

April 1996

# COMBAT AIR POWER

## Funding Priority for Suppression of Enemy Air Defenses May Be Too Low







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

National Security and  
International Affairs Division

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April 10, 1996

The Honorable Strom Thurmond  
Chairman  
The Honorable Sam Nunn  
Ranking Minority Member  
Committee on Armed Services  
United States Senate

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

The Honorable C. W. Bill Young  
Chairman  
Subcommittee on National Security  
Committee on Appropriations  
House of Representatives

In March 1996, we issued a classified report on the Department of Defense's (DOD) requirements, capabilities, and plans for conducting airborne suppression of enemy air defenses (SEAD). This is an unclassified summary of that report. We conducted this review under our basic legislative responsibilities and are addressing this report to you because these issues fall principally within your Committees' purview.

Airborne SEAD has been a critical component of U.S. combat air power for many years. As part of a broad effort to assess the current and projected U.S. combat air power capabilities,<sup>1</sup> we sought to determine whether (1) SEAD is important in the current and anticipated national security environment and (2) SEAD capabilities will be adequate in terms of the anticipated threats. Appendix I contains our review's scope and methodology.

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## Results in Brief

DOD acknowledges that SEAD has been and will continue to be a critical component of DOD air operations for many years. However, DOD has

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<sup>1</sup>In addition to this review, we have reviewed five other key combat air power missions/functions, including (1) achieving and maintaining air superiority in areas of combat operations, (2) interdicting enemy forces before they can be used against friendly forces, (3) providing close fire support for ground forces by attacking hostile forces in close proximity to friendly forces, (4) refueling combat aircraft in the air to sustain combat operations, and (5) performing aerial surveillance and reconnaissance to obtain intelligence data for combat operations.

recently made a number of budget decisions that result in reduced SEAD capability. DOD is abandoning deployed SEAD capabilities that have significant military value and has dropped plans to improve SEAD capabilities to meet new threats. Despite the potential adverse impact on war-fighting capability, DOD has chosen to (1) retire the F-4G without a comparable replacement, (2) retire the EF-111 and use the less suitable EA-6B for Air Force missions, and (3) curtail funding for other SEAD programs. These decisions were made without an assessment of how the cumulative changes in SEAD capabilities would impact overall war-fighting capability.

These actions are not consistent with DOD requirements to have systems capable of defeating a large spectrum of threats. Furthermore, DOD now recognizes that the decline in SEAD capabilities may create a higher vulnerability for friendly aircraft as well as frustrate achieving U.S. military objectives and prolong future conflicts. Nevertheless, DOD has chosen to support less urgent and more prospective combat air power programs, such as the Air Force's F-22 aircraft. We are concerned that DOD's decisions, if implemented as currently planned, could reduce U.S. war-fighting capabilities and may have to be corrected later, possibly at much greater expense and effort.

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## Background

The SEAD mission is designed to increase U.S. forces' ability to accomplish campaign objectives by improving the forces' survivability. SEAD involves neutralizing, destroying, or temporarily degrading enemy air defense systems through either physical attack or electronic warfare. For physical attack (known as lethal SEAD), aircraft use various weapons, including missiles that home in on the radars used by the enemy's surface-to-air missiles and anti-aircraft artillery, to temporarily or permanently disable the defenses. For electronic warfare (known as nonlethal SEAD), specialized aircraft electronically jam enemy radars and communication systems associated with the defenses to reduce their effectiveness.

In practice, SEAD involves the synergistic use of (1) communication jamming by the Air Force's EC-130H Compass Call and the Navy and Marine Corps' EA-6B; (2) radar jamming by the Navy and Marines' EA-6B and the Air Force's EF-111; and (3) destruction with antiradiation missiles delivered by the Air Force's F-4G, certain F-16Cs, and the Navy and Marine Corps' EA-6B and F/A-18. Because it is considered impractical to physically attack all elements of the enemy's air defense system with conventional munitions, the goal of SEAD is to protect friendly aircraft by

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suppressing enemy surface-to-air missile and antiaircraft artillery sites en route to and in the target area.

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## SEAD Will Continue to Be Critical to Overall Air Combat Capability

Since the heavy U.S. losses to enemy air defenses experienced at the outset of the Vietnam War, DOD has recognized SEAD as a critical component of air operations. Now, when a crisis arises, SEAD assets are among the first called in and the last to leave.

Current war plans require DOD to be able to conduct and win two nearly simultaneous major regional conflicts. The most recent such conflict, Operation Desert Storm, required heavy use of the SEAD aircraft fleet. These aircraft were considered a key to the effectiveness of the air campaign. For example, strike aircraft were normally not permitted to conduct operations unless protected by SEAD aircraft. Also, according to the Air Force, no U.S. aircraft were lost to radar-controlled surface-to-air missiles during Operation Desert Storm when an F-4G accompanied the strike aircraft.

Because U.S. and other friendly aircraft will continue to be vulnerable to enemy air defenses, SEAD's role as a critical element of DOD's air combat capability is expected to continue. Even the advent of stealth aircraft will not obviate the need for SEAD support because the U.S. aircraft inventory will continue to be predominately nonstealth until at least 2005 and probably much longer. Moreover, even stealth aircraft require some SEAD support. Also, SEAD may be even more critical in future conflicts because the Defense Intelligence Agency has reported that potential enemy air defenses are expected to increase in sophistication.

In addition to their war-fighting roles, the limited number of SEAD aircraft and aircrews have also been used extensively in peacekeeping operations, such as in enforcing no-fly zones. For example, 13 of the 24 EF-111 operational aircraft were recently deployed to 3 crisis spots. To further highlight SEAD's importance, a U.S. F-16 was shot down over Bosnia when no SEAD aircraft were present.

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## Airborne SEAD Capabilities Are Being Reduced

Despite its own analyses that show SEAD capabilities need to be improved, DOD's funding decisions are instead having the effect of reducing those capabilities. Planned improvements to counter newer threats have been canceled, and the current force structure is being reduced.

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The Air Force's radar-jamming EF-111 was to have been upgraded to counter new threats but now will be retired. The Navy will dedicate some of its EA-6B aircraft to provide SEAD support for Air Force strike missions. However, the EA-6B is slower and has less range, which may require different tactics, more sorties, additional fighter protection, and more tanker support to provide equivalent capability. In addition, the EA-6B improvement program, which was intended to address newer threats, was canceled in 1993. Much less extensive upgrades are now under consideration by the Navy but are not yet funded.

Also, the Air Force will retire its most capable lethal SEAD aircraft—the F-4G—by the end of fiscal year 1996, although there is no major urgency to do so. Its replacement, the F-16 equipped with the High Speed Antiradiation Missile Targeting System, is recognized as much less capable than the F-4G and was originally intended only as an interim system until an equivalent capability to the F-4G could be developed and fielded. However, acquisition of a replacement for the F-4G has been canceled due to funding limitations.

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## Airborne SEAD Has Been Given Low Funding Priority

As DOD reduces its force structure in response to budgetary constraints, SEAD programs have been given low priority relative to other missions or functions. Despite its own analyses that show SEAD capabilities need to be improved, DOD has instead decided to place higher funding priority on other combat air power programs, such as the Air Force's F-22 aircraft. However, as we have previously reported, there is no urgent need to deploy the F-22 aircraft because current fighter aircraft can defeat the foreseeable air-to-air threat well into the next century.<sup>2</sup> Conversely, both current and known near-term SEAD threats are not being adequately addressed.

DOD's decisions on the SEAD force structure have been made based on budget constraints and with the assumed risk of not being able to adequately counter enemy threats that were to have been addressed in various SEAD improvement programs. Further, DOD has not assessed the cumulative impact on war-fighting capability resulting from the individual program decisions canceling improvements or replacement systems. Moreover, the preliminary results of DOD's recent study on electronic warfare requirements not only reaffirm the continuing need to improve

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<sup>2</sup>Tactical Aircraft: F-15 Replacement Is Premature as Currently Planned (GAO/NSIAD-94-118, Mar. 25, 1994).

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those capabilities but question the funding priorities given to address air-to-air versus surface-to-air threats.

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## Recommendations

The known contributions of current SEAD assets to mission effectiveness and survivability and the identified need to improve SEAD capabilities appear at odds with DOD's SEAD investment plans. Therefore, we recommend that the Secretary of Defense postpone the retirement of the F-4G and EF-111 until the funding priority of the airborne SEAD mission in relation to other elements of combat air power is reassessed. This reassessment should include extensive input from the service secretaries and the war-fighting commanders and be based on the specific threats expected in the two postulated major regional conflicts as well as likely peacetime operations.

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## Agency Comments and Our Evaluation

In commenting on a draft of this report, DOD did not concur with our recommendation, stating that such a reassessment of the SEAD mission area would be redundant to some recent DOD studies. Nevertheless, DOD added that a mission area assessment of future electronic warfare capabilities and needs is already underway and that it will take into account evolving military priorities and increased fiscal restraints. DOD stated that it is sensitive to the SEAD mission but, with declining budgets, it must weigh the SEAD war-fighting contribution with other war-fighting assets. That is precisely our intent in recommending that the funding priority of SEAD be reassessed relative to other elements of combat air power. Our concern—which DOD did not address in its comments—is that previous DOD studies and assessments did not evaluate the relative cost-effectiveness of SEAD to other elements of combat air power in meeting current and anticipated war-fighting and peacekeeping needs.

The full text of the DOD comments and our evaluation of them are set forth in appendix II.

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## Matters for Congressional Consideration

DOD's planned actions in the next few years will have a negative impact on SEAD capabilities and may need to be reversed in the future, at much greater expense and effort. In response to the recommendation in our draft report, DOD said that a reassessment of the SEAD mission would be redundant to recently completed and ongoing studies. However, DOD did not address our call to assess SEAD's war-fighting and peacetime value relative to other elements of combat air power. Therefore, we suggest that

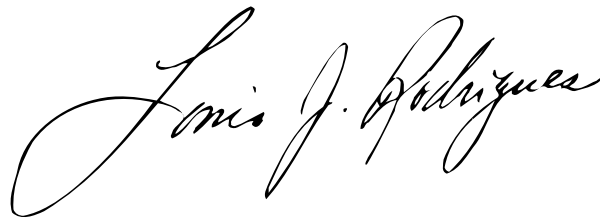
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the Congress consider requiring that DOD, prior to retiring the F-4G and EF-111, reassess the relative funding priority of SEAD and other elements of combat air power based on their war-fighting and peacetime contributions.

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We are also sending copies of this report to the Chairmen and Ranking Minority Members of the House Committee on Government Operations, Senate Committee on Governmental Affairs, and House and Senate Committees on Appropriations; the Secretaries of Defense, the Army, the Air Force, and the Navy; the Commandant of the Marine Corps; the Director of the Office of Management and Budget; and other interested parties.

Major contributors to this report are listed in appendix III. Please contact me on (202) 512-4841 if you or your staff have any questions concerning this report.

A handwritten signature in black ink that reads "Louis J. Rodrigues". The signature is written in a cursive style with a large, looping initial "L".

Louis J. Rodrigues  
Director, Defense Acquisition Issues



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## Abbreviations

DOD	Department of Defense
SEAD	suppression of enemy air defenses

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# Scope and Methodology

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In developing this report, we assessed the Department of Defense's (DOD) current and planned suppression of enemy air defenses (SEAD) requirements, capabilities, and programs and obtained and analyzed information on SEAD policies, strategies, and doctrine. We also obtained information on (1) the types and numbers of weapon systems—dedicated and nondedicated—for use in airborne SEAD, (2) their use and the types of targets they can engage, (3) their capabilities and limitations, and (4) their age and physical condition.

We evaluated service plans to upgrade existing and acquire new airborne SEAD capabilities. We analyzed information on the current threat projections for integrated air defense capabilities. We reviewed a variety of documents and held discussions with DOD officials on the roles and effectiveness of airborne SEAD assets in Operation Desert Storm and more recent deployments. Finally, we met with representatives of the war-fighting commanders to discuss how they assess the adequacy of existing airborne SEAD capabilities and the services' plans to upgrade those capabilities.

We performed our review from August 1994 to November 1995 in accordance with generally accepted government auditing standards.

# Comments From the Department of Defense

Note: GAO comments supplementing those in the report text appear at the end of this appendix.



ACQUISITION AND TECHNOLOGY

## OFFICE OF THE UNDER SECRETARY OF DEFENSE

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18 JAN 1996

Mr. Louis J. Rodrigues  
Director, Systems Development  
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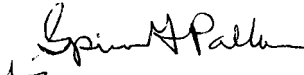
Dear Mr. Rodrigues:

Enclosed is the Department of Defense (DoD) response to the General Accounting Office (GAO) draft report, (U) "COMBAT AIR POWER: Funding for Suppression of Enemy Air Defenses Needs to be Reassessed," dated November 28, 1995 (GAO Code 707075), OSD Case 1056-X. The DoD partially concurs with the GAO report.

The DoD does not concur with the recommendation to perform a reassessment of the electronic warfare (EW) mission area. The Department has recently completed studies and assessments regarding the EW mission area and has initiated an EW Mission Area Assessment under the Joint Chiefs of Staff. A detailed response to the recommendation is enclosed. Technical comments were also provided to the GAO separately.

The Department appreciates the opportunity to comment on the draft report.

Sincerely,

*for* 

George R. Schneiter  
Director  
Strategic and Tactical Systems

Enclosure



See comment 1.

GAO DRAFT REPORT - DATED NOVEMBER 28, 1995  
(GAO CODE 707075) OSD CASE 1056-X

"COMBAT AIR POWER: FUNDING FOR SUPPRESSION OF ENEMY AIR  
DEFENSES NEEDS TO BE REASSESSED"

DEPARTMENT OF DEFENSE COMMENTS

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**RECOMMENDATIONS**

**RECOMMENDATION 1:** The GAO concluded that the known contributions of current suppression of enemy air defense (SEAD) assets to mission effectiveness and survivability and the identified need to improve SEAD capabilities appear at odds with the DoD SEAD investment plans. Therefore, the GAO recommended that the Secretary of Defense postpone the retirement of the F-4G and EF-111 until the funding priority of the airborne SEAD mission in relation to other elements of combat air power is reassessed. (p. 7, p. 44/GAO Draft Report)

**DOD RESPONSE:** Nonconcur. The November 10, 1993, Program Decision Memorandum directed a Joint Tactical Air Electronic Warfare Study (JTAEWS). The study considered the tactical EW needs into the twenty-first century including airborne jammers, aircraft self-protection systems, lethal and non-lethal SEAD, low observable technology, and other aspects of command and control warfare. In February 1995, the Deputy Secretary of Defense (DEPSECDEF) directed the Joint Chiefs of Staff (JCS) to study the retirement of the Air Force EF-111 and the transition of the non-lethal SEAD mission to the Navy EA-6B. In addition, the August 18, 1995, Program Decision Memorandum directed the Vice Chairman, JCS, to perform a Mission Area Assessment (MAA) of future EW capabilities and needs. It directed that the MAA should draw on the JTAEWS analysis, addressing both lethal and non-lethal SEAD, while evaluating the need, priority, and likely costs for any additional EA-6B warfighting capability improvements.

The Department has recently completed two studies addressing the EW mission area. The results of the DEPSECDEF-directed JCS study, which was approved by the Joint Requirements Oversight Council (JROC), concluded that the EA-6B could

Now on p. 5.

See comment 2.

**Appendix II**  
**Comments From the Department of Defense**

See comment 3.

See comment 4.

See comment 5.

See comment 6.

See comment 7.

Now on p. 5.

See comment 8.

perform the non-lethal mission for both the Air Force and the Navy. Some support shortcomings were recognized, and additional funding was identified for the Fiscal Year 1997 budget submission. The results of JTAEWS, although not endorsed by the JROC, are being used to support the JCS EW MAA where applicable. Both the EF-111/EA-6B transition study and JTAEWS had inputs from the Commanders in Chiefs (CINCs) of the Unified and Specified Commands and the Services in the formation of the SEAD mission requirements. The JCS EW MAA will take into account evolving military priorities and increased fiscal constraints that were not placed on JTAEWS. The results of the MAA should provide a more pragmatic basis for future EW decisions.

The F-4G will be retired in Fiscal Year 1996. The Air Force lethal SEAD mission will be performed by the F-16 Harm Targeting System (HTS). The DEPSECDEF-directed EF-111/EA-6B transition study concluded that twelve EF-111 aircraft should be retained in the active fleet into Fiscal Year 1999 to support the transition from the EF-111 to the EA-6B. The President's Fiscal Year 1997 budget submission will reflect those decisions.

The Department is sensitive to the SEAD mission, but with declining budgets, it must weigh the SEAD warfighting contribution with other war fighting assets. The concluded and ongoing studies and assessments are taking that broad approach. The assessment of the SEAD mission has been an ongoing process, and another assessment, as recommended, is not required, and in fact, would be redundant.

**RECOMMENDATION 2:** The GAO also recommended that the reassessment include extensive input from the Service Secretaries and the war fighting commanders and be based on the specific threats expected to be encountered in the two postulated major regional conflicts as well as likely peacetime operations. (p. 7, p. 44/GAO Draft Report)

**DOD RESPONSE:** Nonconcur. The Department does not support the requirement for a new EW assessment. The Department currently has the JCS EW MAA in process. The MAA participants include the Services and the offices of the Secretary of Defense. In addition, the inputs from the CINCs will be included in the MAA. The results of the MAA should be available in the May 1996 time frame to support future EW acquisition decisions.

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The following are GAO's comments on the Department of Defense's letter dated January 18, 1996.

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## GAO Comments

1. The studies DOD mentions, as well as previous electronic warfare and SEAD studies, are not responsive to our recommendation because they do not evaluate the relative cost-effectiveness of SEAD to other elements of combat air power in meeting current and anticipated war-fighting and peacetime needs.
2. In February 1995, the Deputy Secretary directed the Joint Chiefs of Staff to study how the EA-6B could be used to provide non-lethal SEAD support for Air Force missions. The decision to retire the EF-111 had already been made.
3. The EA-6B is slower and has less range than the EF-111, which may require different tactics, more sorties, additional fighter protection, and more tanker support to provide equivalent capability. In addition, given the additional costs to refurbish, upgrade, and deploy the additional EA-6Bs for Air Force missions, it is far from certain that the government will realize any net savings from retiring the EF-111 and canceling its improvement program.
4. Although the analytical aspects of the Joint Tactical Air Electronic Warfare Study were completed many months ago, its recommendations have not yet been endorsed or rejected by DOD. Until DOD takes an official position on the study, we believe that it is inconsistent to use its results for the electronic warfare mission area assessment.
5. Fiscal constraints appear to be prominently mentioned in regard to programs and functions like SEAD and much less so in regard to high visibility programs like the F-22.
6. We do not disagree with DOD's comment, but it and the DOD decisions it refers to seems to give little weight to the fact that the F-16 with HTS is much less capable than the F-4G and there is no major urgency to retire the F-4G.
7. Our review of DOD's studies indicate that they have not weighed electronic warfare and SEAD's contributions in war-fighting and peacetime operations with those of other combat air power capabilities. Our concern is that the criticality of the SEAD function in both war-fighting and



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peacekeeping operations is not expected to diminish despite DOD's decisions to give it lower priority. It may be much more difficult and costly to regenerate SEAD capabilities than it would be to retain and improve on current capabilities.

8. We are concerned that the war-fighting commanders' input may not have a timely and effective impact on those investment decisions that directly affect their war-fighting and peacekeeping capabilities. The reason for our concern is that the commanders were given an opportunity for input only after the decision was made to retire the EF-111 and use the EA-6B for Air Force missions.

# Major Contributors to This Report

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