



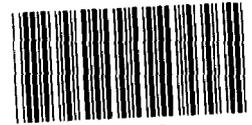
United States  
General Accounting Office

National Security and  
International Affairs Division

B-248882

September 1, 1993

The Honorable Christopher S. Bond  
United States Senate



149938

Dear Senator Bond:

In response to your request of August 27, 1993, we are providing you a comparison of the costs and capabilities of the F/A-18E/F and the F-14D Quickstrike. This information was originally included in a draft of our recently issued report on the justification for the F/A-18E/F program.<sup>1</sup>

Because of your concern about our handling of this issue, we think it is important to explain why the report excluded the comparison. We originally made the comparison of the two aircraft at the request of some members of the New York congressional delegation. The Navy said it had chosen the F/A-18E/F because the aircraft would be cheaper and more capable. In doing our review, we found that the Navy had not adequately justified the procurement of either aircraft. Our draft report highlighted that major issue and also contained the requested cost and capability comparison. Your office and the offices of the New York requesters received copies of that draft.

After receiving the draft report, the requesters indicated they were not interested in this larger issue and did not believe that our cost and capability analysis was comprehensive enough. Because of the significance of our overall finding on the lack of justification for the F/A-18E/F program, we issued our report to the Secretary of Defense. We did not consider it necessary to include the cost and capability comparison, as it was not pertinent to our position that the F/A-18E/F aircraft was not adequately justified.

---

<sup>1</sup>Naval Aviation: Consider All Alternatives Before Proceeding With the F/A-18E/F (GAO/NSIAD-93-144, Aug. 27, 1993).

GAO/NSIAD-93-287R, Naval Aviation

058081/149938

Because you have requested the data, we are providing it to you. It was never our intention to keep it from you, other interested parties in the Congress, or the public.

Even though we believe that the major issue is the Navy's inadequate justification for procuring either the F/A-18E/F or the F-14D Quickstrike, it is, in retrospect, clear that any misunderstanding could have been avoided had we included the cost comparison data in our report.

COST AND TECHNICAL COMPARISON  
FAVOR THE F/A-18E/F

Various Navy cost and technical comparisons made between April 1991 and May 1992 indicated that the F/A-18E/F would be technically superior and cheaper than the F-14D Quickstrike on a life-cycle basis. A May 1992 Navy life-cycle cost estimate indicates that a force of F-14D Quickstrikes sufficient to equip 11 active and 2 reserve air wings would cost \$79.3 billion<sup>2</sup> and that an equivalent force of F/A-18Es<sup>3</sup> would cost \$71.9 billion.<sup>4</sup> The \$7.4 billion difference is attributable to the higher operations and support costs of the F-14D Quickstrike.<sup>5</sup> The development and production costs of the F-14D Quickstrike, at \$47.5 billion, were about \$0.9 billion less than the cost of the F/A-18E.

We believe one aspect of the Navy's cost comparison unfairly favored the F/A-18E. The Navy assumed that additional aircraft of both types would have to be acquired to compensate for aircraft wearing out and lost due to accidents over the 20-year support period. However, because the Navy assumed different production rate buildups and different attrition rates for each aircraft, it

---

<sup>2</sup>All costs are expressed in fiscal year 1990 constant dollars.

<sup>3</sup>The Navy used only the F/A-18E in its comparisons since it does not intend to use the F/A-18F operationally. The Marine Corps intends to use both types operationally.

<sup>4</sup>Navy estimates place F/A-18E/F total program costs at \$85 billion based on producing 1,000 aircraft.

<sup>5</sup>Operations and support costs include personnel, fuel, maintenance, and spare parts.

concluded that it would need to buy 87 more F-14D Quickstrikes than F/A-18Es to cover normal replacements and attrition.

We do not believe that the Navy adequately supported these differences in attrition rates and normal replacements. However, when we adjusted the Navy's comparison to compensate for these differences, we found that the F-14D Quickstrike would still cost \$3.6 billion more than the F/A-18Es on a life-cycle cost basis.

The Navy's technical comparisons showed that in most respects the F-14D Quickstrike would not be as capable as the F/A-18E. For example, the F-14D Quickstrike could not employ laser-guided bombs and would not have all the cockpit displays that the F/A-18Es would have. These displays are intended to improve the aircrew's situational awareness by showing them where they are, what is going on around them, what the status of the various weapon systems are, and how much fuel remains.

With external fuel tanks, the F/A-18E had a slightly longer range on most missions<sup>6</sup>; was expected to be more reliable, easier to maintain, and less vulnerable to ground fire; and would require fewer support personnel.

AGENCY COMMENTS  
AND OUR EVALUATION

The Department of Defense (DOD) provided written comments on the draft of our August 27, 1993, report (see encl.). These comments encompassed both issues: the need for either aircraft and the comparative analysis. In response to our conclusion that the requirement for the F/A-18E/F was not threat based, DOD commented that expected threats after the year 2000 would require survivability improvements to fixed-wing aircraft. Current F/A-18s are approaching capacity margins in their ability to safely return to carriers and land without jettisoning some unused fuel and possibly expensive munitions.

---

<sup>6</sup>The comparison was based on the F/A-18E's having three external tanks with a capacity of 480 gallons each. The F-14D Quickstrike had two external tanks with a capacity of 280 gallons each.

B-248882

DOD questioned our calculation that the difference in life-cycle cost between the F-14D Quickstrike and the F/A-18E/F was only \$3.6 billion versus the Navy's estimate of \$7.4 billion. As we indicated, the Navy had assumed it would need to buy 87 more F-14D Quickstrikes than F/A-18E/Fs over the program's life cycle to compensate for higher F-14D Quickstrike attrition and normal replacements. We derived the \$3.6 billion by multiplying the Navy's estimated F-14D Quickstrike unit procurement cost of \$43.5 million by 87 and subtracting the result from the \$7.4 billion difference shown in the Navy estimate. We do not believe the Navy adequately supported its cost comparison in this instance.

- - - - -  
We are sending copies of this report to interested congressional members.

I may be reached at (202) 512-3504 if you or your staff have any questions concerning this letter.

Sincerely yours,

  
Richard Davis  
Director, National Security  
Analysis

Enclosure



ACQUISITION

## OFFICE OF THE UNDER SECRETARY OF DEFENSE

WASHINGTON, DC 20301-3000

20 MAY 1993

Mr. Frank Conahan  
Assistant Comptroller General  
National Security and International  
Affairs Division  
U.S. General Accounting Office  
Washington, D.C. #20548

Dear Mr. Conahan:

This is the Department of Defense (DoD) response to the General Accounting Office (GAO) draft report, "NAVAL AVIATION: Consider all Alternatives Before Proceeding with the F/A-18-E/F," dated March 26, 1993 (GAO Code 394476), OSD Case 9140-A. The DoD partially concurs with the report.

The GAO implies that the Department of Defense allowed the Navy to proceed with modifying the F/A-18 C/D to become the F/A-18 E/F without adequate justification. In the report, the GAO specifically pointed out that there was not a threat rationale to justify the F/A-18 E/F. In response to the Department of Defense Appropriations Act, 1993 (Public Law 102-396, Section 9141), the DoD issued the classified "Report to Congress on Fixed-Wing Tactical Aviation Modernization," in April 1993. The report includes intelligence data on projected threats in the post-year 2000 period which require improvements in the survivability of tactical fixed-wing aircraft. Those improvements were part of the Department of Defense consideration during the acquisition process for approving the modification of the F/A-18 C/D to the F/A-18 E/F configuration. Immediate requirements for the F/A-18 E/F focused on range, payload, and additional capacity for other weapon systems. The requirements for the F/A-18 E/F are formally documented in the Operations Requirement Document, which was validated by the Joint Requirements Oversight Council.

The GAO report confirmed that the F-14D Quickstrike would cost more and be less capable than an F/A-18 E/F. However, the DoD estimates that the savings in life cycle costs when comparing the two aircraft are greater than stated by the GAO.

The Secretary of Defense has informed the Congress that a "Bottom Up Review" is presently underway, which will determine the type and mix of fixed-wing tactical aircraft that will be required for future conflicts. The results of the review should be available by later this summer and will be reflected in the future budget process. Therefore, since an examination of our

fixed-wing tactical aircraft is underway, the DoD does not agree with the GAO suggestion that the Congress withhold funds on F/A-18 E/F. That action could require the Department of Defense to issue stop-work orders regarding on-going contracts if funds are not available.

The detailed DoD comments on the GAO findings, recommendations and matters for congressional consideration are provided in the enclosure. The DoD appreciates the opportunity to comment on the GAO draft report.

  
for  
Frank Kendall  
Director  
(Tactical Systems)

Enclosure

GAO DRAFT REPORT - DATED MARCH 26, 1993  
(GAO CODE 394476) OSD CASE 9140-A

"NAVAL AVIATION: CONSIDER ALL ALTERNATIVES  
BEFORE PROCEEDING WITH THE F/A-18 E/F"

DEPARTMENT OF DEFENSE COMMENTS

\* \* \* \* \*

FINDINGS

- **FINDING A: Development of the F/A-18 E/F.** The GAO reported that, according to the Navy, all three of its carrier-based fighter or attack aircraft--the F-14, the A-6E, and the F/A-18--will reach the end of their fatigue lives after the turn of the century and will need to be replaced. The GAO observed that (1) the F-14s are fighter aircraft used for air-to-air combat, (2) the A-6Es are used to attack surface targets, and (3) the F/A-18s are used for both air-to-air and surface attack missions. The GAO pointed out that, because of budget constraints, the Navy plans to reduce the number of carrier-based fighters and attack aircraft from three types to two.

The GAO observed that the Navy decided to develop the F/A-18 E/F, which is eventually to replace both the F/A-18 and the F-14--and to develop an entirely new aircraft (the AX) to replace the A-6E. The GAO explained that, although the F/A-18 C/Ds are still being produced, the F-14s and the A-6Es are not. The GAO reported that, compared to the F/A-18 C/D, the Navy expects the F/A-18 E/F will (1) have a 34-inch fuselage extension, with a 25-percent bigger wing, (2) have a larger tail, and a new engine with 35-percent more thrust, (3) carry 3,600 pounds more internal fuel than earlier versions of the F/A-18, and (4) be more survivable in combat. The GAO noted that, according to the Navy, it would not be practicable to modify the existing F/A-18s to the F/A-18 E/F configuration because of the extensive differences between the F/A-18 E/F and the prior F/A-18 models--and the extensive new tooling that will be needed to produce the F/A-18 E/Fs. The GAO reported that the F/A-18 E/F life-cycle cost estimate in 1990 baseline dollars is about \$85 billion.

The GAO reported that missions intended for the F/A-18 E/F include (1) the strike or surface attack missions and (2) the anti-air mission. The GAO explained that the anti-air mission protects the carrier task force from enemy aircraft and missiles. The GAO observed that the strike or surface attack mission is now being performed by Navy F/A-18s, the A-6s, and the TOMAHAWK cruise missiles launched by surface ships and submarines. The GAO concluded that the mission can

also be performed by several Air Force and Army aircraft and missiles--and that air superiority can also be performed by Navy F-14s, F/A-18s, and the AEGIS combat system.

The GAO reported that, on May 6, 1992, the Defense Acquisition Board considered the Navy request to initiate the F/A-18 E/F program. The GAO observed that, on May 12, 1992, the Under Secretary of Defense for Acquisition approved the Navy development plans. The GAO reported that the Navy awarded an undefinitized contract to McDonnell Douglas Corporation in July 1992--and, at the same time, awarded a similar contract to the General Electric Company to develop the engine. The GAO observed that the Navy FY 1992 budget request included \$351 million to begin development of the F/A-18 E/F. The GAO pointed out that, through FY 1993, the Congress appropriated about \$1.2 billion for the F/A-18 E/F program and, of that amount, \$510.7 million was obligated by December 3, 1992, and the contract was definitized on December 7, 1992. (pp. 3-6/GAO Draft Report)

**DOD RESPONSE:** Concur.

- **FINDING B: Anticipated Threat Is Not the Basis For the F/A-18 E/F.** The GAO reported that documentation presented to the Defense Acquisition Board indicated the primary reason for developing the F/A-18 E/F is to have available an aircraft that could carry more equipment than the present F/A-18. The GAO noted that the Navy also wants an aircraft with greater ability to survive in combat. The GAO reported that a March 24, 1992, memorandum from the Vice Chairman of the Joint Chiefs of Staff to the Under Secretary of Defense for Acquisition stated that the main consideration in the timing of the need for the F/A-18 E/F is neither an emerging threat nor a declining inventory of existing aircraft--but is, instead, the approaching limit in F/A-18 C/D growth potential. The GAO pointed out that, due to incorporation of incremental system upgradings over the years, the F/A-18 C/D will have used nearly all its excess volume, electrical capacity, and cooling capacity by FY 1996 and, therefore, in order to take advantage of further technology advances as they become available, the growth capacity embodied in the F/A-18 E/F will be needed. (pp. 6-7/GAO Draft Report)

**DOD RESPONSE:** Partially concur. The GAO is correct that the Navy has not justified the F/A-18 E/F as a response to a specific threat and has not identified specific additional equipment that will be incorporated in the future. The Navy has instead been more farsighted and recognized, based on past experience, that the threat will continue to evolve (to an unknown extent) and technology will continue to provide new and more effective equipment to counter current as well as future threats. The F/A-18 E/F, as the only fixed-wing

carrier-capable combat aircraft that this country will produce for the next 15 years, must be able to accommodate changes to respond to new threats as they appear and/or to take advantage of new technology as it becomes available. The F/A-18 E/F will provide that needed flexibility through the growth capacity being designed into the aircraft. The F/A-18 C/D, however, will not be able to accommodate additional improvements beyond the planned FY 1996 configuration.

Additionally, the GAO report does not address another important aspect of the requirement underpinning the F/A-18 E/F development. One of the prime reasons for the development of this aircraft is the reduced range, endurance, and specifically carrier return capability of the F/A-18 C/D. This reduced return capability has already become an operational, as well as a safety problem and will reach unsatisfactory levels as the aircraft matures further. Naval aviation began looking for alternatives that would allow the F/A-18 to recapture the carrier return and growth capability it had lost over the years. The introduction of newer technology, higher weight weapons exacerbate the problem. The high unit cost and low procurement amounts of these weapons will require that they be brought back aboard the carrier if not expended. This will not be possible with the present aircraft.

The F/A-18 E/F raises the return capability back to 9000 pounds (1000 pounds higher than the original F/A-18 A/B) and increases range radius from 341 to 520 nautical miles with two AIM-9 missiles, four MK-83 bombs, and three tanks in a high-low-low-high mission profile (a 52 percent range increase). That solves the carrier return deficiency and adds additional capacity for the heavier weapons that will be in inventory.

Since the F/A-18 E/F is planned for operational use after the year 2015, prudence dictated that sufficient growth capability be included. Added electrical capacity, volume, cooling air, and the addition of 15 kilowatts of liquid cooling give the F/A-18 E/F the ability to add improvements as additional threats arise.

Several other specific comments are provided:

-- On Page 1, Paragraph 2, Line 1, the GAO stated that "We believe the decision to develop the F/A-18 E/F was premature. The F/A-18 E/F was not justified to counter a particular military threat that could not be met with current capabilities." Numerous studies of potential improvements to the F/A-18, F-14, and A-6 were conducted prior to the May 1992 Defense Acquisition Board review, including the Major Aircraft Review, analyses by the Office of the Assistant Secretary of Defense (Program

Analysis and Evaluation), as well as Fighter Alternative, Cost Estimates, and Hornet 2000 studies. The studies validated the decision to develop the F/A-18 E/F. Additionally, the F/A-18 E/F is a modification to an established tactical aviation system -- the F/A-18 C/D.

-- The GAO statement does not reflect the reasoning behind the F/A-18 E/F. The Navy Cost and Operational Effectiveness Analysis demonstrates that the survivability improvements in aggregate make the F/A-18 E/F more survivable for strike missions and more capable in air-to-air engagements. The F/A-18 E/F provides the flexibility to incorporate future survivability improvements.

- **FINDING C: Alternatives Not Fully Considered.** The GAO reported that, before deciding to acquire the F/A-18 E/F, the Navy considered a variation of the F-14, called the F-14D QUICKSTRIKE, but it did not consider weapon systems other than Navy aircraft--i.e., such as Air Force bombers or missiles. The GAO observed that, in April 1991, prior to the Defense Acquisition Board review, Grumman Aircraft Company made an unsolicited offer to build the F-14D aircraft as a competitor to the F/A-18 E/F. The GAO asserted that the aircraft would have added ground attack capabilities to the F-14D--and that, between receipt of the Grumman proposal and approval for the F/A-18 E/F program in May 1992, the Navy made several cost and technical comparisons of the F/A-18E and F-14D QUICKSTRIKE.

The GAO asserted Defense acquisition principles require the Services to consider alternate ways of meeting the perceived mission needs that do not require developing a new weapon system--and, if no non-hardware solutions are available, consideration should be given to widely divergent types of hardware. The GAO concluded that the documentation submitted to the Defense Acquisition Board did not show that such alternatives were considered. The GAO speculated that, in addition to Navy aircraft, it might be possible to achieve the desired increases in mission capability with Navy or Air Force cruise missiles or Air Force aircraft such as bombers. The GAO further concluded there are no indications that hardware solutions other than aircraft were considered.

The GAO reported that documentation presented to the Defense Acquisition Board, in connection with obtaining approval to develop the F/A-18 E/F, indicated that the Navy considered the F-14D QUICKSTRIKE, plus various other new or modified aircraft for the role. The GAO concluded, however, that except for the F-14D QUICKSTRIKE, the Defense Acquisition Board deliberations appeared to be based on an individual's

knowledge and judgment or on information derived from prior analyses that were not completely or even minimally documented in the Defense Acquisition Board materials--rather than on studies performed specifically to compare the F/A-18 E/F with other alternatives.

The GAO indicated that the Office of the Assistant Secretary of Defense for Program Analysis and Evaluation reviewed the F/A-18 E/F justification prior to the Defense Acquisition Board review and noted that the analyses dealt mainly with aircraft specifications viewed very narrowly and that more broadly based analyses of cost and operational effectiveness were not available. The GAO also noted that a Cost and Operational Effectiveness Analysis was not prepared for the F/A-18 E/F program. The GAO pointed out that DoD Regulations normally require preparation of a Cost and Operational Effectiveness Analysis before a major weapons system is allowed to enter successive phases of the acquisition cycle in order to demonstrate that the weapons system to be developed is the most cost effective solution.

The GAO also indicated that a related DoD Inspector General Report (No. 92-097), F/A-18 E/F Program As a Part of the Audit of the Effectiveness of the Defense Acquisition Board Review Process-FY 1992, dated June 5, 1992, concluded the F/A-18 E/F would be so different from existing versions of the F/A-18 that it would be a new aircraft and the studies and analysis performed by the Navy were not an adequate substitute for a formal Cost and Operational Effectiveness Analysis and that without a formal analysis, alternatives to developing the F/A-18 E/F may not have been adequately assessed with regard to their relative cost and operational effectiveness. The GAO pointed out that the Office of the Secretary of Defense advised the Inspector General that (1) a formal Cost and Operational Effectiveness Analysis was not required, since the F/A-18 E/F was a modification of an existing aircraft rather than a new aircraft and a Cost and Operational Effectiveness Analysis is not necessarily required for modifications, and (2) the Navy had performed several studies and analyses that complied with other DoD documentary requirements.

The GAO also observed that in a December 28, 1992, letter, the Office of the DoD Inspector General stated that the November 19, 1992, Navy AX Cost and Operational Effectiveness Analysis, compared the F/A-18 E/F to the current F/A-18 configuration and to the proposed AX. The GAO noted that, according to the DoD Inspector General, this separate analysis responded to the earlier report and demonstrated that the F/A-18 E/F was cost and operationally effective against the current threat and sustained Naval superiority against more advanced future threats. The GAO further explained that the DoD Inspector General noted that recent

events significantly impacted the F/A-18 E/F program, including (1) congressional direction to build prototypes that will extend the engineering and manufacturing development schedule, (2) reductions in the number of deployable aircraft carrier battle groups resulting in a decreased airwing requirement, (3) Defense Planning Guidance mission changes, and (4) cancellation of the AirBorne Self-Protection Jammer that was to be installed on the aircraft. The GAO reported that the DoD Inspector General further concluded that those events made revision of the Cost and Operational Effectiveness Analysis essential before approving low rate and full rate production of the F/A-18 E/F. (pp. 7-11/GAO Draft Report)

**DOD RESPONSE:** Partially concur. The Navy conducted numerous studies prior to the May 1992 Defense Acquisition Board review, including Major Aircraft Review, assessment by the Office of the Assistant Secretary of Defense (Program Analysis and Evaluation), Fighter Alternative, Cost Estimates, and Hornet 2000 studies. The GAO report does not recognize that the Defense Acquisition Board directed the Navy to conduct a Cost and Operational Effectiveness Analysis prior to the definitization of the F/A-18 E/F contract. That Cost and Operational Effectiveness Analysis was completed in September 1992, formally submitted to the Office of the Secretary of Defense in November 1992, and fully reviewed by the DoD Inspector General. The DoD Inspector General found that it complied fully with the direction of the Defense Acquisition Board and satisfied the initial concerns of the DoD Inspector General.

Several other specific comments are provided:

- On Page 7, Paragraph 2, Line 1, the GAO stated that "...the Navy considered a variation of the F-14, called the F-14D QUICKSTRIKE...". The Navy analysis was confined to a cost and performance analysis of the aircraft configuration and performance capabilities as defined by Grumman in its F-14D QUICKSTRIKE Unsolicited Proposal.
- On Page 8, Paragraph 3, Line 5, the GAO stated that "Except for the F-14D QUICKSTRIKE, the Defense Acquisition Board deliberations appeared to be based on individuals' knowledge and judgment or on information derived from prior analyses that were not completely or only minimally documented in the Defense Acquisition Board materials, rather than on studies performed specifically to compare the F/A-18 E/F with other alternatives." In light of the previously cited studies conducted prior to the Defense Acquisition Board review, and the fact that the F/A-18 E/F was a modification to an existing aircraft, the Navy believed that a formal

Cost and Operational Effectiveness Analysis was not required. However, a Cost and Operational Effectiveness Analysis comparing the cost and effectiveness of the F/A-18 C/D to the F/A-18 E/F was completed and reviewed by the Office of Secretary of Defense and DoD Inspector General prior to the F/A-18 E/F contract definitization. The Office of Secretary of Defense concluded that "the Cost and Operational Effectiveness Analysis has been judged to verify the superior cost effectiveness of the F/A-18 E/F when compared to the F/A-18 C/D."

- On Page 10, Paragraph 3, Line 9, the GAO stated that "... he [the DoD Inspector General] noted that recent events significantly impacted the F/A-18 E/F program including Congressional direction to build prototypes that will extend the engineering and manufacturing development schedule, reductions in the number of deployable aircraft carrier battle groups resulting in decreased airwing requirements, Defense Planning Guidance mission changes, and cancellation of the Airborne Self-Protection Jammer that was to be installed on the aircraft. He concluded that these events made revision of the Cost and Operational Effectiveness Analysis essential before approving low rate and full rate production of the F/A-18 E/F." The DoD 5000 Series of Directives calls for updating the Cost and Operational Effectiveness Analysis at each Defense Acquisition Board milestone; therefore, the DoD Inspector General was emphasizing current policy. The specific items mentioned have been addressed. Changes in force structure may affect the final number and procurement schedule for the F/A-18 E/F, but not the need for the aircraft. The cancellation of the Airborne Self-Protection Jammer was addressed in the Cost and Operational Effectiveness Analysis. The F/A-18 C/D was more dependent on Airborne Self-Protection Jammer than the F/A-18 E/F, which incorporates other countermeasure systems and has room to incorporate future improvements. Additionally, the DoD is in the process of a "Bottom Up" review that will evaluate all tactical aircraft programs in the light of declining budgets and force structure. The review will be completed May-June 1993.

- **FINDING D: F-14D QUICKSTRIKE Would Cost More and Be Less Capable Than An F/A-18E.** The GAO reported several Navy comparisons made between April 1991 and May 1992 show that the F-14D QUICKSTRIKE would cost more on a life cycle basis than the F/A-18 and would, in most respects, be less capable. The GAO observed that a May 1992 Navy life-cycle cost comparison indicates that a force of F-14D QUICKSTRIKES sufficient to equip 11 active and 2 reserve air wings would

cost \$79.3 billion, while an equivalent force of F/A-18Es would cost \$71.9 billion. The GAO asserted that the \$7.4 billion cost difference is attributable to the higher operations and support cost of the F-14D QUICKSTRIKE. The GAO pointed out that, on the other hand, the development and production costs of the F-14D QUICKSTRIKE, at \$47.5 billion, were about \$0.9 billion less than the cost of the F/A-18E.

The GAO concluded, however, that one aspect of the Navy cost comparison unfairly favored the F/A-18E. The GAO reported that the comparison assumed that additional aircraft of both types would have to be acquired to compensate for aircraft wearing out and lost due to accidents over the 20-year support period. The GAO explained that, because different production rate buildups and different attrition rates were assumed for each aircraft, the comparison assumed 87 more F-14D QUICKSTRIKES than F/A-18Es would have to be bought to cover normal replacements and attrition. The GAO concluded, however, that the differences in attrition rates and normal replacements were not adequately supported. The GAO did point out that, when adjusted to compensate for the cited differences, the comparison shows the F-14D QUICKSTRIKE would still cost \$3.6 billion more than the F/A-18Es on a life-cycle cost basis.

The GAO concluded technical comparisons performed by the Navy showed that, in most respects the F-14D QUICKSTRIKE would not be as capable as the F/A-18E. The GAO cited the example where the F-14D QUICKSTRIKE studied by the Navy would not have the ability to employ laser guided bombs or have all the cockpit displays that the F/A-18Es would have. The GAO explained that such displays are intended to improve the situational awareness of the air crews, including knowing where they are, what is going on around them, weapons systems' status, how much fuel remains, etc. The GAO further explained that using external fuel tanks, the F/A-18E had a slightly longer range on most missions, was expected to be more reliable and easier to maintain, be less vulnerable to ground fire, and require fewer support personnel.  
(pp. 11-13/GAO Draft Report)

**DOD Response:** Partially concur. While most of the information is correct, the following discrepancy was identified.

-- On page 12, Paragraph 2, Line 1, the GAO stated that "We do not believe these differences in attrition rates and normal replacements were adequately supported. However, when adjusted to compensate for these differences, the comparison shows the F-14D QUICKSTRIKE would still cost \$3.6 billion more than the F/A-18Es on a life-cycle cost basis." The differences in attrition rates between the F/A-18 E/F and the F-14D QUICKSTRIKE are based on

actuals derived from an analysis of current fleet operations for the F/A-18 and F-14, respectively. Aircraft retirements/replacements are based on an analysis of the aircraft production rate established to meet three inventory requirements, aircraft fatigue life, and the effects of normal aircraft attrition. The force level analysis used was unbiased in order to produce a valid comparison. All factors considered, it resulted in a \$7.4 billion cost difference in life cycle costs, not the \$3.6 billion as reported by the GAO.

\* \* \* \* \*

### RECOMMENDATIONS

- **RECOMMENDATION 1:** The GAO recommended that the Secretary of Defense direct the Secretary of the Navy to revalidate the need for another strike/fighter aircraft by demonstrating that there is or will be a military threat that it cannot meet with present weapons systems and force structure (pp. 13-14/GAO Draft Report).

**DOD RESPONSE:** Partially concur. The DoD has already validated the decision to develop the F/A-18 E/F. The Operational Requirements Document has been approved and validated by the Joint Requirements Oversight Council. The timing of the F-18 E/F, as necessary to replace the F-14s beginning in FY 1997, has also been documented in the Navy budget submission since FY 1993. The need for the F/A-18 E/F to correct F-18 C/D deficiencies for range and carrier return capability is well documented. The Secretary of Defense has informed Congress that a "Bottom Up Review" is presently underway which will determine the type and mix of fixed-wing tactical aircraft that will be required for future conflicts.

- **RECOMMENDATION 2:** The GAO recommended that, in conducting the analysis (called for in Recommendation 1), the Navy consider whether changes could be made in military operations that would obviate the need for developing a new weapons system. The GAO indicated such changes could include modifications to military tactics or strategy--and the analyses should also consider whether another Military Service might be able to meet the threat with existing capabilities (pp. 13-14/GAO Draft Report).

**DOD RESPONSE:** Partially concur. As discussed in the DoD response to Recommendation 1, the DoD has already validated the decision to develop the F/A-18 E/F. Response to a specific future threat is not the sole basis for development of the F/A-18 E/F. The requirements were well documented and

were validated by the Joint Requirements Oversight Council prior to the Defense Acquisition Board review. The Joint Staff, rather than the Navy, is in a better position to evaluate how another Military Service might be able to counter the threat. This is an on-going process for the Joint Staff and will be re-addressed in the Secretary of Defense's "Bottom Up Review" of tactical aircraft to be completed by June 1993.

- **RECOMMENDATION 3:** The GAO recommended that, if the Navy finds that development of a new weapon system cannot be avoided, then it should demonstrate that a fixed-wing aircraft should be developed--rather than some other type of weapons system (e.g. missile system). (pp. 13-14/GAO Draft Report).

**DOD RESPONSE:** Partially concur. Again, the Joint Staff, rather than the Navy, is in a better position to evaluate roles and missions. The studies conducted were sufficient to support the decision to develop the F/A-18 E/F. While smart weapons and other technology fulfill a dimension of war, fighting capability, they cannot provide the presence, endurance, and discretionary power projection that an aircraft carrier and its embarked airwing provide for national security.

- **RECOMMENDATION 4:** The GAO recommended that the Navy conduct a thorough in-depth analysis of all reasonable alternative aircraft designs on a comparable basis before proceeding with a development program. (pp. 13-14/GAO Draft Report).

**DOD RESPONSE:** Nonconcur. The studies and Cost and Operational Effectiveness Analysis conducted by the Navy and referenced as appropriate by the DoD Inspector General prior to contract definitization were sufficient to support the decision to develop the F/A-18 E/F.

\* \* \* \* \*

#### MATTER FOR CONGRESSIONAL CONSIDERATION

- **SUGGESTION:** The GAO suggested that, in the interim, the Congress consider making the obligation of any additional appropriations to advance the development of the F/A-18 E/F contingent upon the Navy completion of the in-depth analysis that the GAO believes is necessary to determine whether the F/A-18 E/F is the best alternative to fulfill defense needs. (p. 14/GAO Draft Report)

**DOE RESPONSE:** Nonconcur. The DoD Inspector General has concluded that the F/A-18 E/F portion of the A/F-X Cost and Operational Effectiveness Analysis fulfilled this requirement and, the Secretary of Defense has informed Congress that a "Bottom Up Review" is presently underway which will determine the type and mix of fixed-wing tactical aircraft that will be required for future conflicts. That review is expected to be completed by June 1993 and the results will be reflected in the future budget process. The F/A-18 E/F aircraft is included in the review. Since an examination of fixed-wing tactical aircraft is underway, it would not be appropriate to withhold funds, which may create stop-work orders regarding on-going contracts.