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# DOD ACQUISITION

## Case Study of the Navy Anti-Submarine Standoff Weapon Program



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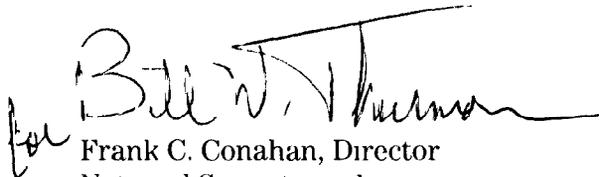
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# Preface

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The Chairmen of the Senate Committee on Governmental Affairs and its Subcommittee on Oversight of Government Management asked GAO to examine the capabilities of the program manager and contracting officer in weapon systems acquisition. As part of this study, GAO examined 17 new major weapon system programs in their initial stages of development. These case studies document the history of the programs and are being made available for informational purposes.

This study of the Navy Anti-Submarine Standoff Weapon Program (renamed the Sea Lance Anti-Submarine Standoff Weapon) focuses on the role of the program manager and contracting officer in developing the acquisition strategy. Conclusions and recommendations can be found in our overall report, DOD Acquisition: Strengthening Capabilities of Key Personnel in Systems Acquisition (GAO/NSIAD-86-45, May 12, 1986)

  
for Frank C. Conahan, Director  
National Security and  
International Affairs Division

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# Anti-Submarine Standoff Weapon

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## Origin of Start

The Navy's Underwater Systems Center laboratory did preliminary studies as early as 1968 on the feasibility of carrying a torpedo payload within a missile. In 1975, firing tests of the Navy's current submarine-launched, long-range, antisubmarine missile (SUBROC) showed that its success ratio had diminished. Recognizing this diminishing effectiveness, the Navy began to take steps toward developing a new submarine missile, and in December 1975, an operational requirement was issued.

It was not until March 1978, however, that the Chief of Naval Operations directed the Chief of Naval Materiel to plan development of an Anti-Submarine Warfare Standoff Weapon (ASWSOW). ASWSOW is intended to replace SUBROC, which the Navy determined had exceeded its design life and should be retired. ASWSOW will be a long-range, quick reaction missile platform capable of delivering torpedoes or nuclear depth bombs. It will be used on the United States attack submarines SSN637, SSN688, and follow-on attack classes.

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## Formation of the Project Office

In March 1978, the ASWSOW project office was formed in the Naval Sea Systems Command, although it was not formally designated as a program office. The first program manager was a civilian GS-15, a former project manager with the Navy, and a general manager in private industry. In addition, the manager had a degree in physics and has done some graduate work in physics and business administration. A GS-14 with approximately 26 years of contracting experience and a master's degree in business administration was appointed as contracting officer.

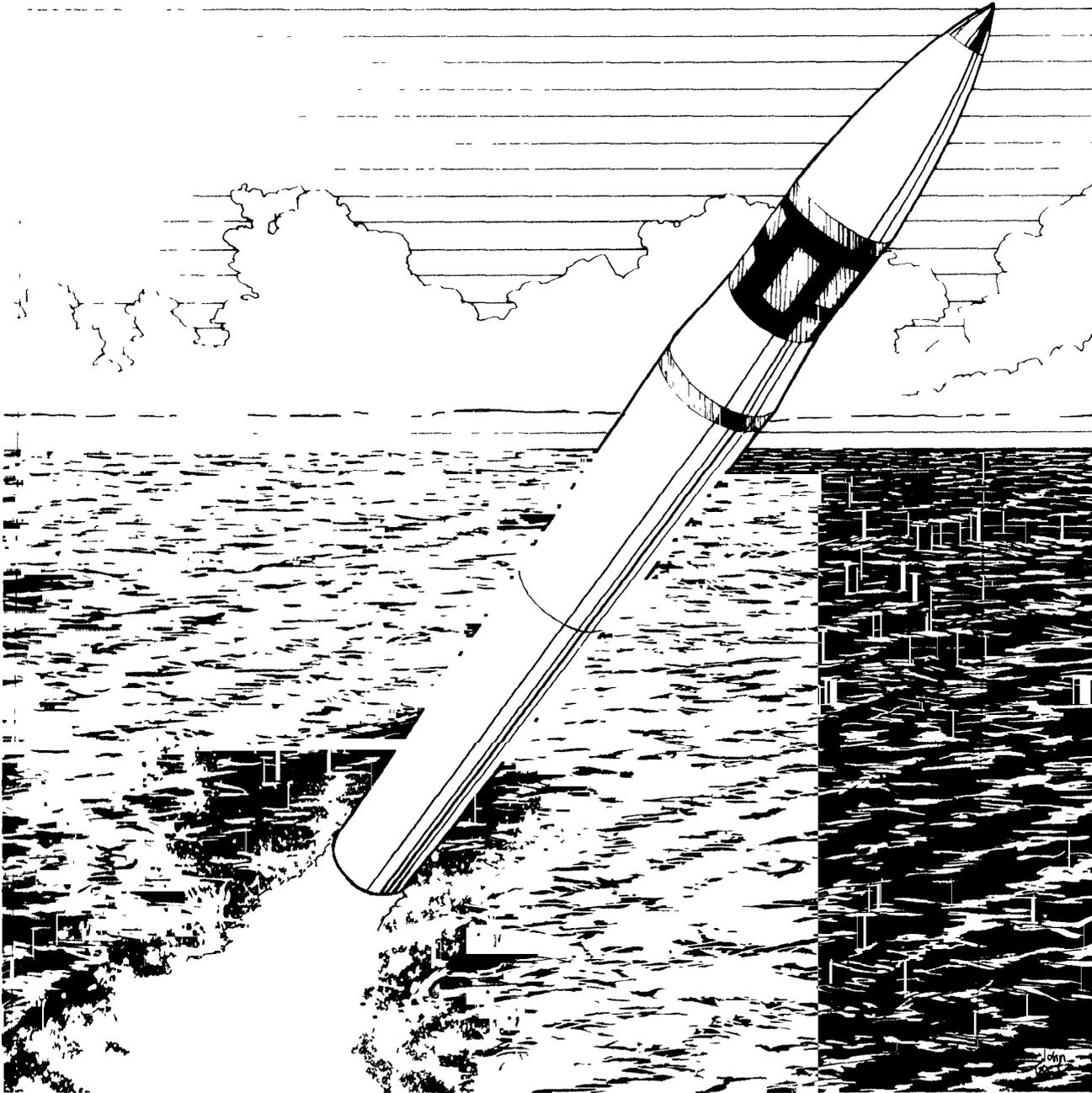
Both were appointed at the beginning of the program and did not inherit any decisions. Their first program responsibilities were to develop the acquisition strategy and plan the prebidders industry conference.

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## Development of the Acquisition Strategy

Department of Defense (DOD) Directive 5000.1 calls for flexibility and tailoring of an acquisition strategy to each program's unique characteristics. It suggests that competition should be continued through the first two program phases of concept exploration and demonstration/validation. The Directive suggests further competitive efforts into full-scale development and production if they are "cost effective."

Figure 1 The Anti-Submarine Standoff Weapon



In April 1978, the ASWSOW project office solicited a statement of interest from industry via the Commerce Business Daily. This was followed by an informational briefing to industry that summer. By fall 1978, an acquisition strategy had been developed. The strategy called for the award of up to five contracts for the concept formulation study phase. From this phase, the two best concepts were to be selected for the demonstration/validation phase. The two contractors would then develop hardware systems and subject them to competitive performance tests. Based on these tests, one contractor would be selected for full-scale engineering development and initial production. The winning contractor would furnish a procurement data package so that future production contracts could be competed.

Both the program manager and contracting officer participated in the development of the acquisition strategy, and jointly planned the competition for the design phases. The contracting officer developed the competition method and the program manager approved it.

In November 1978, the Navy held a prebidders conference to discuss the draft request for proposals which had been sent to 50 contractors. The acquisition strategy was approved by the Commander, Naval Sea Systems Command, in January 1979. The ASWSOW project was proceeding according to schedule until May 1979 when, according to the program manager, the Senate Armed Services Committee eliminated the funding for fiscal year 1980. However, the Navy continued to work on it, and after receiving comments from industry issued a final request for proposal in August 1979 for a concept formulation study. The request for proposal required the contractors to also address the feasibility of using the submarine standoff weapon on surface ships. The program manager and contracting officer jointly developed the request for proposal and assured that it had no restrictions in the statement of work and evaluation criteria by letting industry review it in advance. The program manager directed and managed the preparation of the statement of work and revised it based on industry's input. The contracting officer was responsible for the business terms and conditions and reviewed the statement of work.

A congressional conference committee met in September 1979 and agreed to fund \$7 million for ASWSOW for fiscal year 1980. This amount was \$1 million less than the Navy had requested.

In October 1979, Goodyear, McDonnell Douglas, General Dynamics, and Gould, with Boeing as a major subcontractor, submitted proposals for

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the concept formulation phase. Gould's proposal indicated that Boeing would be a subcontractor during this phase, but the roles would be reversed during demonstration/validation and the later phases, with Boeing as the prime contractor and Gould as the subcontractor.

The Mission Element Needs Statement (prepared by outside consultants) defining the Navy's requirements was formally approved by the Deputy Secretary of Defense in January 1980. Both the program manager and contracting officer thought the need was functionally stated in terms that would allow contractors to pursue alternative design concepts, thus ensuring maximum competition.

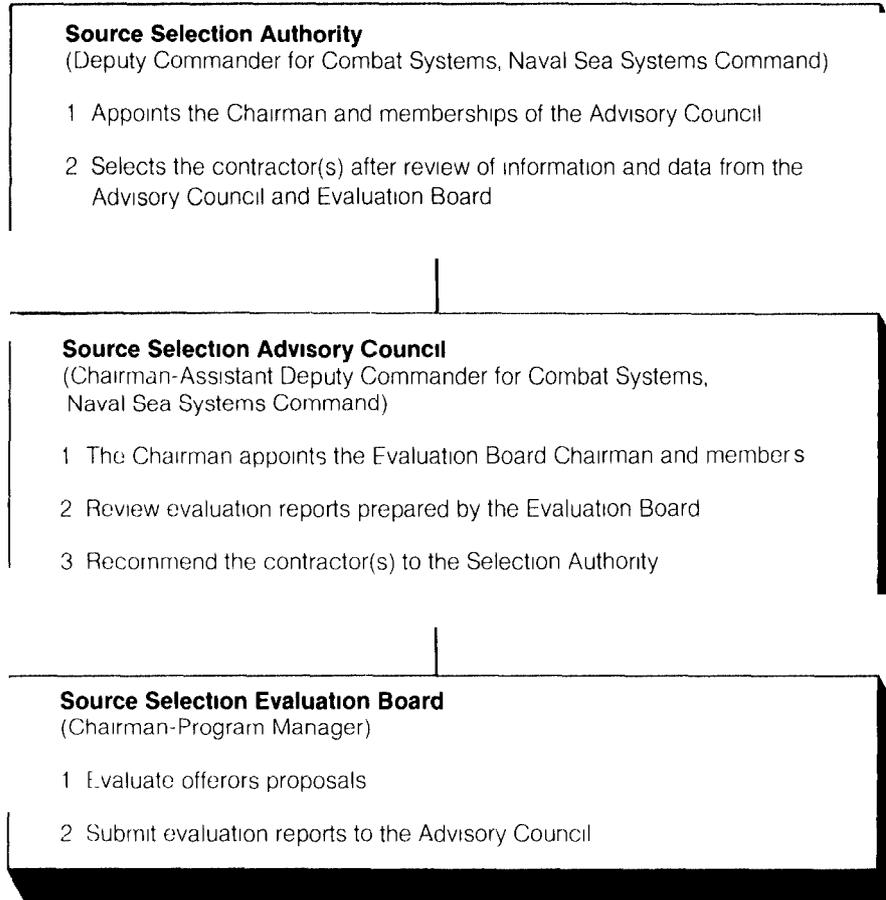
The Navy awarded four concept formulation study contracts in the amount of \$785,000 each in February 1980. In May 1980, the Deputy Chief of Naval Operations (Submarine Warfare) cut ASWSOW's funding in the proposed fiscal year 1982 budget from about \$50 million to \$25 million in an effort to balance the division's budget.

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## Source Selection Started

Despite the funding cut, the program continued and in August 1980, the Source Selection Advisory Council and Selection Evaluation Board were appointed. The Advisory Council's membership consisted of several persons, including the Chairman, who is the Assistant Deputy Commander for Combat Systems (Naval Sea Systems Command), and the program manager and contracting officer as nonvoting members. The program manager was appointed Chairman of the Evaluation Board and the contracting officer was appointed an advisor. Figure 2 describes the responsibilities of these groups.

Figure 2: Source Selection Personnel



In October 1980, the Source Selection Authority approved the Source Selection Plan for the demonstration/validation phase jointly developed by the program manager and contracting officer. The Plan was based on the source selection objectives and criteria in the request for proposal issued in 1979. The Plan established procedures to be used for evaluating offerors' proposals for entry into the demonstration/validation phase. It also identified the Source Selection Plan personnel and their duties and responsibilities. The contracting officer's duties included establishing the competitive range (considering price and technical factors, determining which proposals had a reasonable chance of being selected for award) and agreeing in the final decision for award. The program manager's duties included recommending members for the Advisory Council and appointing members to the Evaluation Board.

In October 1980 contractors submitted concept study phase reports and proposals for the demonstration/validation phase. The following month, the source selection process began even though the Navy was only expecting half of its original funding request for fiscal year 1982. The contractors' proposals were reviewed, and each contractor was asked to submit additional information to clarify and support their proposals.

Beginning in December 1980, the contracting officer was on sick leave for approximately 9 weeks. During that time, the contract negotiator acted in the contracting officer's place.

In January 1981, the one-half cut in funding was restored to the amount originally requested in the President's fiscal year 1982 budget.

## Departure From the Acquisition Strategy

Following individual negotiations led by the contract negotiator, the four contractors submitted their best and final offers for the demonstration/validation phase in February 1981. After evaluating the technical proposals, the Evaluation Board, chaired by the program manager, decided to submit to the Advisory Council in addition to its technical evaluation, an analysis comparing the cost that would be incurred if one contractor rather than two were selected for the demonstration phase.

After reviewing the evaluations, the Advisory Council determined and recommended to the Source Selection Authority that competitive development should stop at the concept stage and only one contractor should be selected for the demonstration/validation phase. According to the Advisory Council, although funding was available to support two contractors competing in this phase, it was sufficient for only an initially low level of effort by each. It concluded that the program could be accelerated by awarding a single contract, bringing the weapon into the fleet at an earlier time with substantially lower development cost. The review team determined that the top two companies—Boeing with Gould as a major subcontractor and Goodyear—were offering similar approaches. It evaluated Boeing's approach as having (1) the lower risk, (2) the greatest assurance of meeting the schedule, and (3) best met the technical requirements.

In March 1981, the Source Selection Authority informed the Secretary of the Navy's office about the Naval Sea Systems Command's intent to award only one contract to Boeing.

The contracting officer opposed the award of only one contract because this approach departed from the request for proposal and approved acquisition strategy. The contracting officer said that the change in ground rules should have been accompanied by an opportunity for others to change their proposals.

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### Industry Protests Navy Decision

After the contracting officer notified the contenders of the Navy's intent to award only one contract, Goodyear filed a bid protest to GAO against the Navy on April 2, 1981.<sup>1</sup> It charged that the Navy's action to select only one contractor was a material change in requirements as stated in the request for proposal. In comments to us during this study, Goodyear said this change constituted a change in the "ground rules" on which its investment, proposal, and competitive strategy were based. Goodyear thought the change should have been communicated to all offerors and all of them allowed to revise their proposals accordingly. Goodyear stated it might have changed its technical approach under the new circumstances

Furthermore, Goodyear argued, the Navy was premature in awarding a single demonstration/validation contract. It contended that concept formulation studies alone could not provide an adequate technical basis for determining the optimum technical approach for ASWSOW

Goodyear also maintained that although Boeing's approach was similar in that both used solid rocket propulsion, differences were significant. According to Goodyear, Boeing's concept involved a buoyant ascent from underwater to the surface. Weight, therefore, was a key factor in the design. Weight growth could result in the weapon becoming too heavy to float, therefore defeating the concept. Because Goodyear's approach relied on a powered ascent to the surface, the effect of weight growth would have been minimal according to Goodyear.

The Navy responded to Goodyear's arguments by stating that all offerors were given an equal opportunity to compete for the same requirements and as such, were not prejudiced by the change in awarding only one contract. Further, the award of a single demonstration/validation contract was a command prerogative and did not violate government policy. Although the Navy acknowledged that to select a single contractor for this phase was not the most favored approach, the

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<sup>1</sup>In addition, a subcontractor with McDonnell Douglas Corporation filed a protest on similar grounds with the Navy on March 17, 1981

regulations did not prohibit it. In any event, the Navy said its failure to follow internal government policy was insufficient basis for a protest.

Consequently, on April 17, 1981, Boeing was awarded a sustaining engineering contract for \$10.6 million to be followed by a demonstration/validation contract award. This decision was based on a Naval Sea Systems Command determination that additional information on the new system was needed for the Secretary of Defense's first program review.

The Naval Sea Systems Command contracting function reorganized at this time and a new contracting officer was assigned to ASWSOW. The former contracting officer retained all previous assignments except ASWSOW

In July 1981, we denied Goodyear's protest. Relying on the Navy's technical assessment of the proposals, we concluded that the Navy could justify changing its acquisition plan if one proposal was far superior to other proposals.

## Program Changes and Funding Cuts

The Navy had two separate standoff weapon programs—one for surface ships and the other for submarines. In September 1981, the Director of Research, Development, Test and Evaluation proposed, as part of a DOD-wide budget reduction effort, that funds for these two standoff weapon programs be cut by 50 percent in fiscal years 1983 and 1984. Another proposal was to entirely eliminate funding for ASWSOW as opposed to stretching out the program due to fundamental concerns about the program (See p 13.) Instead of cancellation, however, the Navy's research and development head finally urged a common weapon for both submarines and surface ships as a means of saving the ASWSOW program.

In October 1981, the Chief of Naval Operations directed that the ASWSOW program be revised so that it could be used on surface ships as well as submarines. It was renamed "The Common ASWSOW Program " This change, coupled with another funding cut, resulted in various changes to the program. First, the initial Secretary of Defense program review was rescheduled from November 1981 to mid-fiscal year 1982. Next, the demonstration/validation phase was extended 1 year—instead of ending in May 1984 it would end in May 1985. Finally, Boeing's sustaining engineering contract was modified to include the revised scope of work and to extend the period of contract performance.

The Navy later determined the number of standoff weapons needed for the surface ships' training exercises was quite large and ASWSOW was considerably more expensive than a weapon designed for surface launch only. The Navy concluded that it would not be cost effective to use ASWSOW in the dual capacity. As a result, in March 1982, the Chief of Naval Operations' Executive Board decided the common ASWSOW program should again be split, and ASWSOW should revert to being a submarine weapon only. Boeing's contract was again modified to reflect this change.

In May 1982, the Navy cut the ASWSOW funding in its fiscal year 1984 budget submission because of an across-the-board presidential budget cut. This reduced funding stretched the program even more. To minimize the stretchout, the program manager developed various acquisition alternatives

One suggested alternative was eliminating flight tests during demonstration/validation. Since the program manager believed a demonstration/validation contract should not have been awarded before the Secretary of Defense's first review, rescheduled for December 1982, additional sustaining engineering efforts were procured. Boeing was awarded another sustaining engineering contract for \$16.3 million for November 1982 to September 1983. In September 1982, the funding cut was restored.

On December 1, 1982, the first Secretary of Defense review was held and approval was given to proceed to demonstration/validation without the flight tests.

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**Military Program Manager  
Assigned**

In January 1983, a new program manager, a military officer, was appointed. The new manager was a recent graduate of a 20-week Defense Systems Program Management Course, and had extensive operational experience with fleet weapons, but no prior acquisition experience. The first program manager was reassigned as the deputy.

In March 1983, the acquisition strategy was updated to reflect the changes that had taken place since the approval of the original strategy

After a 2-year sustaining engineering contract, a letter contract was awarded to Boeing for the demonstration/validation phase in May 1983. According to the contracting officer, this undefinitized contract was

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awarded because the many program changes did not allow time to enter into a fully developed, conclusive contract.

In June 1983, ASWSOW experienced another funding cut. The Chief of Naval Operations announced that of the \$4 million for reprogrammed fiscal year 1983 funds earmarked for ASWSOW, \$1.7 million had been diverted to other programs by the Office of the Secretary of Defense. In addition, the remaining \$2.3 million had been delayed pending congressional approval of the reallocation. As a result, Boeing was requested by the contracting officer to submit a revised expenditure plan. Also, Boeing was requested to reschedule some test requirements from the full-scale engineering development phase into the demonstration/validation contract to have a stronger position at the Secretary of Defense's second review. Boeing's revised plan extended the demonstration/validation contract from March to October 1985 and the Secretary of Defense review was rescheduled to slip by 5 months from March to August 1985.

In January 1984, the Chief of Naval Materiel granted approval to definitize the letter contract awarded to Boeing in May 1983. After resolving some problems concerning proprietary manufacturing processes with a subcontractor, the contract was finally definitized on April 11, 1984.

In May 1984, the Senate Armed Services Committee recommended the ASWSOW program budget of \$617 million for fiscal year 1985 be reduced by \$20 million. The Committee believed higher priority should be given to other submarine programs. A conference committee restored half of the cut, which resulted in a \$10 million total reduction for fiscal year 1985. For fiscal year 1986, the congress appropriated \$753 million, as requested by DOD.

ASWSOW was formally designated as a program office in July 1984.

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## Industry Comments on Acquisition Strategy

During this study, we obtained industry comments on the Navy's acquisition strategy. The responses generally were that the Navy's request for proposals and its competitive procurement plans were straightforward, well prepared, and clearly stated.

Both Goodyear and McDonnell Douglas, however, had problems with the sudden change in the contracting strategy. According to Goodyear, this change constituted a change in the "ground rules" on which its investment, proposal, and competitive strategy were based.

McDonnell Douglas agreed with Goodyear's evaluation in that when changing the ground rules, the Navy should have permitted the offerors to submit new proposals. According to McDonnell Douglas, "In order for competition to be meaningful the ground rules must be clearly expressed and adhered to." Further, had McDonnell Douglas known only one contractor would be selected at that stage, it would have used a different approach. Boeing found no problem with the Navy's acquisition process.

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## Evaluation of Roles and Acquisition Strategy

The program manager had the lead role in developing the acquisition strategy. The contracting officer designed the initial competitive approach and was both an active player and influential advisor to the program manager. The competition designed into the strategy was well planned and innovative design concepts were encouraged. This initial strategy developed by the program manager and contracting officer was accepted by Navy management, but it was not followed.

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## The Design Competition

Various reasons were given for terminating the design competition earlier than planned. The Source Selection Authority, who was responsible for selecting the contractor, informed us that funding was the chief reason for altering the acquisition strategy. On the other hand, while acknowledging that funding was a problem, the program manager maintains that the strategy was changed because Boeing's approach was superior and contained lower risk. Other Navy and industry sources suggest it was funding and lack of high level support for the program.

The change in strategy during execution raises two basic questions:

- Should the competition have proceeded further, at least through demonstration/validation of the new and untried areas in each proposal? (We asked the program manager to identify significantly new or untried areas in the Boeing and Goodyear design concepts. The program manager identified six such areas in Boeing's proposal and eight in Goodyear's proposal.)
- Did the Navy have enough information and design confidence to make an investment in any one system and contractor at the conceptual phase? (Two prior studies on weapon system competition found that in the majority of the programs examined, the eventual winning design

would not have been chosen if a selection had been made at the end of the conceptual stage.<sup>2</sup> )

DOD Directive 5000.1 encourages competitive design work up to full-scale development (the third program phase) or beyond, if cost effective. The Navy carried this competition through only the first phase—concept exploration.

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## External Influences

We inquired into the various delays, funding cuts, and program changes. The Navy's then research and development head and industry sources attributed them to the lack of high level support of ASWSOW. They said there were concerns about (1) the value of this weapon versus others considering the limited submarine space, (2) the likelihood of obtaining approval to use a nuclear bomb in an underwater environment, (3) serious problems being encountered with the alternate payload—the lightweight torpedo, (4) the capability of submarines to locate and accurately target an enemy submarine at long distances, and (5) the weapon's relative cost.<sup>3</sup>

The deputy program manager (formerly the program manager), in comments to us, challenged several of these concerns. He expressed the view that (1) the use of a nuclear depth bomb is a political issue, (2) ASWSOW is needed because no other weapon is available or under development that will satisfy the requirement, (3) ASWSOW will be a low-cost weapon compared to other modern guided missiles, and (4) even though numerous funding cuts and program changes have occurred, there is strong Navy support for ASWSOW.

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## The Production Competition

The Defense Appropriations Act requires a competitive production plan for major weapons or their subsystems, before full-scale development, or a certification that program quantities will not justify dual production lines.

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<sup>2</sup>Institute for Defense Analyses, Competition as an Acquisition Strategy: Impact of Competitive Research and Development on Procurement Costs (Nov 1983)

Rand Corporation, Acquisition Policy Effectiveness: Department of Defense Experience in the 1970s (Oct 1979)

<sup>3</sup>A GAO study—The Navy's New Anti-Submarine Warfare Standoff Weapon—An Uncertain Future (C-MASAD-82-11, Feb 26, 1982)—also raised concerns about ASWSOW. It noted the many delays, the dependence on affiliated programs, which could affect ASWSOW's future, detection, and targeting improvements needed to support ASWSOW's proposed range, and the problems associated with its planned conventional payload—the advanced lightweight torpedo

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During the summer of 1985, the program office responded to this requirement by preparing a competitive production plan for ASWSOW.

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## Present Status

For fiscal years 1986 and 1987, ASWSOW funding was reduced by the Navy in response to a presidential directed DOD-wide budget cut. Subsequently, the program schedule has been extended. The second review of the program by the Secretary of Defense's office was held on April 22, 1986. The Secretary of Defense approved the start of full-scale development in May 1986.

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# Chronology of Events

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March 1978	Chief of Naval Operations directed development of ASWSOW. Project office formed. Program manager appointed. Contracting officer appointed.
April 1978	Solicitation of Industry briefing held.
July 1978	Informational industry briefing.
October 1978	Acquisition strategy developed.
November 1978	Prebidders conference held.
January 1979	Acquisition strategy approved.
May 1979	Budget zeroed.
August 1979	Request for proposal issued.
September 1979	Program funded.
October 1979	Proposals submitted.
January 1980	Mission Element Needs Statement approved.
February 1980	Concept formulation contracts awarded.

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Chronology of Events

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May 1980	Funding cut.  Source Selection Plan for demonstration/validation phase approved
October 1980	Initial proposals for demonstration/validation submitted.
January 1981	Funding restored.
February 1981	Contractors submitted best and final offers.
March 1981	Source Selection Authority recommended award of one contract.
April 1981	Bid protest filed.  One sustaining engineering contract awarded
June 1981	New contracting officer appointed
July 1981	Protest denied.
October 1981	Proposal to eliminate funding for the standoff weapons.  Submarine standoff weapon combined with surface ship program.
March 1982	Combined program split.
May 1982	Funding cut.
November 1982	Sustaining engineering efforts extended.

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**Chronology of Events**

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December 1982	First Secretary of Defense review.
January 1983	Second program manager appointed
March 1983	Acquisition strategy updated
May 1983	Boeing awarded letter contract
June 1983	Funding cut
April 1984	Letter contract definitized.
May 1984	Funding cut.
July 1984	Standoff weapon program formally designated as a program office
April 1986	Defense Systems Acquisition Review Council milestone II review held.

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