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REPORT BY THE COMPTROLLER  
GENERAL OF THE UNITED STATES

THE NAVY'S ADVANCED LIGHT-  
WEIGHT TORPEDO: A NEW  
WEAPON THAT FACES MANY  
DEVELOPMENT CHALLENGES

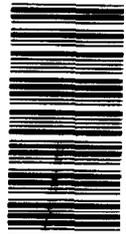
D I G E S T

The Advanced Lightweight Torpedo (ALWT) is the Navy's newest antisubmarine warfare weapon. It is intended as the replacement for the Navy's current lightweight torpedo, the MK-46.

In July 1979 the ALWT program received approval to begin advanced development, and in August 1979 two competitive advanced development contracts were signed. Both contractors are to competitively design, build, and test their proposed ALWT concepts, leading to a full-scale engineering development decision in April 1983.

GAO noted the following during its review:

- ALWT is intended to address the advancing Soviet submarine threat and overcome deficiencies in current lightweight torpedoes. However, the severity of the Soviet threat has increased significantly since the ALWT requirement was issued, particularly in the areas of speed and depth capability. Thus, the advanced development baseline design may require enhancement. The Assistant Secretary of Defense has recommended that the Navy begin efforts to develop enhancements to key subsystems such as the warhead and propulsion. (See pp. 19 and 20.)
- Navy analysis has shown there is no viable alternative to developing a new lightweight torpedo. Other free world torpedoes available or under development do not possess the performance necessary to satisfy the Navy's requirements. (See pp. 3 and 6.)



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- Early in advanced development, cost overruns were encountered by both contractors which prompted (1) deleting warhead development as a contractor responsibility, (2) eliminating documentation in weapon system integration, design to cost, life-cycle cost, and reliability and maintainability, and (3) reducing planned subsystem and system-level testing. These changes, however, may result in greater program risks. (See pp. 9 to 11.)
- A Selected Acquisition Report which advises the Congress on status of cost, schedule, and performance for ALWT will probably not be prepared until 1983. (See pp. 13 and 14.)
- The ALWT warhead technology must still be developed and proven in the ALWT application. A more advanced warhead is being investigated, but its performance still needs to be determined. (See pp. 20 and 21.)
- Since ALWT is likely to be longer and significantly heavier than the MK-46 torpedo, modifications to a variety of surface ship and aircraft launch platforms will be required. (See p. 22.)
- Availability of a new advanced torpedo target system, currently under development, is critical for ALWT testing. (See p. 23.)
- Navy development to date generally compares favorably with the Office of Management and Budget Circular A-109's principles. Should the Navy attempt to direct technical trans- fusion later as now indicated, procurement principles would be violated and development risks will likely increase. (See app. I.)

### CONCLUSIONS

Continued increases in the Soviet threat have significantly degraded the effectiveness of the MK-46 torpedo. Since no known

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alternative torpedoes exist, the Navy believes there is a clear need for ALWT.

Should ALWT perform as planned, it will provide a valuable addition to the Navy's anti-submarine warfare capability. However, ALWT is still early in development and faces many challenges as development continues. Cost increases have affected the Navy's original development plan, and some efforts have been deferred even before significant testing has begun. As a result, advanced development risks have increased. Continued advances in Soviet submarine capabilities have raised questions as to the adequacy of the present ALWT design.

### RECOMMENDATIONS

GAO recommends that the Secretary of Defense direct the Navy to

--reexamine the wisdom of the reductions in reliability, maintainability, platform integration, and testing that have resulted from changes in contract documentation requirements in light of their potential future effect on the program and

--begin preparing a Selected Acquisition Report now for the program to help insure adequate attention to cost, schedule, and performance goals.

In view of the issues raised in this report, GAO recommends that the Congress direct the Secretary of Defense to periodically provide it with an assessment of the ALWT technical and programmatic issues and plans for dealing with them.

GAO did not request official comments on this report because of the tight reporting deadline. Instead, a draft of this report was discussed with high level officials associated with management of the program to assure that the report is accurate and complete. Their points of view are included where they differ with GAO's.