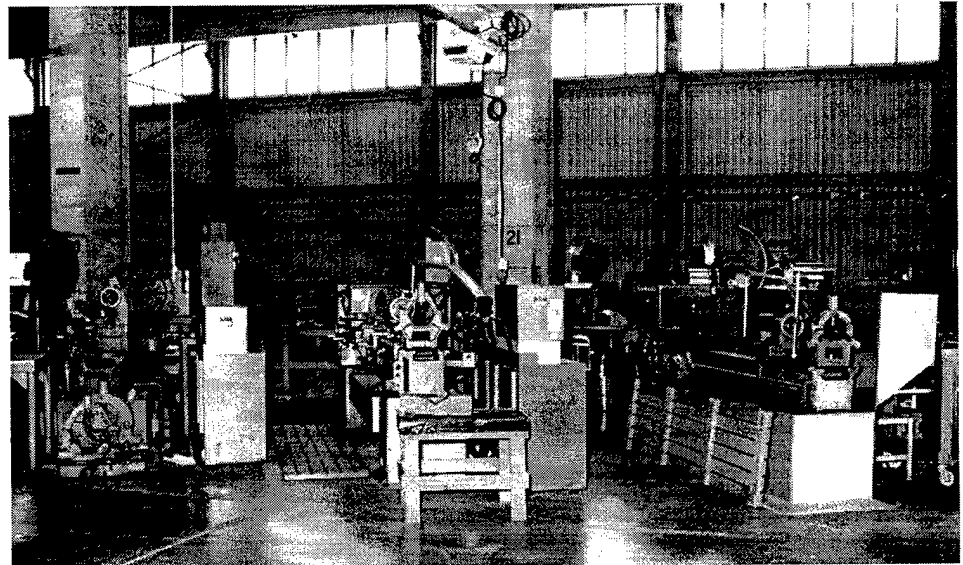
**Appendix I  
Estimated Savings From Potential  
Consolidations Not in Current Business  
Plans**

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**Figure I.1: Machine Shops in Two  
Hawaii Region Activities**



Intermediate Maintenance Facility



Pearl Harbor Naval Shipyard

For purposes of this review, we estimated a range of potential savings. If selected backshop industrial work was combined and done by the shipyard, (1) facility savings alone might be about \$1 million annually and (2) facility and personnel savings could be about \$14 million annually if the work could be done just at the shipyard by a workforce the size of the current shipyard workforce.

When we first reviewed operations in the Hawaii region in December 1996, we observed that a consolidation of intermediate-level maintenance activities with the shipyard appeared practicable; the Pacific Fleet Maintenance Officer agreed. On our return, in May 1997, fleet maintenance officials said that the Navy had begun to study issues surrounding the consolidation of the Intermediate Maintenance Facility and the Pearl Harbor Naval Shipyard, with a target date for complete integration by September 30, 1998.

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## Opportunities for Savings in the Northwest Region

In the Northwest region, the Trident Refit Facility and the Naval Undersea Warfare Center, Keyport, are located within 4 miles of each other and about 14 miles from the Puget Sound Naval Shipyard. As in the Hawaii region, there were indications of excess facilities and equipment. The shipyard has a greatly reduced workload in 1996 compared to 1992, and the Keyport facility was subject to downsizing based on base realignment and closure action. Also, officials at these facilities told us that the shipyard had the facilities and equipment to do all of the region's backshop industrial work. As other indicators, the shipyard had four machine shops scattered throughout the facility, and the sheet-metal shop was noticeably underused, employing about 65 workers on three shifts versus about 100 when it operated at full capacity, according to the shop supervisor. Similar to the Hawaii region, we estimated a range of savings. For example, if the industrial backshops at the Trident Refit Facility and the Warfare Center were declared excess and if all the workers needed to do that work were moved to the shipyard and used just the shipyard's facilities and equipment, then there might be annual savings of about \$1 million. If this industrial backshop work could be done just at the shipyard by a workforce the size of the current shipyard workforce, then facility and personnel savings could be about \$12 million annually.

Chief of Naval Operations (CNO), Regional Maintenance (RM) Program, fleet, and Northwest region officials agreed that there are significant amounts of excess industrial backshop facilities and equipment and that consolidation is possible and necessary. They said that consolidating

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**Appendix I  
Estimated Savings From Potential  
Consolidations Not in Current Business  
Plans**

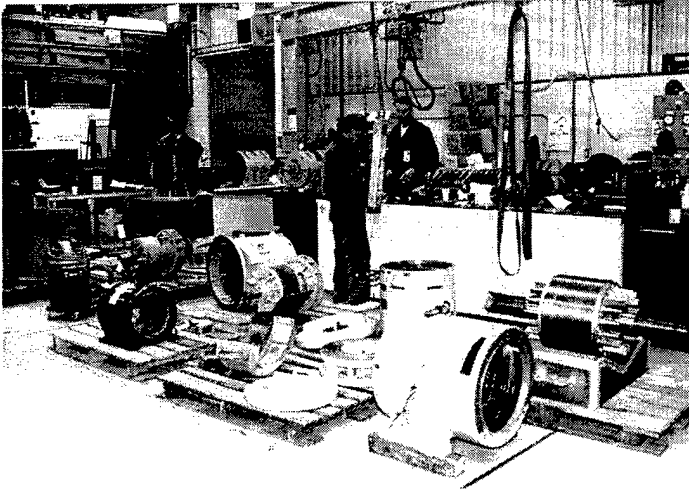
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industrial backshop work of all types into one industrial complex is key and that the goal should be to have one regional backshop for each type of capability.

Figure I.2 shows electric motor industrial backshops at the Puget Sound Naval Shipyard and Trident Refit Facility in the Northwest region that have similar facilities and equipment for rewinding electric motors. A SIMA, Everett, Washington, detachment located at the shipyard also had its own facilities to rewind smaller electric motors. The Naval Undersea Warfare Center does not repair electric motors.

Appendix I  
Estimated Savings From Potential  
Consolidations Not in Current Business  
Plans

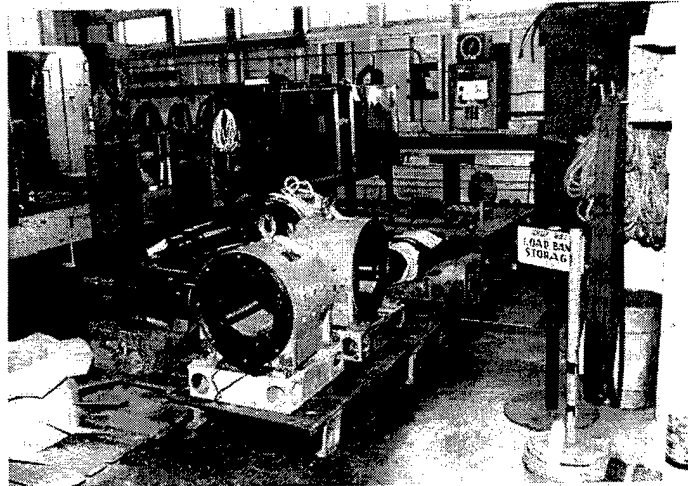
Figure I.2: Electric Motor Rewind Shops in Three Northwest Region Activities



Trident Refit Facility



Shore Intermediate Maintenance Activity



Puget Sound Naval Shipyard

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**Appendix I  
Estimated Savings From Potential  
Consolidations Not in Current Business  
Plans**

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In addition to the consolidation suggested above, the work of the SIMA at Everett, Washington, might be transferable to existing shops at Whidbey Island Naval Air Station, the Puget Sound Naval Shipyard, and the Trident Refit Facility. This transfer might eliminate the need for a military construction project at the SIMA. This military construction project is estimated to cost about \$17 million, according to information provided by Everett SIMA officials. Northwest regional maintenance officials told us this military construction project is currently in the budget for fiscal year 2000. Also, other facilities at the SIMA could be converted to support waterfront maintenance activity requirements and eliminate the need for two barges and planned docking and repairs that Everett SIMA officials estimated could cost about \$5 million.

# Labor and Facilities Cost Data on Potential Hawaii and Northwest Region Consolidations

Tables II.1 and II.2 show the potential range of annual savings for the Hawaii region from consolidating at the Pearl Harbor Naval Shipyard selected industrial backshop work of the shipyard, the Intermediate Maintenance Facility, and the Public Works Center. Savings of about \$1 million annually (table II.1) would be realized from lower facility operations (maintenance, utilities, and janitorial) costs if the entire workforce from all three activities is retained, but located at the shipyard. However, additional savings of about \$13 million annually (table II.2) could be realized if the work were to be consolidated into the shipyard and could be absorbed by a smaller workforce the size of the one at the shipyard.

Tables II.3 and II.4 show a similar range of annual savings for the Northwest region from consolidating at the Puget Sound Naval Shipyard selected industrial backshop work from the shipyard, the Trident Refit Facility, and the Naval Undersea Warfare Center, Keyport. The savings would be about \$1 million annually (table II.3) from lower facility operations costs if the entire labor force is retained after consolidation. It shows additional savings of about \$11 million annually (table II.4) if the work is absorbed by a smaller workforce the size of the one at the shipyard. Total annual savings from consolidations in both regions would be about \$2 million if just facilities were consolidated and current staffing levels relocated to the shipyards, or about \$26 million if the facilities were consolidated and all the work was done at the shipyards using a reduced labor force the size of the two shipyards.

Data in the tables on labor-years and square footage of facilities were obtained from the six activities identified. Estimated total square footage costs and estimated costs of retaining only shipyard square footage were developed by multiplying the number of square feet identified by a cost factor used for RM studies. (See tables II.1 and II.3, footnote a.) Estimated savings is the difference between total square footage costs and the costs of retaining just the shipyard square footage. The lower range of projected total annual savings is derived by adding estimated facilities savings for both the Hawaii and Northwest regions, about \$1 million each, or a total of about \$2 million.

Estimated total workforce costs and estimated costs of retaining just the shipyard level workforce were developed by multiplying the number of labor years identified by a cost factor also used the Navy uses for its RM studies. (See tables II.2 and II.4, footnote a.) Estimated labor savings is the

**Appendix II  
Labor and Facilities Cost Data on Potential  
Hawaii and Northwest Region  
Consolidations**

difference between estimated total costs and estimated costs retaining just the shipyard force.

The upper range of projected total annual savings is derived by adding the facilities and labor savings for both regions, about \$1 million and \$13 million, respectively, for the Hawaii region and about \$1 million and \$11 million, respectively, for the Northwest region, for a total of about \$26 million.

**Table II.1: Potential Annual Facilities Savings From Consolidating Activities in the Hawaii Region**

Dollars in millions

<b>Selected backshop work</b>	<b>Pearl Harbor Naval Shipyard (square footage)</b>	<b>Intermediate Maintenance Facility (square footage)</b>	<b>Public Works Center (square footage)</b>	<b>Total (square footage)</b>	<b>Estimated total square footage costs<sup>a</sup></b>	<b>Estimated costs<sup>a</sup> retaining just the shipyard square footage</b>	<b>Estimated savings retaining just the shipyard square footage</b>
Electric motor overhaul/repair	168,574	4,627	0	173,201	\$2.252	\$2.191	\$0.061
Electronic equipment repair	132,968	44,382	0	177,350	2.306	1.729	0.577
Machining	134,700	13,392	3,953	152,045	1.977	1.751	0.226
Material testing	18,538	316	0	18,854	0.245	0.241	0.004
Metal forming	189,569	13,040	4,000	206,609	2.686	2.464	0.222
<b>Total</b>	<b>644,349</b>	<b>75,757</b>	<b>7,953</b>	<b>728,059</b>	<b>\$9.466</b>	<b>\$8.376</b>	<b>\$1.090</b>

<sup>a</sup>Based on Navy RM Program estimates of \$13 per square foot.

**Appendix II  
Labor and Facilities Cost Data on Potential  
Hawaii and Northwest Region  
Consolidations**

**Table II.2: Potential Annual Labor Savings From Consolidating Activities in the Hawaii Region**

Dollars in millions

<b>Selected backshop work</b>	<b>Pearl Harbor Naval Shipyard (labor years)</b>	<b>Intermediate Maintenance Facility (labor years)</b>	<b>Public Works Center (labor years)</b>	<b>Total costs (labor years)</b>	<b>Estimated total labor year costs<sup>a</sup></b>	<b>Estimated costs<sup>a</sup> retaining just the shipyard level workforce</b>	<b>Estimated savings retaining just the shipyard level workforce</b>
Electric motor overhaul/repair	39	22	0	61	\$4.255	\$2.720	\$1.535
Electronic equipment repair	29	58	0	87	6.068	2.023	4.045
Machining	56	51	3	110	7.673	3.906	3.767
Material testing	12	3	0	15	0.979	0.783	0.196
Metal forming	20	39	7	66	4.604	1.395	3.209
<b>Total</b>	<b>156</b>	<b>173</b>	<b>10</b>	<b>339</b>	<b>\$23.579</b>	<b>\$10.827</b>	<b>\$12.752</b>

<sup>a</sup>Cost estimates are a total of (1) Navy RM Program estimate of \$45,000 in labor cost per year for military and civilian total compensation; (2) production support costs, which are estimated at 40 percent of direct labor for all shops or 30 percent for material testing laboratories; and (3) administrative and general costs, which are estimated at 15 percent of direct labor.

**Table II.3: Potential Annual Facilities Savings From Consolidating Activities in the Northwest Region**

Dollars in millions

<b>Selected backshop work</b>	<b>Puget Sound Naval Shipyard (square footage)</b>	<b>Trident Refit Facility (square footage)</b>	<b>Naval Undersea Warfare Center (square footage)</b>	<b>Total (square footage)</b>	<b>Estimated total square footage costs<sup>a</sup></b>	<b>Estimated costs<sup>a</sup> retaining just the shipyard square footage</b>	<b>Estimated savings retaining just the shipyard square footage</b>
Electric motor overhaul/repair	15,725	6,506	0	22,231	\$0.289	\$0.204	\$0.085
Electronic equipment repair	30,650	6,344	0	36,994	0.481	0.398	0.083
Machining	57,526	24,209	13,740	95,475	1.241	0.748	0.493
Material testing	13,520	1,479	5,600	20,599	0.268	0.176	0.092
Metal forming	107,998	12,827	5,245	126,070	1.639	1.404	0.235
<b>Total</b>	<b>225,419</b>	<b>51,365</b>	<b>24,585</b>	<b>301,369</b>	<b>\$3.918</b>	<b>\$2.930</b>	<b>\$0.988</b>

<sup>a</sup>Based on Navy RM Program estimates of \$13 per square foot.

**Appendix II  
Labor and Facilities Cost Data on Potential  
Hawaii and Northwest Region  
Consolidations**

**Table II.4: Potential Annual Labor Savings From Consolidating Activities in the Northwest Region**

Dollars in millions

<b>Selected backshop work</b>	<b>Puget Sound Naval Shipyard (labor years)</b>	<b>Trident Refit Facility (labor years)</b>	<b>Naval Undersea Warfare Center (labor years)</b>	<b>Total (labor years)</b>	<b>Estimated total labor year costs<sup>a</sup></b>	<b>Estimated costs<sup>a</sup> retaining just the shipyard level workforce</b>	<b>Estimated savings retaining just the shipyard level workforce</b>
Electric motor overhaul/repair	20	25	0	45	\$3.139	\$1.395	\$1.744
Electronic equipment repair	48	46	0	94	6.557	3.348	3.209
Machining	79	32	23	134	9.347	5.510	3.837
Material testing	33	6	6	45	2.936	2.153	0.783
Metal forming	8	17	8	33	2.302	0.558	1.744
<b>Total</b>	<b>188</b>	<b>126</b>	<b>37</b>	<b>351</b>	<b>\$24.281</b>	<b>\$12.964</b>	<b>\$11.317</b>

<sup>a</sup>Cost estimates are a total of (1) Navy RM Program estimate of \$45,000 in labor cost per year for military and civilian total compensation; (2) production support costs, which are estimated at 40 percent of direct labor for all shops or 30 percent for material testing laboratories; and (3) administrative and general costs, which are estimated at 15 percent of direct labor.

# Scope and Methodology

To identify the Navy's progress made in implementing the RM Program, we interviewed officials from the Office of the Secretary of Defense (OSD), Office of the Comptroller, the Deputy Under Secretary of Defense (Logistics), the Deputy Chiefs of Naval Operations for Manpower and Personnel and for Logistics, the Naval Sea and Air Systems Commands, and the Assistant Secretary of the Navy for Financial Management and the Comptroller and reviewed studies, briefings, and other documents on the RM Program. At the Atlantic Fleet headquarters, we interviewed the Fleet Maintenance Officer, reviewed documents, and obtained briefings from the Mid-Atlantic region—one of the four regions under the Atlantic Fleet. For the Pacific Fleet, we met with the Fleet Maintenance Officer and his staff, reviewed documents, and obtained briefings and other information from the Hawaii and the Northwest region—two of the four regions under the Pacific Fleet. Further, we talked to the officials of the Naval Audit Service about regional maintenance progress and its management consulting work for the RM Program.

The Navy has identified seven objectives for the RM Program: (1) process improvement to maintain customer responsiveness and fleet readiness, (2) elimination of excess maintenance infrastructure, (3) integrated supply support, (4) maintenance cost visibility, (5) compatible maintenance management automated data processing, (6) positive control of technical elements, and (7) support the Department of Defense's (DOD) industrial core policy. However, the program's principal efforts thus far have been on the elimination of excess maintenance infrastructure; therefore, we focused our work on that program objective.

To obtain cost and related-savings information for the RM Program, we interviewed officials with the Navy Financial Management and Comptroller offices, the CNO's Naval Operations Supportability, Maintenance, and Modernization Division, and financial managers with the Naval Sea Systems Command, Naval Air Systems Command, and the Atlantic and Pacific Fleets. We also reviewed documents generated during the budget program review, the fiscal year 1998 program objective memorandum review, the net savings summary, and various memoranda discussing the budget reductions and projected savings.

To identify opportunities for additional excess maintenance infrastructure reductions and cost savings in the Hawaii and the Pacific Northwest regions, we reviewed Atlantic and Pacific Fleet business plans, regions' lists and studies of redundant capabilities. From the lists, we selected for further analysis industrial backshops for electric motor repair, electronics

equipment repair, machining, and metal-forming shops and material testing laboratories. We obtained data, observed work, and discussed issues with maintenance officials and shop supervisors at six activities in two regions—the Pearl Harbor Naval Shipyard, the Intermediate Maintenance Facility, and the Public Works Center in the Hawaii region; and the Puget Sound Naval Shipyard, the Trident Refit Facility, and the Naval Undersea Warfare Center, Keyport, in the Northwest region. To calculate costs for these shops, we obtained information on square footage of facilities, and direct labor years and RM Program cost estimate factors (\$13 per square foot for costs to operate and maintain facilities; \$45,000 per year for each staff; 40 percent of direct labor for production support costs for all shops and 30 percent for material testing laboratories; and 15 percent of direct labor for administrative and general expense costs). We used this data to calculate estimated total costs, estimated total costs to retain the total workforce in just the shipyard facility, and estimated total costs of doing the work just at the shipyard with just a shipyard-level workforce. We compared the difference in these estimated total costs to identify estimated savings from retaining the total workforce at the shipyard, and estimated total savings with just a shipyard-level workforce at the shipyard.

We conducted our work between December 1996 and September 1997 in accordance with generally accepted government auditing standards.

# Comments From the Department of Defense



ACQUISITION AND  
TECHNOLOGY

## OFFICE OF THE UNDER SECRETARY OF DEFENSE

3000 DEFENSE PENTAGON  
WASHINGTON DC 20301-3000

07 NOV 1997

Mr. David R. Warren  
Director, Defense Management Issues  
National Security and International Affairs Division  
U.S. General Accounting Office  
Washington, DC 20548

Dear Mr. Warren:

This is the Department of Defense (DoD) response to the General Accounting Office (GAO) draft report, "NAVY REGIONAL MAINTENANCE: Substantial Opportunities Exist to Build on Infrastructure Streamlining Progress," dated October 1, 1997 (GAO code 709219/OSD Case 1473). The Department's response to the specific recommendations and technical comments are enclosed.

The Regional Maintenance initiative was started to help the Navy perform maintenance more efficiently, not to offset a specific budget reductions. Because maintenance requirements have been dynamic as the Fleet shrinks, systems must be changed carefully to ensure that operational commitments continue to be met. This has resulted in variation with original plans for achieving efficiencies. Even so, GAO notes that the overall cost of Navy Maintenance has decreased. The GAO proposes further consolidations in the Puget Sound Area and Pearl Harbor. The Navy is already pursuing variations of these consolidations to the fullest extent practical and within existing political constraints.

It should be noted that the Navy has been the most proactive of all of the Military Departments in efforts to reduce infrastructure. Further reductions must be made in a thoughtful and deliberate fashion. The Regional Maintenance initiative is a dynamic process which provides a framework for identifying and implementing necessary further reductions.

Roy K. Willis  
Acting Deputy Under Secretary  
of Defense (Logistics)

Enclosures:  
As stated



GAO DRAFT REPORT - DATED OCTOBER 1, 1997  
(GAO CODE 709219) OSD CASE 1473

**"NAVY REGIONAL MAINTENANCE: SUBSTANTIAL OPPORTUNITIES  
EXIST TO BUILD ON INFRASTRUCTURE STREAMLINING PROGRESS"**

**RECOMMENDATIONS**

- **RECOMMENDATION 1:** The GAO recommended that the Secretary of Defense direct the Secretary of the Navy to annually report on the Regional Maintenance Program initiatives identified, savings achieved that have been verified in Navy budget and accounting records, and the progress made to overcome barriers to achieving infrastructure reductions and savings. (P. 28/GAO Draft Report)

**DOD RESPONSE TO THE DRAFT REPORT:** Concur in principle. As communicated to the GAO during the entrance briefing for this audit, the Navy, through the staffs of the Chief of Naval Operations, Naval Sea Systems Command, the Atlantic and Pacific Fleet Maintenance Officers are already in regular communication with the OSD staff on all matters relating to the Navy's Regional Maintenance Program.

- **RECOMMENDATION 2:** The GAO recommended that program implementation plans be established and tied to milestones, with regular reporting to the Chief of Naval Operations. (P. 28/GAO Draft Report)

**DOD RESPONSE TO THE DRAFT REPORT:** Concur. As the GAO pointed out in the draft report, the Navy has established a management structure, a phased execution plan, and a process for realigning and reducing its maintenance infrastructure and achieving savings. They have also identified 102 initiative and plot projects to regionalize, consolidate, and streamline the maintenance infrastructure. They have also established a management structure for planning and implementing the regional Maintenance Program that is linked to the Chief of Naval Operation through committees, systems command, the fleets and various quality boards. This management structure provides unfettered information to the Chief of Naval Operations on relative merits of potential initiatives as well as the success or failure of on-going initiatives.

Now on p. 22.

Now on p. 22.

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# Major Contributors to This Report

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**National Security and  
International Affairs  
Division, Washington,  
D.C.**

James F. Wiggins  
George A. Jahnigen

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**Los Angeles Field  
Office**

Lionel C. Cooper, Jr.  
Dennis A. DeHart  
Samuel S. VanWagner  
Gary W. Kunkle  
Jean M. Orland

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