

**GAO**

Briefing Report to the Chairman,  
Subcommittee on Defense, Committee on  
Appropriations  
House of Representatives

October 1986

# TEST RANGE NEEDS

## Future Navy Underwater Range Requirements Need to Be More Fully Assessed



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United States  
General Accounting Office  
Washington, D.C. 20548

National Security and  
International Affairs Division

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October 31, 1986

The Honorable Bill Chappell, Jr.  
Chairman, Subcommittee on Defense  
Committee on Appropriations  
House of Representatives

Dear Mr. Chairman:

The House Appropriations Committee in 1983 requested the Navy to prepare a long-term assessment of its underwater range requirements. The request was based on analyses we provided the Committee and later incorporated in a report we issued in April 1984.<sup>1</sup>

In that report we pointed out that the absence of a long-term assessment prevented the Navy from determining the most cost-effective approach to meet its range requirements in the Caribbean. The timely completion of a long-term assessment is particularly critical because the Navy's current agreement with the Government of the Bahamas for use of the Atlantic Undersea Test and Evaluation Center is up for renewal in mid-1987. DOD agreed that a coordinated long-term assessment of antisubmarine warfare test and training needs was required. To follow-up on the status of both the Committee's request and our 1984 report recommendations, we reviewed the Navy's progress in conducting its assessment. We discussed the results of our work with your staff, and as agreed, are providing this briefing report summarizing these results.

The Navy has not completed the long-term assessment but has provided the Committee with information on its range requirements. However, the Navy has not yet provided a comprehensive range development plan. Fragmented management of Navy ranges has contributed to the extensive time needed to complete this assessment. Nonetheless, the Navy is currently developing an integrated long-term assessment which incorporates all range requirements, including training, readiness, and exercise evaluations.

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<sup>1</sup>The Navy Should Assess Its Long-Term Undersea Test and Evaluation Needs (GAO/NSIAD-84-2, April 23, 1984).

This assessment should be available prior to renewal of the Atlantic Undersea Test and Evaluation Center agreement in July 1987, and should also be useful in evaluating future underwater test range expansion and modernization plans as well. These findings, along with recommendations to the Secretary of Defense, are discussed in appendix I.

We conducted our review at the Navy offices responsible for the current on-going range assessment effort as well as the earlier range assessment previously provided to the House Appropriations Committee. We reviewed the progress of the assessment efforts to date and the Navy's plans to complete its work.

As requested, we did not obtain Department of Defense comments on the report; however, we did discuss its contents with agency officials during the course of our work. Navy representatives and we disagree on the completeness of the Navy's response to the Committee request for a long-term assessment of range requirements. The representatives believe the range assessment completely satisfied the request, and that Navy is not committed to any additional reporting requirements. However, the report did not address training and other major range support requirements but rather only emphasized research, development, test and evaluation range requirements. We believe the Navy's current efforts to develop a comprehensive coordinated 20-year range development plan, if successful, will be more responsive to the Committee's request and to our recommendations.

We are making recommendations to the Secretary of Defense intended to improve the management of Navy test ranges and to assure that sufficient information is available to assess future range improvement and modernization plans.

We are sending copies of this report to the House and Senate Armed Services and Appropriations Committees and the Secretaries of Defense and Navy. Copies will also be made available to other interested parties upon request. If you have any questions, please contact Michael E. Motley, Associate Director, on 275-4587.

Sincerely yours,



Frank C. Conahan  
Assistant Comptroller General

BRIEFING HIGHLIGHTS

In April 1984 we issued a report<sup>1</sup> in response to a request by the Chairman, House Appropriations Committee, to study underwater range lease agreements in the Caribbean. We reported that the Navy had not performed a long-term assessment of its underwater range requirements in almost 20 years and therefore, was not in a position to select the most cost effective approach for satisfying its long-term test and training range requirements in the Caribbean. At the time, the Navy was planning to proceed with major improvement programs at major underwater ranges such as the Atlantic Undersea Test and Evaluation Center (AUTEK), without the benefit of a long-term range development plan to justify these efforts. The Navy currently operates 11 major underwater ranges located on the east and west coasts and in the Caribbean.

In October 1983, based on our preliminary findings, the House Appropriations Committee requested that the Navy complete a long-term range assessment by April 1, 1984, and withheld about \$4.3 million in fiscal year 1984 funds for AUTEK facilities' modernization until the assessment was completed. To follow-up on both the Committee's request and our 1984 report recommendations,<sup>2</sup> we reviewed the Navy's progress in conducting the assessment.

The Navy has not yet developed a comprehensive coordinated range plan incorporating all important underwater range requirements including research, development, test and evaluation (RDT&E), fleet exercises, training and other range support functions, as requested by the Committee and as we recommended. To date, the Navy has provided the Committee with information that (1) addresses primarily RDT&E range requirements,<sup>3</sup> and (2) reiterates its position, taken in response to our 1984 report, that AUTEK is needed for the foreseeable future.

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<sup>1</sup>The Navy Should Assess Its Long-Term Undersea Test and Evaluation Needs, (GAO/C-NSIAD-84-2, April 23, 1984).

<sup>2</sup>The report recommended that the Navy prepare a long-term range assessment that considered testing and training needs of undersea warfare weapons. We also recommended that representatives from test range user commands such as weapons development, training and fleet operations participate so that all relevant issues are considered.

<sup>3</sup>Underwater Range Requirements Study, November 1984.

We believe study efforts to date have been sporadic due to Navy reorganizations and personnel changes which have contributed to a lengthy and piecemeal assessment approach. The Navy's limited assessment has, however, identified serious shortfalls in underwater range capabilities, and noted limitations in range cost and usage data. Also, an earlier Navy study<sup>4</sup> cited problems, such as different range funding sources, which have impeded efforts to improve range capabilities.

As requested, we did not obtain Department of Defense (DOD) comments on this report. During our work, we discussed the facts with DOD officials and considered their views in preparing this report. In summary, Navy representatives believe the Committee's request for a long term range assessment was satisfied by the Navy's 1984 report. We disagree. We believe the Navy's current range assessment which started in April 1986 to develop a comprehensive coordinated range development plan, if successful, will be more responsive to the Committee's request and to our recommendations.

We conducted our review at the Office of Research, Development, Test and Evaluation, the Office of Naval Warfare, the Naval Underwater Systems Center, the Naval Air Systems Command (NAVAIR) and the Naval Sea Systems Command (NAVSEA) by interviewing Navy officials responsible for collecting and analyzing range data used in responding to the Committee's request. We reviewed the (1) information developed by the Navy and provided to the Committee and (2) Navy's plans to complete its long-term range assessment.

Our review, conducted between February and September 1986, was performed in accordance with generally accepted government auditing standards.

#### BACKGROUND

The United States currently has a 10-year agreement with the Government of the Bahamas for the use of AUTEK. The agreement ends in January 1993. According to its terms, six months prior to the end of the initial 5-year period in January 1988, the United States can renew an option for a second 5-year period. During the initial 5-year period of the agreement, the United States is paying \$10 million annually to the Government of the Bahamas. If renewed, the agreement calls for a total increase in payments of not more than 10 percent or \$5 million.

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<sup>4</sup>Undersea Tracking Ranges: Requirements for Support of Submarine ASW and ASUW, (March 1984).

In our 1984 report we recommended that a long-term range assessment should be completed before the Navy started expanding AUTEK's test range capabilities. We also specified that an expansion decision based on this assessment should be made and reviewed by the Congress in sufficient time to implement the continued leasing of AUTEK, if necessary. In commenting on that report, the DOD agreed that a coordinated, long-term assessment of antisubmarine warfare test and training range requirements was needed and could be completed within the initial 5-year period of the agreement.

The Navy was unable to complete its underwater range assessment by the Committee's deadline of April 1, 1984. The Committee reduced the Navy's fiscal year 1985 AUTEK budget by \$5 million because, without the assessment, the Navy would not be certain that the funds requested to expand AUTEK's capabilities would be sufficient to meet future requirements. In all, since 1984, the Committee has withheld \$9.3 million from the Navy's AUTEK budget.

The Navy delivered its Underwater Range Requirements Study to the Committee in December 1984. The study concluded that AUTEK should continue as the primary underwater RDT&E range for the foreseeable future because of its (1) quiet and more stable ambient<sup>5</sup> acoustic background, (2) proximity to the continental United States and its users, and (3) high level of security. The study identified its total underwater range requirements and capabilities through the year 2005, but concentrated primarily on research, development, test and evaluation (RDT&E) range needs and did not include the major range user, the Fleet.

The study also identified major limitations in the ability of ranges to support RDT&E programs. These included the inability of (1) range instrumentation to adequately support the test requirements of weapons, sensors and platforms; (2) ranges to provide a variety of ocean environments; and (3) ranges to provide for the protection and recovery of test assets. The study acknowledged that other major range requirements, such as training and readiness measurements,<sup>6</sup> although important, were not emphasized, and there was still a need to conclusively establish training exercise evaluations and readiness measurement requirements. For example, one study recommendation called for a review of underwater training range capabilities

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<sup>5</sup>Refers to the noise of the ocean itself and its sources including tides, surface waves, wind, ship traffic, biological organisms and rain.

<sup>6</sup>Measurements designed to assure that systems are functioning according to specifications.

and requirements. The study also recommended that a coordinated underwater range development plan, integrating RDT&E and training and noise measurement facilities be developed. This latter recommendation is particularly important because some ranges satisfy a variety of requirements and users.

#### CURRENT STATUS OF RANGE ASSESSMENT EFFORTS

The Navy has implemented some of the 1984 study's recommendations. The identification of underwater training range capabilities and a feasibility analysis of consolidating management of all Navy ranges were completed in the spring of 1985. The analysis of underwater training range requirements identified major limitations in ranges which have prevented the Fleet from fully accomplishing its training objectives.

The implementation of another important study recommendation, the development of a coordinated range development plan addressing test, training and noise measurement requirements, was originally expected to be completed by December 1985. Development of this plan did not begin, however, until April 1986, because of a Navy reorganization eliminating the Naval Materiel Command which had this responsibility.

The Navy plans to complete its assessment of range requirements in late calendar year 1986. Its objective is to develop a 20-year coordinated underwater range development plan covering all antisubmarine warfare range requirements. The study's scope is comprehensive. For example, the study is expected to consolidate and prioritize range requirements of all users, determine what mix of new technology options and new range sites can best meet those requirements, and determine the cost effectiveness and efficiency of existing ranges. With technology advancing at the rate that it does, the plan may be outdated quickly; hence, there is a need for the Navy to periodically update and prioritize its long term test and training needs.

#### OUR EVALUATION OF RANGE ASSESSMENT EFFORTS

The Navy needs a long-term underwater range development plan to justify decisions to increase capabilities at existing ranges or to add new ranges. The assessment should support how the capabilities of individual ranges, such as AUTEK, meet specific needs of weapon systems and provide a sound basis for the continued leasing of ranges located in foreign waters. However, the following three problems may affect the results or usefulness of the study.

Satisfying range assessment objectives  
may be difficult because of limitations  
in range cost and usage data

The Navy is assessing underwater range requirements anticipated over the next 20 years and determining whether those requirements justify existing ranges, establish the need for new ranges or necessitate changes to existing ranges. The Navy also intends to identify excess range capacity, determine whether closing of ranges is warranted, and identify opportunities for applying technological advances to overcome range capability limitations.

Although these objectives are important and comprehensive in scope, some may be difficult to achieve because of problems in the way cost and range usage data was being collected, as noted in the Navy's November 1984 study. Adequate cost and range usage data is essential in identifying excess range capacity and supporting decisions to consolidate ranges. The study showed that each range records utilization data differently, which makes it difficult to accurately compare utilization rates among ranges. In addition, the study noted that the complexity and difficulty associated with collecting cost data prevented the Navy from identifying the total cost of using ranges. A DOD official told us that these problems still exist. They have not yet been corrected because of their magnitude.

Limited time available for completion of range  
assessment before expiration of AUTEK agreement

The current AUTEK agreement expires in January 1988, unless the United States notifies the Government of the Bahamas by July 1987 of its intention to exercise its option for a second 5-year lease. Ideally, the Navy should complete its comprehensive assessment of underwater test and training range needs before that time to insure AUTEK is needed.

The Navy determined some time ago that it is technically feasible to relocate AUTEK facilities to the Virgin Islands. However, the Navy intended its analysis to include only an examination of alternatives in case agreement between the United States and the Bahamas could not be reached. The Navy presented what it believed were sufficient reasons for test facilities to remain at AUTEK for the foreseeable future, but it acknowledged that the relocation issue could not be fully resolved on the basis of its early analysis.

One unanswered question related to how much noisier the Virgin Islands site was over AUTEK and whether the difference was serious enough to handicap the Navy's noise measurement

programs if moved to the Virgin Islands. The Navy's 1984 study noted that a long-term ambient noise measurement program at both sites using comparable measurement techniques would be required to resolve the noise question.<sup>7</sup>

The recently initiated range assessment is intended to answer the question of how AUTEK fits into the Navy's long-term plan for underwater ranges. Our 1984 report recommended that the Navy's assessment include an evaluation of the AUTEK agreement issue in sufficient time to permit a review by Congress before the AUTEK agreement expires. To exercise the option for a second 5-year period, the United States must provide written notice to the Government of the Bahamas by July 1987. All parties, including high level DOD, Congressional and State Department officials need the results of this range assessment to make decisions on how range requirements can best be met, including negotiating and renewing lease agreements for ranges located in foreign waters such as AUTEK. The Navy plans to complete its comprehensive assessment in sufficient time to be used in making decisions on renewing the AUTEK agreement. This is consistent with the request in the House Appropriations Committee's report on the Fiscal Year 1987 Defense Appropriations Bill that the Navy complete its plan of action and milestones for implementing recommendations made in the Underwater Range Requirements Study in time for this data to be used in the January 1988 AUTEK lease review. The comprehensive assessment should also be useful in evaluating other underwater range expansion and modernization plans as well.

Fragmented management contributes to limited range capabilities

The Navy's 1984 study was to evaluate the effectiveness of existing diverse range management structures for planning, developing and using underwater range resources. While the Navy did not completely address this issue in the study provided to the Committee, it did recommend examining the feasibility of consolidating management of all Navy ranges. In a March 1985 memorandum, the Navy acknowledged a need for centralized management and control of all Navy ranges at the Chief of Naval Operations level to provide for a quick and appropriate resolution of range issues. The Navy found that fragmented management--many different management groups responsible for RDT&E and fleet training ranges--contributed to limited range capabilities. Recently, DOD's Inspector General also found that fragmented management contributed to excess range capacity.

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<sup>7</sup>DOD's Office of the Inspector General is in the process of investigating cost and duplication of the Navy's noise measurement facilities.

The absence of centralized management and control of Navy ranges may have contributed to the fragmented approach the Navy is taking in developing its underwater range development plan. The 1984 study, the implementation of some study recommendations in 1985, and the April 1986 start of a new effort to develop a range development plan have all required establishing committees and study groups. NAVAIR, which is chairing the most recent study, cited reorganization within its own command, lack of staff continuity and elimination of another Navy command as reasons for the Navy's range assessment taking an extensive period of time to complete.

In a June 1986 report,<sup>8</sup> addressing the need for increased management attention to developing antisubmarine warfare test resources, we recommended designating a headquarter's sponsor, an option that the Navy agreed to consider. The report showed that antisubmarine warfare test resource development did not keep pace with weapon systems' development programs because of insufficient management attention and oversight. The report discussed range capabilities only in relation to their involvement in specific weapon system development programs.

On September 18, 1986, the Under Secretary of Defense for Research and Engineering advised us that DOD agreed with our recommendation to designate a headquarters sponsor. As a result, the Navy has been tasked to develop a plan of action and milestones by January 31, 1987, to implement our recommendation.

### CONCLUSIONS

The Navy has not yet developed a comprehensive, coordinated range assessment plan incorporating all underwater requirements as the Committee requested and as we recommended. Although 3 years have elapsed since the Navy was requested to conduct such an assessment, the Navy has not yet collected nor analyzed all underwater range requirements data nor provided a comprehensive report containing conclusions and recommendations.

The scope of the Navy's current assessment to complete its 20-year range development plan is comprehensive. However, accomplishing its goals and objectives requires sufficient time and effort to assure that collecting and analyzing data, drawing conclusions and making decisions about implementing recommendations are done thoroughly. These decisions will include the use of ranges located in foreign waters under agreements which authorize the payment of millions of dollars in compensation during their duration. For example, leasing AUTEK for a second 5-year period would cost the United States \$55 million dollars. Accordingly, we believe this effort requires

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<sup>8</sup>Early Testing of Major ASW Weapons Can Be Enhanced by Increased Focus on Test Resources, (GAO/C-NSIAD-86-19, June 1986).

effective and timely management oversight and review to insure that it has adequately met its objectives and is available in sufficient time to be considered as part of the AUTECH lease renewal decision. This is especially important in order to mitigate, to the extent possible, the effects on the study and on future range operations of potentially serious limitations identified by the Navy such as cost and range usage data and the major impediment to improving range facilities caused by different range funding sources.

RECOMMENDATIONS TO THE SECRETARY  
OF DEFENSE

We recommend that the Secretary of Defense direct the Secretary of the Navy to:

- provide the Defense Appropriations, Authorizations, and Oversight Committees the results of its current range assessment for use in (1) deciding on whether to renew the current AUTECH agreement and (2) determining the justification for Navy test range improvement and modernization plans for all major underwater facilities;
- resolve the fragmented range management problem and develop compatible range usage and cost data; and
- periodically update and prioritize underwater test and training needs considering advancements in weapon capabilities and range technology.

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