

JTATU 110031

This is an unclassified digest furnished in lieu of
a report containing classified security information.

REPORT BY THE
COMPTROLLER GENERAL
OF THE UNITED STATES

ISSUES CONCERNING THE
NAVY'S EXPENDABLE RELIABLE
ACOUSTIC PATH SONOBUOY AND
ADVANCED SIGNAL PROCESSOR

D I G E S T

An effective airborne antisubmarine warfare system includes the capability to detect, classify, localize, and destroy the enemy. This capability includes multimillion dollar weapon systems, such as the land-based P-3 patrol aircraft, the carrier-based S-3 aircraft, and the Light Airborne Multipurpose System helicopter.

Sonobuoys and their related signal processors are the keys to the effective use of these aircraft in combating enemy submarines. Sonobuoys are acoustic sensors which when dropped from aircraft into the water are designed to detect the presence of submarines. Signal processors are computers on board aircraft and ships which analyze sonobuoy data to enhance submarine detection, classification, and localization.

The effectiveness of about \$40 billion worth of antisubmarine warfare platforms depends on how well sonobuoys and signal processors perform. History has shown that the significance of these complex and interrelated programs has not been fully recognized or understood. This report presents GAO's views on the major unresolved issues in developing and procuring the expendable reliable acoustic path sonobuoy (ERAPS) and the advanced signal processor.



118039

THE ERAPS PROGRAM
NEEDS CRITICAL REVALIDATION

The ERAPS development program is encumbered with many technical problems which are costly and complex. Cumulative development costs through fiscal year 1981 are \$30 million and the Navy plans to spend at least \$28 million more to complete its development by about 1985. Production costs are not known at this time. The Navy has established a unit cost goal of \$5,000 in production quantities of 10,000, but at this stage, the Navy's confidence in the accuracy of these figures is low. (See p. 11.)

221307

Regarding ERAPS, GAO found that:

- It is the most complex in design and operation of the Navy's tactical sonobuoys. It requires deploying a long cable and other factors which increase technical risk. (See pp. 6 and 7.)
- It is not compatible with antisubmarine warfare aircraft without hardware and software modifications. Special handling, storage, safety, training, and maintenance procedures need to be developed. (See p. 8.)
- The Navy has not proposed a cost-effective mission for it relative to other available sensors or tactics. (See pp. 8 and 9.)
- Depending on the quantities procured, its expense could significantly affect the annual sonobuoy budget by requiring the Navy to forego buying other needed sonobuoys. (See p. 11.)

THE NAVY SHOULD REASSESS
THE ADVANCED SIGNAL
PROCESSOR PROGRAM

The advanced signal processor was designed to be the Navy's standard processor and to improve antisubmarine warfare capability during the late 1980s and early 1990s. Production costs are not firm and could exceed \$1 billion.

Regarding the advanced signal processor, GAO found that:

- The Navy could not provide a total cost estimate for the advanced signal processor. The basic acquisition plan shows about 1,700 planned units, but different configurations of the processor may be bought at prices which range from \$466,200 to \$1,525,000. The Navy could not provide GAO with estimates of total development and support costs because there are many users. According to Navy officials, these costs could be obtained only from the weapon system program managers. (See pp. 14 and 15.)
- Operational testing with the larger memory module has not been completed. (See p. 16.)

- The concept has been under development for 13 years, but the full benefits of this processor will take several more years to materialize because the needed computer programs-- software and advanced processing techniques-- will not be available. (See p. 17.)
- Due to recent rapid advances in computer processing, the signal processor could become technologically obsolete. Also, the Navy predicts that these processors will be functionally inadequate within the next 10 years. (See p. 17.)
- The Navy has no analyses showing that the advanced signal processor is or can be cost effective in comparison to alternatives. Standardization offers advantages such as reduced development, production, and support costs. Some defense observers believe it inhibits new, lower cost technology and competition, prohibits tailoring to system requirements, and generally increases life-cycle costs. (See p. 18.)

RECOMMENDATIONS TO THE
SECRETARY OF DEFENSE

The ERAPS program has many critical problems. Technical risks are high and it has been around for many years; but the Navy has not demonstrated a cost-effective mission for it. GAO recommends that the Secretary of Defense direct the Navy to provide convincing evidence and a sound justification that technology is at hand and ERAPS is needed. Otherwise, the program, as presently structured, should be terminated.

GAO's recommendation to terminate does not mean that research to advance the technology should not continue if Defense deems that it is essential to future antisubmarine warfare capability. In that case, sonobuoy research should continue and when technology is sufficiently in hand and the feasibility has been demonstrated, a decision can be made whether full-scale development should begin.

In view of acquisition program deficiencies and future Navy plans for signal processing, GAO recommends that, before millions of dollars are appropriated to procure the advanced signal

processor, the Secretary of Defense direct the Navy to

- reevaluate and justify the quantity to be acquired and proposed uses for the advanced signal processors currently in the procurement plan;
- fully define the total cost to produce, operate, and support the advanced signal processor, including hardware and software acquisition and integration, software maintenance, integrated logistics support, and spares; and
- provide conclusive evidence to demonstrate that the advanced signal processor is cost effective in comparison to alternatives.

VIEWS OF AGENCY OFFICIALS

GAO did not request official comments on this report because of the need to issue the report in time for congressional consideration of the fiscal year 1983 defense budget request. GAO did, however, discuss a draft of this report with high level officials associated with the management of these programs and they agreed with the facts presented. The Navy disagreed that ERAPS should be terminated, suggesting instead that it formally review the ERAPS program for technical and operational evaluation before procurement. However, the Navy has not offered tangible evidence in the form of studies, analyses, justifications, or other bases to support continued development of ERAPS. GAO still believes that, unless the Navy provides convincing evidence and a sound justification that technology is at hand and ERAPS is needed, the program should be terminated.

The Navy agrees with GAO's recommendations concerning the advanced signal processor; however, they note that weapon system program managers should be responsible for their implementation. GAO addresses issues critical to the Navy and expects the Navy to appropriately assign responsibilities for carrying them out.