



UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D C 20548

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PROCUREMENT LOGISTICS,
AND READINESS DIVISION

January 28, 1983

Admiral J. G. Williams
Chief of Naval Material
Naval Material Command
Department of the Navy



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Dear Admiral Williams

Subject Depot Operations Improvement Program⁷
(GAO/PLRD-83-33)

Because of interest expressed by staff members of the House Armed Services Committee, we reviewed the Naval Sea Systems Command's current effort to improve ship overhaul performance. This Navy effort, which is referred to as the Depot Operations Improvement Program, consists of over 100 different improvement actions in areas ranging from ship overhaul policy to the physical condition of naval shipyards.

In general, we were impressed with the commitment made by the Commander, Naval Sea Systems Command, to bring about improved ship overhaul performance and indications that some improvements have already been achieved. We also agree with the Command's approach of bringing all improvement actions together so that management's ability to review and coordinate the various improvement actions will be enhanced. However, since the program is still in its early stages, we were unable to reach any firm conclusions on whether the program will ultimately be truly effective. But, we do have some observations and suggestions on its management which, if implemented properly, should result in program improvements.

We believe that the program should have more specific goals and milestones which would provide all participants a clear statement of what is to be accomplished and would serve as a basis for program assessment. Also there appears to be a need to improve controls over implementation of the various actions being taken within the program to insure adequately developed plans, the timely accomplishment of milestones, and feedback to action officers on any major problems encountered. Finally, the timing may be right to reassess the program initiatives and actions to validate their need and establish the

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order of priority in which they should be accomplished. Such reassessment is desirable because (1) there is serious doubt whether all of the current initiatives can be funded at a level where success is assured and (2) a comprehensive overhaul process model that will display in chronological order the actions that must occur before, during, and after an overhaul has been completed. See the enclosure for details on these matters.

While we are not making any recommendations on the program at this time, we would like your comments on the matters discussed in this letter. We are particularly interested in actions underway or planned to improve the program's management.

Copies of this report are being sent to the Chairman of the House Armed Services Committee, to the CNO, and the Commander, NAVSEA.

Sincerely yours,



Henry W. Connor
Senior Associate Director

Enclosure

BACKGROUND

The Navy has about 514 deployable ships which periodically require overhaul. During overhaul, major repairs and alterations are undertaken at either a public or private shipyard. Generally, the more complex ships are overhauled at the public shipyards. According to Navy criteria, a satisfactory overhaul is one that is completed on schedule, within cost, and returns a ship to a condition which allows it to reliably perform its assigned mission during its next operating cycle. The Navy expected to spend about \$3.9 billion on overhauls in fiscal year 1981, \$2.9 billion for repairs, and \$1.0 billion for alterations.

Ship overhaul performance has been a concern to the Navy and the Congress for several years. Although improvement has occurred much remains to be done particularly with respect to schedule slippage in the public shipyard, and contract cost growth in the private shipyard. For example, for the 12 month period ending March 30, 1982, surface ship overhauls are averaging about 16 days late in private shipyards and 25 days late in public yards. Comparable figures for fiscal year 1980 are 51 days and 33 days. Cost growth occurs because either additional essential repairs are identified or the scope of already identified work has been underestimated. For the year ending March 30, 1982, cost growth (final cost over original Navy estimate) on surface ships overhauled in the private sector was averaging about 5 percent and about 10 percent in the public sector. Comparable figures for fiscal year 1980 are 25 percent and 11 percent. Private sector performance is also tracked by contract growth. Contract growth was averaging about 47 percent in March 1982 compared to about 57 percent in fiscal year 1980. ^{1/}

^{1/}Contract growth represents the difference between the contract award and the final actual contract cost. It does not represent the difference between the Navy's estimate of contract cost and actual. The principal reason for the difference between the overhaul growth figures and the contract growth is that the original contract award is generally much lower than the Navy estimate of contract cost.

The Navy has long recognized its need to improve ship overhaul performance. In February 1974, the Chief of Naval Operations established the Ship Support Improvement Project with the goal of improving and maintaining the fleet's material condition. The goal was to be accomplished through four separate but interrelated program efforts. The FFG-7 Class Support Program, the Engineered Operating Cycle Program, the Intermediate Maintenance Activity Upgrade Program, and Maintenance System Development Program. This last program was initiated as a 5-year, \$35 million effort to develop an integrated ship maintenance system. Although the program did not result in an overall maintenance system, it did bring to the forefront the reliability-centered maintenance and the phased maintenance concepts which are currently being tested.

The Depot Operations Improvement Program (DOIP) is Navy's current and most comprehensive effort to improve ship overhaul performance. This program can be traced to May 1978 when the Navy established a steering task group to examine ship overhaul problems in the private sector. In 1980, the program became formalized as the Surface Ship Overhaul Improvement Program and in August 1981 public shipyards were added and the program became the DOIP.

The DOIP is a comprehensive effort by the Naval Sea Systems Command (NAVSEA) to overcome longstanding ship overhaul problems in both public and private shipyards. The program is overseen by a Board of Directors consisting of most NAVSEA Deputy Commanders and chaired by the NAVSEA Commander. Ship overhaul program improvements are being pursued through 35 separate initiatives that address various elements of the overhaul process ranging from policy development to physical condition of the public shipyards. Initiatives are further broken down into 101 specific actions to be implemented by a designated action officer.

Since the program implementation is just getting underway, we focused our efforts on (1) obtaining information on the objectives and current status of the program and (2) evaluating the effectiveness with which the program is being started. Our observations and suggestions are based on work done at NAVSEA Headquarters in Arlington, Virginia. We discussed the program with Navy officials responsible for its management and with a number of action officers responsible for specific actions. We obtained and reviewed ship overhaul policies and procedures and DOIP management instructions, budget documents and action plans that had been submitted to the program manager as of April 9, 1982.

PROGRAM NEEDS REALISTIC
GOALS AND MILESTONES

We believe that an essential element of an effective program is a clear statement of its objective, what is to be accomplished, and when. Such a statement should provide for all participants a clear basis in which plans can be made and undertaken. Additionally, it provides a simple and unequivocal basis for assessing program effectiveness.

The stated objectives of the DOIP are vague to improve overhaul performance in the short term and in the long term. The short term improvement is defined as completing overhauls on schedule and within costs. However, when this is to be accomplished is not stated. There is no long term objective stated (other than the word--improve) nor is the "long term" defined.

While the program has a clear short term objective statement, the time period it is to be achieved in is less certain. The short term goal is to perform quality overhauls within the agreed upon time and cost estimates. This is supported by the NAVSEA Commander's stated fiscal year 1982 and 1983 overhaul goals

Schedule adherence	0 days late
Cost Growth	0 percent
Contract price growth	10 percent

While the goals are clear, the time periods seem unrealistic. First, the plans for actions considered most likely to effect 1982 performance were not even due until February 15, 1982, 4 months into the fiscal year. Second, the contract growth has been averaging over 47 percent for the last 2 years.

Neither specific objectives nor a time period have been set for the long term. Navy's ultimate objective is to reduce the average time and cost an overhaul takes to complete, thereby providing increased ship operating time and resources.

While we recognize the difficulty of setting specific objectives in such a complex area, we nevertheless believe that it is essential to provide, for all concerned, a clear statement of what is to be accomplished. Goals should be realistic and stated in specific terms such as percentage reduction in costs and days.

BETTER CONTROL NEEDED OVER
PROGRAM IMPLEMENTATION

The DOIP does not have a formal control system in place to assure timely implementation of its actions. Detailed management has been delegated to the responsible NAVSEA Directorates but this does not appear to be working as evidenced by the late submission of most action plans, many of which did not meet the required criteria. Although a Flag level board meets bi-weekly to review the program, the review is not systematic but focusses on major initiatives of "problem" areas. Quarterly Progress reports are required from action officers but whether this will serve as an effective control remains to be seen.

NAVSEA Notice 4700, dated January 13, 1982, formally assigned NAVSEA Deputy Commanders their DOIP implementation responsibilities. For each of their respective actions, they appointed an action officer who had to submit an implementation plan to include the following: a description of work, a plan of action complete with milestones, resources available or needed, written and/or oral products to be produced, and quantifiable measures which could be used to assess effectiveness. Action officers were to submit their plans to the DOIP manager by February 15, 1982, or March 15, 1982, depending on the action's priority. Most implementation plans were submitted from 1 to 3 months late. As of April 9, 1982, only about half of the required plans were submitted. All action plans were ultimately submitted by June 9, 1982.

Review of the action plans submitted by April 9, 1982, showed varying degrees of quality. In many cases it is hard to determine the objective of the action and there were many cases of incomplete responses. Eleven of the 44 plans we reviewed did not include the required milestone schedules. Thirteen of the plans did not include any quantifiable measures. However, regardless of the incompleteness of the implementation plans, they were not returned by the DOIP manager for correction.

Without a comprehensive monitoring system there is no assurance that all DOIP actions will be implemented. We did not review any actions to determine if they are being effectively implemented, however, we did talk with several action officers who had established milestones for their actions.

Asked whether a DOIP official had contacted them about milestone adherence, they generally responded that they have not been contacted either orally or through written means since they received the original NAVSEA Notice 4700. This means that if the action officers are behind in meeting their milestones, the DOIP manager would not know it. The only other persons in a position to monitor are the NAVSEA Deputy Commanders, however, conversations with action officers indicated that the Deputy Commanders do not have any oversight mechanisms in place.

INITIATIVES SHOULD BE REASSESSED

The timing might be right for a reassessment of the DOIP initiatives and actions. In our March 1982 report (PLRD-82-29) we concluded the DOIP lacked cohesiveness and coordination because existing initiatives were simply pulled together to form the program. Since that time, the Navy has substantially completed development of an overhaul process model that should aid in identifying barriers to effective overhaul performance. It also appears that adequate funding may not be available to effectively execute all actions concurrently.

The Navy is developing a comprehensive model of the overhaul process for surface ships. The model is a flow network consisting of about 100 major events and activities which begins 41 months before an overhaul begins and ends about 3 months after the overhaul is completed. The model is divided into four phases. (1) long range planning, (2) work definition/detail planning, (3) work accomplishment, and (4) post overhaul analysis. In addition to the master network, there are 11 support networks that describe selected aspects of the overhaul process at a lower level of detail. For example one of the support networks, award of ship overhauls to the private sector, covers the 1-year period before overhaul start and describes the process of developing a bid specification, issuing a request for bid or solicitation, evaluating responses, and contract award. The model will also have a manual describing the major events.

The Navy believes the model will be a major tool in its overhaul improvement effort. In addition to providing a common understanding of the overhaul process and being used in performance measurement, the model will facilitate analysis of the process. Such analysis should result in decisions on whether to continue existing initiatives and/or whether additional initiatives or actions are needed.

Although DOIP actions were to be substantially accomplished within existing funds, a 1984 Program Objectives Memorandum (POM) issue paper raises serious doubts whether this can be done. The DOIP Management plan (NAVSEA Notice 4700) stated that "The initiatives and actions of the DOIP will with few exceptions, be accomplished with existing resources..." We obtained a 1984 POM issue paper that lays out three alternatives for further improving ship overhaul performance. The recommended alternative calls for a total additional expenditure of \$3.1 billion through fiscal year 1988.^{2/} This money would be used to improve on implementation of 27 of the 101 actions in the DOIP.

The issue paper raises two main questions (1) Can the 27 actions currently planned be completed without the additional funds? (2) If not, how effective will the current DOIP be if, as the paper states, the additional money is "essential"? The answer to the first question seems to be--maybe not. Funds are apparently being reprogramed and provided to some action officers to complete their actions. However, one action officer we talked to stated that he could not complete his action unless funded, and it appeared it would not be. We cannot answer the second question. The Navy might be able to, if it sets specific goals and milestones. Additional funding levels could then be supported with projections of how much better or sooner the overhauls could be completed and/or how much sooner the DOIP could be completed.

SUGGESTED IMPROVEMENT ACTIONS

Improving performance in the multi-billion dollar overhaul business is a formidable task. The benefits, however, in ship availability and saved resources should be worth the effort. Navy's centrally managed approach appears to be sound. However, the program needs a clear statement of more specific goals and milestones. It also needs improved management controls to insure the development of adequate plans, the timely accomplishment of milestones and feedback to action officers on problems encountered. Finally, initiatives and actions should be based on a thorough analysis of the overhaul process.

^{2/} The \$3.1 billion figure includes all costs of implementation--new equipment, administration, additional facilities, etc.

ENCLOSURE

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To insure that maximum benefits are derived from the depot operations improvement program, we suggest that you ask the Naval Sea Systems Command to

- (1) establish more specific objectives and milestones for the program to guide planning and enable assessment,
- (2) establish and implement controls to assure timely and effective implementation of all actions, and
- (3) using the recently developed ship overhaul process model, reevaluate the program initiatives to assure that those with maximum potential are funded at the earliest possible date.