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Report to the Chairman, Committee on National Security, House of Representatives

May 1995

NAVAL SURFACE FIRE SUPPORT

Navy's Near-Term Plan Is Not Based on Sufficient Analysis

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GAO

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

National Security and
International Affairs Division

B-261397

May 19, 1995

The Honorable Floyd Spence
Chairman, Committee on National Security
House of Representatives

Dear Mr. Chairman:

As you requested, we evaluated the Navy's program to upgrade guns on surface ships to determine whether the Navy has chosen the most cost-effective system for improving its ability to provide naval surface fire support (NSFS).

Background

Since the end of the Cold War, the Navy has emphasized a strategy of littoral warfare. As part of this strategy, the Navy and the Marine Corps have been developing operational concepts for amphibious warfare, which rely heavily on the ability to launch and support amphibious assaults from ships up to 25 nautical miles from the enemy's shore.[1] According to the Navy and the Marine Corps, to successfully conduct amphibious operations, the Marine Corps requires all-weather fire support. If artillery and other ground-based fire support assets are not available, Marine Corps ground forces will need long-range fire support from Navy surface ships or from attack helicopters and fixed-wing aircraft.

Currently, the Navy operates the 5-inch, 54-caliber gun on cruisers and destroyers, which can fire unguided projectiles a maximum range of about 13 nautical miles. According to the Navy and the Marine Corps, this short range combined with threats to surface ships from mines and antiship missiles currently preclude the Navy from adequately supporting Marine Corps amphibious operations or engaging other long-range targets.

The Congress has been interested in the Navy's plans for NSFS since 1991. The National Defense Authorization Act for Fiscal Years 1992 and 1993 required (1) the Secretary of the Navy to provide a report to the Congress outlining NSFS requirements and survey alternative technologies and other options that could meet these requirements; (2) the Secretary of Defense, through the Institute for Defense Analysis, to provide a study of naval ship-to-shore fire support requirements and cost-effective alternatives; and (3) the Navy to conduct a cost and operational effectiveness analysis (COEA) based on the requirements and technologies identified in the first

[1]A nautical mile is equal to about 1.85 kilometers.

report. In the conference report to the National Defense Authorization Act for Fiscal Year 1995, the Congress required the Secretary of the Navy to submit a report on the Navy's NSFS plan. At the time of this review, this report has not been submitted to the Congress.

Results in Brief

The Navy's decision to upgrade existing 5-inch, 54-caliber guns and develop a 5-inch precision-guided munition, at an estimated research and development cost of $246 million, was made without sufficient analysis. As a result, the Navy is unable to show that this decision will meet NSFS requirements or provide the most cost-effective solution.

The Navy's COEA for NSFS determined that a 155-millimeter, 60-caliber gun with an advanced propellant and precision-guided munitions in combination with the Tomahawk Land Attack Missile was the most cost-effective system to meet NSFS requirements by fiscal year 2003. On the basis of the COEA's results, the Navy initially proposed a $360 million research and development program to (1) develop 155-millimeter, 60-caliber guns; (2) develop a 155-millimeter precision-guided munition with the Army; and (3) research advanced propellants. The Navy also proposed providing limited upgrades to existing 5-inch guns until 155-millimeter, 60-caliber guns became operational. However, the Navy subsequently determined that this comprehensive plan was not affordable and decided to limit the program to upgrading existing 5-inch guns and developing 5-inch precision-guided munitions. A chronology of major events surrounding the NSFS program appears in appendix I.

COEA Determined That 155-Millimeter Gun Was the Most Cost-Effective System

In February 1993, the Center for Naval Analyses began the COEA. It evaluated the performance of 10 existing and candidate 5- and 8-inch and 155-millimeter gun systems with different propellants, flight classifications, and warhead types against target sets for three scenarios, two of which represented major regional conflicts. The third scenario represented a noncombatant evacuation operation. The Navy also evaluated seven missile concepts against these scenarios because it found that none of the gun systems could handle all of the target sets. The scenarios and target sets were developed along with the Marine Corps and validated by the COEA's oversight board.[2]

[2]Co-Chairs of the oversight board were the Director, Expeditionary Warfare Division, Office of the Deputy Chief of Naval Operations (Resources, Warfare Requirements, and Assessments)—a Marine Corps official; and the Deputy Assistant Secretary of the Navy for Research, Development, and Acquisition (Ship Programs).

The COEA identified eight gun systems that, when combined with missiles, were capable of attacking at least 95 percent of the targets in the major regional conflict scenarios at the lowest total estimated cost. Five of these systems were 155-millimeter variants, and three were 8-inch variants with different propellants and calibers. The COEA concluded that a 155-millimeter, 60-caliber gun system with an advanced propellant and precision-guided munitions in combination with the Tomahawk missile was the most cost-effective NSFS option.[3]

According to the Navy, the only 5-inch gun candidate that was able to compete with other gun systems modeled in the COEA was a 5-inch, 70-caliber Magnum gun. This gun does not exist and would have to be developed. The COEA found that, for both major regional conflict scenarios, fewer 155-millimeter munitions and long-range missiles would be needed to hit a majority of the target sets than 5-inch, 70-caliber munitions and missiles. For example, the Navy could hit 99 percent of the targets in one scenario with 1,316 fewer 155-millimeter projectiles, and 34 fewer long-range missiles at a wartime cost of about $69 million less than with a combination of 5-inch, 70-caliber projectiles and missiles.[4] Also, the COEA stated that, if the NSFS program became fiscally constrained, development of a 5-inch, 70-caliber gun might save money in the near term, making it an attractive option because of lower research and development costs, but (1) wartime costs would be considerably higher than with larger guns and (2) a 5-inch, 70-caliber gun would not adequately cover the targets.

The Navy subsequently developed the NSFS program based on the results of the COEA. In March 1994, the Navy proposed (1) developing a new 155-millimeter, 60-caliber gun; (2) developing, along with the Army, a new 155-millimeter precision-guided munition; and (3) researching different propellants, including electro-thermal-chemical and liquid propellants. The Navy planned to field these new systems by fiscal year 2003. The Navy also proposed providing limited upgrades to existing 5-inch guns to achieve greater ranges until the 155-millimeter gun became available and planned to conduct concept demonstrations of various missiles.

According to the Navy, the NSFS program had the potential for joint development of various propellants and commonality with Army

[3]The COEA was signed out for distribution by the oversight board in December 1994. However, according to the Navy, the Assistant Secretary of the Navy for Research, Development, and Acquisition had not signed or released it to the Congress.

[4]According to the COEA, wartime costs refer to costs to replace missile and gun projectile stocks to prewar levels.

155-millimeter munitions. To fund this overall program, the Navy included $360 million for research and development in its proposed Future Years Defense Program for fiscal years 1996-2001 and expected to field the 155-millimeter gun in fiscal year 2003 on new-production DDG-51 destroyers or on a follow-on surface ship, known as SC-21.

The Navy Restructured Its Program for Affordability Reasons

Funding shortfalls in the Navy's fiscal year 1996 program objective memorandum led to a decision by the Navy to cut its NSFS program in August 1994 to help pay for programs that the Marine Corps considered vital to its amphibious capabilities. These programs included the V-22 medium-lift aircraft and the Advanced Amphibious Assault Vehicle.

According to program officials, to stay within the reduced funding level, the Navy canceled plans to develop the 155-millimeter, 60-caliber gun and the 155-millimeter precision-guided munition and scaled back efforts to develop advanced propellants for 155-millimeter munitions. The Navy said it would consider this option as a long-term NSFS solution as it develops its new surface combatant ship, the SC-21. In the interim, the Navy has decided to upgrade its existing 5-inch, 54-caliber guns and develop a 5-inch precision-guided munition. According to program officials, the Navy made this decision primarily because it believed that modifying existing guns would be the quickest way to gain better gun capability at the least cost.

In December 1994, the Chief of Naval Operations approved the Navy's revised NSFS plan, and in January 1995, directed the Naval Sea Systems Command to (1) initiate upgrades to the 5-inch, 54-caliber gun to deliver precision-guided munitions; (2) develop a 5-inch precision-guided munition with an initial operational capability before fiscal year 2001; and (3) scale back liquid propellant gun technology efforts. In addition, the Chief of Naval Operations directed that no funds be used to develop the 155-millimeter gun.

According to the Navy, it will need about $246 million in research and development funds between fiscal years 1996 and 2001 for the revised NSFS program. About $165 million will be required to develop the precision-guided munition, $56 million to upgrade the 5-inch gun, and $25 million will be needed for research and development on NSFS-related command and control systems. The Navy included $160.2 million in its Future Years Defense Program for fiscal years 1996-2001 for research and development of the 5-inch gun and precision-guided munition, including $12 million for fiscal year 1996. As a result, the Navy's research and

development program is underfunded by about $86 million. Navy officials told us that funds would be added to the program in fiscal year 1997.

Marine Corps Defined Gun Range Requirements After the Navy Restructured the Program

In November 1994, 3 months after the Navy proposed the 5-inch, 54-caliber gun solution, the Marine Corps established a range requirement for NSFS that is less than the range requirements assumed in the COEA. Although the COEA does not specify a range requirement, the COEA assumed that a majority of the NSFS targets in the major regional conflict scenarios were located within 75 nautical miles of the fire support ship. This requirement was consistent with the findings of the July 1992 Navy NSFS requirements study and the June 1993 Institute for Defense Analysis study, which found that 75 nautical miles was the maximum required range to support the Marine Corps' operational concepts.

Although range estimates for an upgraded 5-inch, 54-caliber gun vary, all estimates are less than 75 nautical miles. The June 1993 Institute for Defense Analysis study estimated that an advanced 5-inch gun projectile with rocket-assisted propulsion could achieve a range between 45 and 65 nautical miles.

Navy officials told the Chief of Naval Operations that an upgraded 5-inch gun could achieve ranges between 45 and 70 nautical miles depending on the scope of the upgrade and the type of propellant used in the precision-guided munition. According to the Navy, to achieve a 70 nautical mile range, electro-thermal-chemical propellants may be needed, but these propellants have not yet been developed.

In November 1994, the Marine Corps established a requirement for NSFS in terms of range, volume of fire, and lethality. Although it participated in developing the original 75 nautical mile range target assumption used in the COEA, the Marine Corps decided that the minimum range requirement for NSFS should be 41.3 nautical miles and that the maximum range should be 63.1 nautical miles. The Marine Corps based these ranges on its intent to use NSFS during the initial stages of an amphibious operation until artillery is ashore.

Because its 155-millimeter towed artillery would be unavailable during the initial stages of an amphibious operation, the Marine Corps concluded that NSFS, at a minimum, must provide the same range, lethality, and accuracy as current artillery systems. The minimum 41.3 nautical mile range consists of the 25 nautical mile ship-to-shore distance plus a 16.3 nautical

mile (30 kilometers) distance representing the maximum range of existing Marine Corps 155-millimeter artillery with rocket-assisted projectiles. To derive the maximum range of 63.1 nautical miles, the Marine Corps used the accepted minimum range for threat artillery articulated in the Army Field Artillery COEA of 21.8 nautical miles (40 kilometers) and added this range to the minimum range of 41.3 nautical miles.

The Marine Corps' intent to use NSFS during the initial stages of amphibious landing operations was outlined in the NSFS mission needs statement, which was signed by the Navy in May 1992. According to the statement, NSFS also involves suppressing and destroying hostile antiship weapons and air defense systems, delaying and disrupting enemy movements, and reinforcing defending forces.

Marine Corps and Navy requirements officials also told us that the Marine Corps revised the 75 nautical mile range requirement because it was not logical, specifically defined, or formally agreed to by the Navy or the Marine Corps. We found this surprising because Navy and Marine Corps officials were involved in developing the target sets used in the COEA's scenarios. The scenarios and target sets were also approved by officials from both services serving on the COEA's oversight board.

The fact that the Navy and the Marine Corps established the new range requirement after the Navy completed work on the COEA and restructured the program raises questions about the validity of NSFS range requirements. The Marine Corps did not assess the impact of its new requirement on the target sets originally developed for the COEA or conduct any further analysis to validate these ranges. Therefore, the importance to the NSFS mission of targets located between 63 and 75 nautical miles from the ship is not clear.

Supplemental Navy Analysis Appears to Be Limited

According to defense acquisition management policies and procedures, a COEA is intended to assist decisionmakers in choosing the best system alternative for the money invested and not to justify decisions that have already been made. The Navy did not perform a supplemental analysis to its original COEA before it decided to restructure the NSFS program.

The Navy is currently conducting a supplemental analysis to evaluate near-term alternatives for NSFS. According to the Navy, this analysis will reflect the new Marine Corps' maximum range requirement of 63.1 nautical miles and be limited only to 5-inch gun options. The Navy has

asked the Center for Naval Analyses to complete this analysis by May 1995.

It is not clear whether a supplemental analysis that considered all gun options—5 and 8 inch and 155 millimeter—against the Marine Corps' new distance requirements would support the Navy's decision to upgrade the 5-inch gun because (1) larger guns firing advanced projectiles with more payload can attack more targets than smaller, 5-inch guns and (2) the original COEA found that the rankings of the eight most cost-effective systems were not sensitive to range. The original COEA assessed the effectiveness of the eight most cost-effective systems when the ship-to-shore distance was reduced from 25 to 5 nautical miles and found that the cost-effectiveness rankings of the systems remained basically the same. Even at shorter ranges, the 155-millimeter, 60-caliber gun and Tomahawk missile combination remained the most cost-effective NSFS option.

Matter for Congressional Consideration

The Congress may wish to consider not authorizing or appropriating fiscal year 1996 funds for NSFS until the Navy has (1) determined and validated NSFS requirements and (2) conducted a comprehensive supplemental analysis to the COEA that includes all available gun and missile alternatives.

Agency Comments and Our Evaluation

The Department of Defense (DOD) did not concur with either the thrust of this report or the matter for congressional consideration (see app. II). DOD took issue with three major issues in the report: the Marine Corps' range requirement, the Navy's long-term plans for the 155-millimeter gun, and our suggestion that the Navy is revising the COEA to justify decisions it had already made.

DOD noted that the report incorrectly alludes to a Marine Corps initial NSFS requirement of 75 nautical miles. DOD said that the minimum 41.3 and maximum 63.1 nautical mile ranges established by the Marine Corps in November 1994 was the first explicit statement of the requirement based on a practical analysis of war-fighting scenarios.

We do not agree with DOD's position. Although the COEA did not include a specific range requirement, a majority of the targets in the major regional conflict scenarios modeled by the COEA were located within 75 nautical miles of the fire support ship. The 75 nautical mile range was consistent with the findings of the July 1992 Navy NSFS requirements study and the June 1993 Institute for Defense Analysis study, which found that

75 nautical miles was the maximum required range to support the Marine Corps' operational concepts. Further, the Navy did not conduct an analysis to validate the relationship between the target set used in developing the COEA and the Marine Corps' new maximum range requirement of 63.1 nautical miles. Also, it should be noted that the original COEA found that the rankings of the eight most cost-effective systems were not sensitive to range. The original COEA assessed the effectiveness of the eight most cost-effective systems when the ship-to-shore distance was reduced from 25 to 5 nautical miles and found that the cost-effectiveness rankings of the systems remained basically the same. Even at shorter ranges, the 155-millimeter, 60-caliber gun and Tomahawk missile combination remained the most cost-effective NSFS option.

DOD said that plans to develop the 155-millimeter gun and precision-guided projectile, as recommended in the COEA, have not been canceled and that this system remains a viable option for inclusion on the SC-21. This differs sharply from what Navy officials told us during the audit. Moreover, no funds have been budgeted for this program in the Future Years Defense Program for fiscal years 1996-2001. Also, in his December 1994 decision to focus on the 5-inch gun upgrade program, the Chief of Naval Operations directed that no funds be used to develop the 155-millimeter gun.

DOD said that the Navy was not revising its COEA but was conducting a supplemental analysis to the original NSFS COEA.[5] DOD noted that the purpose of the supplemental analysis was to determine the best near-term NSFS improvements to meet the range requirements established by the Marine Corps in November 1994. However, we note the Navy requested the Center for Naval Analyses to perform the supplemental analysis 2 months after its decision to proceed with the restructured program. Because the Navy has restricted the supplemental analysis to only 5-inch gun solutions, rather than all potential gun solutions, we believe that the supplemental analysis may not determine the most cost-effective, near-term NSFS program. Our recent discussions with officials from the Center for Naval Analyses who are conducting the supplemental analysis has reinforced this view. According to these officials, the 5-inch precision-guided munition development program is a high-risk endeavor that requires concurrent development of a number of new technologies. One risk associated with concurrency is that fielding of the munition may be delayed beyond the year 2001. According to the Center for Naval

[5]In a draft of this report, we referred to the supplemental analysis as a revised COEA; as a result of DOD's comments, we changed this language and incorporated other technical comments where appropriate.

Analyses, another risk is that the 5-inch munition may not be able to meet the Marine Corps' maximum range requirement.

DOD also disagreed with the matter for congressional consideration. DOD noted that its near-term program was consistent with the 1993 Institute for Defense Analysis study, which recommended developing advanced projectiles compatible with existing 5-inch, 54-caliber guns for the near term and that sufficient analysis has been conducted for the Navy to proceed with its program. DOD also stated that removal of fiscal year 1996 funding would slow the achievement of both near- and long-term objectives. From the outset, the Navy intended to use the COEA to determine the best program for NSFS. We continue to believe the Navy has not conducted sufficient analysis to support its near-term program.

Scope and Methodology

To obtain information on NSFS requirements and the Navy's plans, we interviewed officials and reviewed documents from the Office of the Deputy Chief of Naval Operations for Resources, Warfare Requirements, and Assessments and the Office of the Assistant Secretary of the Navy for Research, Development, and Acquisition, Washington, D.C. We also interviewed officials and reviewed documents at the Marine Corps Combat Development Command, Quantico, Virginia; and the Naval Sea Systems Command, Crystal City, Virginia. We reviewed the Navy and the Office of the Secretary of Defense NSFS studies mandated by the Congress in the National Defense Authorization Act for Fiscal Years 1992 and 1993 and discussed them with Navy officials and representatives of the Institute for Defense Analysis, Alexandria, Virginia.

The Navy did not provide us with a copy of the COEA, but we reviewed the COEA's summary report dated March 31, 1994, which contained its major findings and conclusions. We discussed the COEA with officials of the Center for Naval Analyses, Alexandria, Virginia. We conducted our review between July 1993 and March 1995 in accordance with generally accepted government auditing standards.

We are sending copies of this letter to the Secretaries of Defense and the Navy and the Commandant of the Marine Corps. We will also make copies available to others on request.

Please contact me at (202) 512-3504 if you or your staff have any questions concerning this report. Major contributors to this report are Richard Price,

Assistant Director; Anton Blieberger, Evaluator-in-Charge; and Robert Goldberg, Senior Evaluator.

Sincerely yours,

Richard Davis
Director, National Security
Analysis

Chronology of Major Events

December 1991	National Defense Authorization Act for Fiscal Years 1992 and 1993 mandates the Navy and the Office of the Secretary of Defense to assess naval surface fire support (NSFS) needs and the Navy to conduct a formal cost and operational effectiveness analysis (COEA).
May 1992	The Navy signs the NSFS mission needs statement.
July 1992	The Navy issues its first congressionally mandated report on NSFS requirements.
February 1993	The Navy begins the COEA.
June 1993	The Institute for Defense Analysis completes its assessment of NSFS.
March 1994	The Navy completes its work on the COEA and, on the basis of its results, proposes an NSFS program and funding in its Future Years Defense Program for fiscal years 1996-2001.
August 1994	The Navy restructures the NSFS program in light of funding shortfalls and cancels 155-millimeter, 60-caliber gun development.
November 1994	The Marine Corps identifies NSFS range requirements.
December 1994	The COEA is signed out for distribution by the Co-Chairs of COEA oversight board, but is not released to the Congress. The Navy proposes a revised NSFS program to the Chief of Naval Operations and obtains approval.
January 1995	The Chief of Naval Operations formally approves the NSFS range requirement and issues formal program guidance directing the Navy to pursue upgrades to 5-inch guns and development of a precision-guided munition.
March 1995	The Navy asks the Center for Naval Analyses to provide a supplemental analysis to its original COEA that reflects the Marine Corps' new range requirements by May 1995.

Comments From the Department of Defense

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MAY 0 9 1995

Mr. Richard Davis
Director, National Security Analysis
National Security and International Affairs Division
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Davis:

This is the Department of Defense (DoD) response to the General Accounting Office (GAO) draft Report, "NAVAL SURFACE FIRE SUPPORT: Navy's Plan Not Based on Sufficient Analysis," (GAO Code 701069/OSD Case 9915), dated April 24, 1995. The draft report does not provide findings or recommendations. It does however, highlight matters for Congressional consideration. The DoD does not concur with the thrust of the draft report or the matters for Congressional consideration.

The detailed DoD comments on the report issues are provided in the enclosure. Technical corrections have been addressed in a separate enclosure.

The DoD appreciates the opportunity to comment on the GAO draft report.

George R. Schneiter
Director
Strategic and Tactical Systems

Enclosures

Key Issues in Response to the General Accounting Office (GAO) draft Report, "NAVAL SURFACE FIRE SUPPORT: Navy's Plan Not Based on Sufficient Analysis," (GAO Code 701069/OSD Case 9915)

The Navy has prepared a Naval Surface Fire Support (NSFS) report, directed by the FY 1995 Defense Authorization Conference Committee Report 103-701, which is a comprehensive Navy review of the Naval Surface Fire Support program. It addresses the substantive questions raised in the GAO draft report. It provides a detailed outline of the near-term NSFS development program and the relationship of Naval Surface Fire Support to other Navy/Marine Corps development programs supporting Expeditionary Warfare. The Navy anticipates releasing the NSFS Report to Congress shortly. Highlights of the report are summarized below.

In FY 1993, the Navy initiated a Milestone Zero Cost and Operational Effectiveness Analysis (COEA) to evaluate gun, missile and rocket system alternatives to address Naval Surface Fire Support deficiencies. The conclusion of the Cost and Operational Effectiveness Analysis was that a 155 millimeter/60-caliber naval gun employing precision guided munitions (PGM) was the most cost effective solution for Naval Surface Fire Support in the long-term, and that a combination of guns, missiles, and tactical aviation (TACAIR) was needed to fully meet the Naval Surface Fire Support requirement. During POM 96, a Naval Surface Fire Support program was structured to proceed with the long-term development of a 155mm gun, develop a gun-launched precision guided munition (PGM), and modifications to the existing Mk 45 5-Inch Gun to provide long-term, as well as near-term, improvement in Naval Surface Fire Support capability. Affordability constraints mandated a restructuring of the program.

In October 1994, the Chief of Naval Operations directed the Navy and Marine Corps to revalidate the requirement for fire support and provide a program plan that would take advantage of existing weapon systems, and deliver an enhanced Naval Surface Fire Support capability prior to FY01. In December 1994, the Chief of Naval Operations approved a near term program plan to provide fire support in support of ground forces to an objective range of 63 nautical miles, and directed that a long-term master plan be developed to meet future Naval Surface Fire Support requirements. The elements of the near-term plan include:

* Improving the existing Mk 45 5-inch gun

* Developing a Global Positioning System/Inertial Navigation System guided projectile
* Demonstration of Army Tactical Missile System, Sea Standoff Land Attack Missile, and STANDARD Missiles in an NSFS role

Supporting the near-term Naval Surface Fire Support program, the Center for Naval Analyses (CNA) has been directed to complete a supplemental analysis to the Naval Surface Fire Support Cost and Operational Effectiveness Analysis to measure the effectiveness of improved 5-inch gun systems.

Identification of Key Issues:

Marine Corps Range "Requirement". The GAO draft report incorrectly alludes to a Marine Corps initial NSFS "requirement" of 75 nautical miles. The target sets within the original NSFS COEA are a robust set intended to be countered with a gun and missile mix, and no specific range requirement was set for gun support. The Objective/ Threshold ranges of 63.1 nm and 41.3 nm established by the Marine Corps for NSFS in November 1994, is the first explicit statement of the requirement, and is based on practical analysis of warfighting scenarios.

Long Term Plans for 155 mm Gun. Contrary to statements in the GAO draft report, the Navy has not canceled plans to develop and field a 155 mm gun. OSD and the Navy consider the 155 mm gun to be a very viable concept for inclusion on SC-21, and the NSFS mission in the COEA for SC-21 will certainly consider the 155 mm gun. Since the SC-21 ship construction start would be roughly FY03, the need for the 155 mm gun within a typical six-year ship construction schedule would be FY06 or later, which is supportable within constrained NSFS resources.

The Navy is currently revising the COEA to justify decisions already made. The Navy is not revising the COEA. The Navy has tasked the Center for Naval Analyses to conduct supplemental analysis to determine the best near-term NSFS improvements to meet the validated range requirement established by the Marine Corps in 1994. The original NSFS COEA's conclusion was that a 155mm/60-caliber naval gun employing precision guided munitions was the best long-term solution to the NSFS requirement, and recommended investment options for the long-term. Those long-term investment options have not been discarded nor disregarded. The current program plan focuses on eliminating a near-term capability gap by taking advantage of existing weapon systems to deliver an enhanced NSFS capability by FY01, and

outlines a systematic approach to achieving a long-term capability.

The Congress may wish to consider not authorizing/ appropriating $12 million in FY96 RDT&E funds until the Navy has validated NSFS requirements, and conducted a comprehensive COEA that includes all available alternatives. As noted in the National Defense Authorization Act for FY94, "the 1993 Institute for Defense Analysis study indicates that advanced projectiles compatible with the Navy's existing 5-inch/54 caliber guns and a ship-launched variant of ATACMS comprise the most cost-effective near-term solution, and that advanced projectiles play a major role in far term solutions, as well." The 1994 NSFS COEA does not take issue with the IDA study, and is consistent with its long-term recommendations. Sufficient analysis has been conducted for the Navy to proceed on its phased approach to the NSFS requirement, stated by the Marine Corps in November 1994, and approved by the CNO at the NSFS CNO Executive Board (CEB) in December 1994. Removal of FY96 funding would slow the achievement of both near and long-term objectives.

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