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United States General Accounting Office

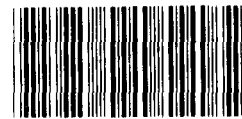
GAO

Briefing Report to Congressional Requesters

December 1987

PROCUREMENT

Analysis of Change Orders on Selected F-16 Airframe Contract



134646

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National Security and
International Affairs Division

B-219874

December 4, 1987

The Honorable William H. Gray III
Chairman, Committee on Budget
House of Representatives

The Honorable Barbara Boxer
House of Representatives

In response to your February 3, 1987, request and subsequent discussions with your representative, we reviewed changes to an F-16 airframe contract (F33657-78-C-0669). You were concerned about the frequency of changes, particularly, the use of unpriced changes. In addition to identifying the number and cost of changes made to the contract, we were asked to determine

- why the changes were made and who originally proposed them;
- whether the price of the change was negotiated before its issuance and, if not, whether the price was finalized within the Air Force's time limits;
- how much money was actually expended before the price of the change was finalized;
- whether the use of an unpriced change affected the government's ability to negotiate an advantageous price; and
- whether the initial justification for the change was realized.

SUMMARY OF CONTRACT CHANGES

On June 9, 1987, we briefed Congresswoman Boxer's Office on the results of our review. As agreed, we focused on the contract identified by Congresswoman Boxer's staff. More specifically, for this contract, we reviewed all contract changes in excess of \$2 million. In our briefing, we stated that:

- The contract price for the fiscal year 1980 buy, finalized in May 1980, totaled \$649.4 million. Before finalizing the price, the Air Force had provided long-

lead funding amounting to \$139 million through the basic contract for \$37.7 million signed in March 1979, and four change orders which provided additional long-lead funding. Subsequently, the Air Force added the fiscal year 1981 buy, which amounted to an additional \$778.5 million, to the contract. Thus, approximately \$1.4 billion of the final contract price of \$1.7 billion was related to the procurement of the fiscal years 1980 and 1981 approved quantities of F-16 airframes.

- The initial contract had 518 changes to it. Of the 80 changes that we examined in excess of \$2 million, most were proposed by the Air Force. We categorized the reasons for the changes into the various groups, such as engineering changes, contract price adjustments provided for in the basic contract, and purchase of support equipment and training equipment. The few proposed by the contractor related to economic price adjustment and support equipment acquisition provisions in the contract that required the contractor to initiate the action.
- The Air Force, in 172 cases, issued an unpriced change and negotiated the price later. In 238 cases, the Air Force issued a change with a negotiated price. The remaining changes did not affect the contract price. Air Force procedures in effect at the time of this contract required that the price be negotiated within 6 months of the unpriced order. Our review of the changes showed that the Air Force did not always comply with that procedure. Program officials said this was partially due to the lengthy contract change process, which in the case of the F-16 program often requires deliberations with other countries buying F-16s before beginning negotiations with the contractor.
- Most of the price negotiation memorandums for the changes we reviewed did not show the amount of cost expended before the prices of individual contract changes were finalized. Accordingly, we could not assess to what extent the unpriced change affected the government's ability to negotiate an advantageous price. Program officials said that since the time these prices were negotiated the procedures have changed. Current F-16 contract change procedures provide for showing, in the price negotiation memorandum, the amount of costs actually incurred for all change orders at the time of negotiation.

They said the contractor now maintains cost records for each change proposal to show the amount of actual cost incurred and that such data are available to the program office upon request.

- For two selected groups of engineering changes we reviewed, which are discussed in greater detail below, program officials were unable to demonstrate that tests were made to verify that the changes remedied the problems which were used to justify them. However, they cited the lack of further deficiency reports as evidence that certain changes had achieved their intended results.

REVIEW OF SELECTED ENGINEERING CHANGES

As agreed, we reviewed two major engineering changes--called Engineering Change Proposal (ECP) 0350 and Falcon Rally I--to determine if the initial justifications for the changes were realized.

The types of changes were very different. ECP 0350, initiated in 1979, was the first phase of a Multinational Staged Improvement Program and was intended to provide a future capability in F-16s to use several systems or subsystems that were in development at that time and expected to be available in 1984 or 1985. The Air Force intended to include wiring and other provisions in the aircraft while it was being produced to preclude costly retroactive modifications later. Falcon Rally I changes were retroactive modifications of aircraft, which had been delivered to the Air Force, to solve problems that had occurred in operation of the aircraft. Many of the changes were considered necessary to ensure safe operation of the aircraft and received high priority attention.

Review of ECP 0350

Our review of the initial justification and ultimate implementation of the ECP 0350 changes showed that the changes were incorporated in the aircraft as intended. The ECP 0350 negotiated price was \$46.9 million. In early 1987, however, only two¹ of the six systems for which the F-16s

¹The two operational systems were a radar altimeter and a fire control computer.

were modified were available for use. The other² systems are expected to be delivered to the operational forces between December 1988 and October 1990. Air Force officials believe it was less costly to incorporate the wiring and other provisions on F-16s as they were produced than it would have been to retroactively modify the aircraft as the other systems became available.

Review of Falcon Rally I changes

The Falcon Rally I program provided for deployment of contractor field teams to six operating bases to incorporate 27 engineering changes required for safe aircraft operation. It also included modification of several production aircraft at the contractor's plant that had been accepted by the Air Force. The total negotiated price of Falcon Rally I was \$9.2 million. The Commander, Aeronautical Systems Division, the Vice Commanders of the Tactical Air Command and Air Force Logistics Command, and an F-16 Multinational Configuration Control Board approved the Falcon Rally I program.

Falcon Rally I engineering changes included (1) installing a constant speed drive accumulator to prevent loss of oil pressure during certain aircraft maneuvers, (2) installing a secure voice system in the radio, and (3) modifying the battery failure monitoring circuit to prevent an indication of battery failure when the battery was fully functional. Other changes involved modifying wiring to correct problems, installing new or replacement systems to correct or improve capability, and reinforcing one of the rear fuselage bulkheads to prevent cracks. Of the 27 changes, 8 were classified as correction of deficiencies requiring that the contractor absorb the cost of the change with no increase in contract target cost or price.

Program officials were unable to show us that tests have been accomplished to verify that the changes remedied the problems. They said that modification kits that the contractor produced for installation in the aircraft were proof tested for 25 of the 27 changes. The proof tests

²The systems not yet operational were: Advanced Medium Range Air-to-Air Missile (AMRAAM), Low Altitude Navigation Targeting Infrared System for Night (LANTIRN), Sparrow missile for Air Defense versions of the F-16 aircraft, and the Global Positioning System.

verified that the parts and instructions were adequate for proper installation by the personnel who would be making the changes. The two kits not proof tested involved changes that were to protect certain electrical cables from damage.

Air Force officials told us that since the Falcon Rally I program was completed, there have been no further reports from operational or maintenance activities which indicated continuing problems with the components after modification. They believe the lack of further deficiency reports is evidence that the changes achieved their intended purpose.

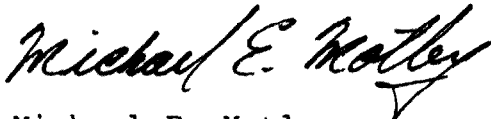
OBJECTIVES, SCOPE, AND METHODOLOGY

To address the objectives noted above, we obtained and reviewed changes to contract F33657-78-C-0669 at the Aeronautical Systems Division of Air Force Systems Command. We also contacted the Air Force Plant Representatives Office having contract administration responsibility and evaluated the changes they approved. We discussed contract change procedures for various types of contract changes with Air Force officials, reviewed pertinent regulations and evaluated the changes made and the applicable technical orders for incorporating the changes into F-16 aircraft. We discussed a draft of this report with Air Force officials but did not obtain official agency comments.

Our review was conducted in accordance with generally accepted government auditing standards.

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Unless you announce its contents earlier, we plan no further distribution of this report until 5 days from the date of the report. At that time, we will send copies to the Chairmen, House and Senate Committees on Appropriations and on Armed Services, House Committee on Government Operations, and Senate Committee on Governmental Affairs; the Secretaries of Defense and Air Force; the Director, Office of Management and Budget; and other interested parties.



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