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COMPTROLLER GENERAL OF THE UNITED STATES

WASHINGTON, D.C. 20548

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The Honorable Les Aspin
House of Representatives

Dear Mr. Aspin:

In response to your letter of March 21, 1973, and subsequent discussions with your office, we have examined certain contract costs for the E-2C aircraft program. Specifically, you asked that we determine (1) the reasons for cost increases as shown in the December 31, 1972, Selected Acquisition Report (SAR) for the E-2C development and production contracts, (2) whether Navy procedures for developing its estimate of the price at completion for the production contract were adequate, (3) why the Navy increased total program acquisition costs by \$28.8 million to pay a larger part of Grumman's overhead, and (4) whether this increase was used to absorb overhead costs incurred on the F-14 aircraft program. To explain some changes that will appear in subsequent SARs, we are also including information on several adjustments the E-2C project office made to the contractor's estimates submitted for inclusion in the December 31, 1972, SAR.

CONTRACT COST INCREASES

The December 1972 SAR for the E-2C aircraft showed that the contractor's estimates of price at completion for the production and development contracts were \$159 million more than the initial contract target prices. Of this amount, \$125.4 million was the estimated price of support items which were included in the initial production and development contracts as unpriced provisions. The remaining \$33.6 million was the estimated price of a number of engineering changes made to the system.

Production Contract

A fixed-price incentive production contract (N00019-71-C-0450) for manufacturing and testing 11 E-2C aircraft was awarded to Grumman Aerospace Corporation in September 1971. The contract had a negotiated target price of \$156.8 million,

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comprising a target cost of \$140 million and a target profit of \$16.8 million, with a ceiling price of \$180 million. Under the contract's incentive formula, the Government bears 75 percent of any increase in the final negotiated cost over target cost and benefits in the amount of 75 percent of any decrease in costs from the target.

The Navy reported in its December 1972 SAR that the contractor's estimated price at completion totaled \$263.1 million--an increase of \$106.3 million over the initial contract target price. Our review of this increase showed that \$96.4 million was the estimated price of support requirements and that \$9.9 million was the estimated price of engineering changes.

The contract originally required that support items be furnished but did not set prices for them. Navy officials said the prices for support items were not included in the initial contract price because the extent of support required could not be definitized at that time. They stated that, as the amount of required support becomes known, the contract is modified to include target and ceiling prices for support items.

The estimated prices of support items required under the contract were as follows.

<u>Item</u>	<u>Amount</u> <u>(millions)</u>
Peculiar ground support equipment	\$37.9
Spares and repair parts	27.8
Tactics trainer	13.2
Naval air maintenance trainer	8.6
Technical manuals	6.6
Training/parts	1.9
Provisioning data	<u>.4</u>
Total	<u>\$96.4</u>

We found that, of the estimated \$9.9 million for engineering changes, \$6.3 million was for engineering changes in the Advance Radar Processing System. This system is being developed to provide the E-2C with improved radar capabilities. Navy officials informed us that this system will be tested and evaluated before any decision is made on further procurement.

The remaining \$3.6 million consisted of (1) \$1.4 million for a change in the ultrahigh frequency communications system based upon a Chief of Naval Operations requirement that the E-2C aircraft have added capabilities not originally planned, (2) \$1.1 million for developing technical data and data inputs for the Navy Engineering Data Management Information Control System which will support maintenance operations of the aircraft, and (3) \$1.1 million for other minor engineering changes.

The engineering changes have been authorized but, for the most part, have not been negotiated or included in the contract target or ceiling prices. As they are negotiated, the contract will be modified to include prices for each change.

Development Contract

A fixed-price incentive development contract (N00019-68-C-0542) was awarded to Grumman in September 1970. The contract provided for the design, development, test, and evaluation of the E-2C weapon system and modification of two Government-furnished E-2A aircraft to an E-2C configuration. An initial target price of \$157.2 million, comprising a target cost of \$141 million and a target profit of \$16.2 million, with a ceiling price of \$165.2 million was negotiated for this contract. An 80-percent/20-percent cost-sharing ratio is set forth in this contract to adjust the final prices if the final negotiated cost is higher or lower than the target cost. According to a project official, the work required under this contract is about 90 percent complete.

According to the Navy's December 1972 SAR, the contractor's estimated price at completion totaled \$209.9 million--an increase of \$52.7 million over the initial contract target price. Our review of this increase showed that \$29 million was the estimated price of support requirements and that \$23.7 million was the estimated price of engineering changes.

Prices for support items were not set out in the original contract because these requirements could not be definitized at that time. The estimated prices of support items are shown below.

<u>Item</u>	<u>Amount (millions)</u>
Peculiar ground support equipment	\$25.9
Supplementary test equipment	1.0
Spares and repair parts	0.8
Repair of Government-furnished equipment	0.8
Naval Air maintenance trainer	0.3
Tactics and weapon system trainer	<u>0.2</u>
Total	<u>\$29.0</u>

The \$23.7 million estimated price of engineering included \$7 million as the contractor's estimate of the Government's share of the 80-percent/20-percent cost-sharing ratio for increases over the estimated target cost of engineering changes. The remaining \$16.7 million consisted of (1) \$12.4 million for a change from Government to contractor-furnished equipment--specifically computer programs for the Tactical Data System and a high-frequency communication system, (2) \$3.6 million for changing the capability in the ultra-high frequency communication system to meet a new Navy operational requirement, and (3) \$0.7 million for other minor engineering changes.

The development contract will be modified to include target and ceiling prices for the support items and engineering changes when they are definitized and renegotiated.

NAVY PROCEDURES USED IN DEVELOPING ESTIMATES FOR THE PRODUCTION CONTRACT

The Navy's estimated price at completion for the production contract as reported in the December 1972 SAR was \$262.7 million. This estimate includes the following cost elements.

	Amount (millions)
Basic contract target price	\$156.8
Undefinitized engineering changes	10.7
Support items	<u>95.2</u>
Total	<u>\$262.7</u>

The basic contract has a negotiated target price of \$156.8 million. The amount for undefinitized engineering changes was computed on the basis of contractor-furnished estimated prices which were adjusted by Navy cost analysts. According to these officials, the adjustments were based on their experience with work of this type. Our review of the \$10.7 million showed this figure to be basically a target amount. When the final target price for engineering changes has been negotiated, the amount may change.

The individual estimates for \$95.2 million in support requirements were provided to the project office by the Navy functional groups responsible for each of the items. For example, the Ground Support Equipment Division, Naval Air Systems Command, estimated the price of peculiar ground su

equipment to be \$38.6 million. Similarly, the Logistics Management Division, Naval Air Systems Command, prepared an estimate of \$22.4 million for the tactics trainer, Naval air maintenance trainer, and associated parts. These two estimates accounted for over 64 percent of the total estimated price of support items.

We discussed estimating procedures with these functional groups and found that each group used basically the same procedures. These officials informed us that the estimates were prepared on the basis of contractor pricing estimates for such items and the experience gained under other aircraft programs. For example, an official of the Ground Support Equipment Division informed us that its estimate was based on contractor-submitted support requirements and equipment lists for the various organizational levels of Navy maintenance and estimates for the price of this equipment. The Division then reviewed the lists of equipment for reasonableness and compared them with current Navy inventory lists to determine if any existing equipment could be used. On the basis of this information and the experience gained under the E-2A/B program, the Division computed its estimate for the required support.

The manner in which these estimates were prepared appears reasonable, but the amounts could change as support prices are negotiated.

OVERHEAD COSTS

In preparing our March 1972 staff study, we analyzed the reasons for the increased costs shown on the first SAR (June 30, 1971), which showed that the total program acquisition cost was increased \$56.6 million due to economic growth. The SAR listed inflation and a reduced business base as the reasons for the increase. The SAR also stated that the labor and overhead rates used in preparing estimates of increased costs were the rates approved by the Defense Contract Audit Agency (DCAA) for calendar year 1970.

At the time we analyzed the reasons for the increase, we felt that \$10.6 million should have been more properly reported as estimating changes and engineering changes. Navy officials informed us that \$17.2 million of the increase was the result of inflation, and we considered the remaining \$28.8 million as an increase in allocation of overhead costs resulting from Grumman's reduced business base.

Grumman officials informed us that from February 1969, when the F-14 contract was awarded, to early 1971 its business

base decreased for several reasons not related strictly to problems on the F-14 program. These reasons included:

- Schedule slippages and reductions in the F-14 and other aircraft programs.
- Termination of some effort on the Apollo Applications Program and a curtailed Lunar Module Program.
- Loss of anticipated Space Station, Lunar Rover Vehicle, and F-15 aircraft subcontracts.

The reduction in Grumman's business base to which overhead could be distributed caused more overhead costs to be distributed to its remaining programs than initially anticipated. When Grumman increased its estimated distribution of overhead costs to the E-2C program, it also estimated that its distribution of overhead costs to the F-14 program would increase about \$300 million over its estimate at the time of contract award. This is the only relationship between E-2C program overhead increases and the F-14 program.

The DCAA resident staff at Grumman evaluates the contractor's overhead expenses to determine (1) the reasonableness of and the necessity for expenditures and (2) the reasonableness of the method used to allocate expenses to Government work. The DCAA report for calendar year 1970 showed that no exceptions were taken by DCAA to Grumman's contract allocation bases or methods of distribution to Government programs. The 1971 report had not been completed, but discussions with DCAA and review of its 1971 audit work indicated DCAA had evaluated the contractor's policies relating to its overhead structure and allocation bases and found them acceptable. In our opinion, DCAA had adequately determined that overhead costs have been properly allocated to Grumman's Government programs.

NAVY ADJUSTMENTS TO CONTRACTOR-
SUBMITTED ESTIMATES

In reviewing the two contracts, we found that the project office had made several adjustments in arriving at the contractor's estimates of price at completion as reported in the December 1972 SAR. The table below shows the estimates as submitted by the contractor and as reported by the Navy.

	<u>Production contract</u>	<u>Development contract</u>
	(millions)	
Contractor-submitted estimates	\$272.3	\$223.9
Navy reported estimates--12-31-72 SAR (See pp. 2 and 3.)	<u>263.1</u>	<u>209.9</u>
Net reductions	<u>\$ 9.2</u>	<u>\$ 14.0</u>

The \$9.2 million reduction to the production contract estimate was composed of a \$15.5 million decrease in two support items and a \$6.3 million increase for the Advance Radar Processing System. The \$14 million deduction from the development contract estimate consisted of \$13.3 million for three support items and \$0.7 million for aircraft improvements needed as a result of the Navy Preliminary Evaluation tests.

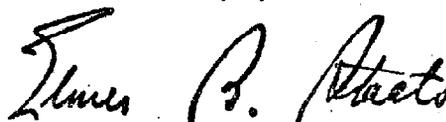
Project officials were unable to explain why Grumman's pricing estimates were adjusted. SAR instructions do not provide for such adjustments. These officials analyzed the adjustments and said that they should not have been made and that they will be corrected in the March 31, 1973, SAR which will be issued shortly.

Of more concern to us was whether the \$23.2 million in adjustments to the contract estimates were also deducted from the program's total acquisition cost, which would result in an understated total program cost. Our review showed that \$5.1 million had been excluded. The amount excluded, which is applicable to the development contract, was funded in fiscal year 1970.

We discussed this matter with project officials and were informed that there was an apparent oversight when the first SAR was prepared; as a result, the \$5.1 million was omitted from all subsequent SARs. These officials said the amount would be reported in the June 30, 1973, SAR.

We do not plan to distribute this report further unless you agree or publicly announce its contents.

Sincerely yours,



Comptroller General
of the United States