



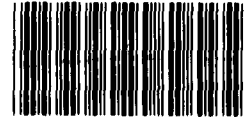
UNITED STATES GENERAL ACCOUNTING OFFICE  
WASHINGTON, D.C. 20548

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MISSION ANALYSIS AND  
SYSTEMS ACQUISITION DIVISION

MARCH 5, 1981

B-202293



114504

The Honorable Drew L. Lewis  
The Secretary of Transportation

Subject: Contract Overpriced and Established Pricing  
Regulations and Procedures Not Followed  
(MASAD-81-16)

Dear Mr. Secretary:

In reviewing the pricing of firm-fixed-price contract DOT-FA77WA-4047, we found that the contract was overpriced by about \$322,000 because of inaccurate and noncurrent data and questionable judgment used to price the contract. (See enc. I.)

This contract was awarded to the Raytheon Company, Equipment Division, Sudbury, Massachusetts, by the Federal Aviation Administration (FAA). The contract provides for the purchase of 70 plan view displays, 92 mechanical installation kits, 66 display control and vector generators, and revisions to test procedures and miscellaneous documentation. The total negotiated price of the contract was \$5,536,375. We selected this contract as part of a nationwide review of the pricing of negotiated noncompetitive contracts awarded by civil agencies. Our objective was to determine whether Federal Procurement Regulations were followed in negotiating the contract price and whether the contract price negotiated was reasonable in relation to cost or pricing data available to the contractor at the time of contract negotiation. For noncompetitive contracts, the Federal Procurement Regulations generally require (1) certified cost or pricing data to support the proposed contract price and (2) a contract price reduction clause which allows the contracting officer to reduce the contract price by any increase caused by noncurrent, incomplete, or inaccurate certified cost or pricing data.

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Our review was performed at the contractor's facility, where we reviewed documents used to support the contract price and discussed them with contractor personnel where warranted to provide and explain supporting documents. We also reviewed work done by Defense Contract Audit Agency staff at the contractor's location, and held discussions with FAA officials to determine the Government's use of the data provided in pricing the contract.

#### RECOMMENDATIONS

We recommend that you emphasize to contracting officials the importance of established regulations in (1) obtaining, reviewing, and using cost or pricing data in negotiating non-competitive contract prices and (2) documenting contract negotiations files. We also recommend that you require the contracting officer to consider the information presented in this report along with any other pertinent information and determine if the Government is entitled to a contract price reduction.

#### FAA AND RAYTHEON COMMENTS

FAA and Raytheon comments were considered in preparing this letter. Raytheon, generally, disagreed that the contract price is overstated. Raytheon contends that adequate supporting data was provided to the contracting officer. However, Raytheon failed to provide any additional support for its position. FAA agreed to (1) make a determination of whether the Government is entitled to a price adjustment and take appropriate action and (2) reemphasize to contracting officials the need to observe established regulations by obtaining, evaluating, and using cost or pricing data and documenting contract files.

As you know, section 236 of the Legislative Reorganization Act of 1970 requires the head of a Federal agency to submit a written statement on actions taken on our recommendations to the House Committee on Government Operations and the Senate Committee on Governmental Affairs not later than 60 days after the date of the report and to the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report.

Copies of this letter are being sent to the President, Raytheon Company; the Director, Office of Management and Budget; the Administrator of FAA; and the Director, Defense

B-202293

Contract Audit Agency. We are also sending copies to the chairmen of the House and Senate Committees on Appropriations, the House Committee on Government Operations, and the Senate Committee on Governmental Affairs.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "W. H. Sheley, Jr.", written in dark ink.

W. H. Sheley, Jr.  
Director

Enclosures - 4

REVIEW OF PRICING OF CONTRACTDOT-FA77WA-4047 WITH THE RAYTHEON COMPANYBACKGROUND

The Federal Procurement Regulations require, with some exceptions, that contractors submit or identify cost or pricing data used to support proposed prices for negotiated noncompetitive contracts over \$100,000 and certify that the data is current, complete, and accurate. Contract prices, including profits, may be adjusted to exclude any significant increases attributable to noncurrent, incomplete, or inaccurate cost or pricing data. After negotiations, the Federal Procurement Regulations require that a memorandum be prepared setting forth the principal elements of the price negotiation. The memorandum should explain why no cost or pricing data was obtained and why obtained data was not relied on or used in negotiating the price.

On June 13, 1977, the Federal Aviation Administration (FAA) verbally requested the Raytheon Company, Equipment Division, Sudbury, Massachusetts, to prepare a proposal for 88 plan view displays, 1/ 88 mechanical installation kits, 66 display control and vector generators, 23 modification kits, and revisions to test procedures and miscellaneous documentation. Raytheon submitted its proposal on July 7, 1977.

Raytheon and FAA negotiated the contract between August 23 and 26, 1977. The FAA contracting officer signed the contract, DOT-FA77WA-4047, on September 30, 1977. The firm fixed price provides for the production of 70 plan view displays (reduced because of limited funding); 92 mechanical installation kits; 66 display control and vector generators; and revisions to test procedures and miscellaneous documentation.

The total negotiated price of the contract was \$5,536,375 of which we reviewed \$5,365,594, the price for the displays, installation kits, and vector generators. According to Raytheon records, the contract price of \$5,365,594 included a profit of \$452,744 or about 9.216 percent.

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1/Plan view displays are used to control air traffic and provide the controllers with data on all aircraft in their sectors of control.

SUMMARY OF FINDINGS

In our opinion, the contract was overpriced by about \$322,000. The contract price was increased during negotiations by 9.45 percent to compensate Raytheon for a decrease in the number of displays to be purchased. A 3.54-percent increase would have been more appropriate. This resulted in overpricing of about \$250,000. The contract was overpriced by an additional \$72,000 due to the use of noncurrent prices and quotes, the inclusion of duplicate parts in the proposal, and questionable judgment in selecting a power supply vendor.

OVERPRICING BECAUSE OF UNREASONABLE  
FACTOR USED

The contract price was overstated by about \$250,000 because a 9.45-percent factor was used rather than a 3.54-percent factor to compensate Raytheon for a decrease in the number of plan view displays to be purchased.

Initially, at FAA's request, Raytheon proposed producing 88 plan view displays at a total price of \$6,045,685 or about \$68,701 per unit, plus nonrecurring costs of \$179,302. Subsequent negotiations between the parties reduced this price to \$5,366,680 or about \$60,985 per unit, plus nonrecurring costs of \$159,280. FAA then indicated it wished to purchase 92 displays which Raytheon agreed to supply at the same unit price of \$60,985.

Because FAA was unable to fund the total procurement, FAA subsequently reduced the quantity to 70, and, to compensate Raytheon, agreed to increase the unit price of each display by 9.45 percent. The following is a computation of the negotiated price for the 70 displays.

Negotiated price for 88 displays	\$5,525,960	
Less nonrecurring cost	<u>-159,280</u>	
	5,366,680	
Unit price for 88 displays	<u>÷88</u>	\$ 60,985
Increase due to reduction to 70 units (at 9.45 percent)		<u>x1.0945</u>
Revised unit price (rounded to nearest \$10)		66,750
Times 70 units		<u>x70</u>
		4,672,500
Recurring price for 70 displays		<u>+159,280</u>
Add nonrecurring costs		
		<u>\$4,831,780</u>

Use of the 9.45-percent factor resulted in a unit price increase of about \$5,765 or \$403,550 for the 70 displays.

Neither FAA nor Raytheon was able to provide documentation in support of the 9.45-percent factor. Further, the FAA memorandum of negotiations makes no mention of how it was developed. An FAA official said it was based on his experience and included consideration of a learning curve and allowances for increased material and labor costs. He also said that he had proposed an 8-percent adjustment which Raytheon refused to accept. In contrast, the chief Raytheon negotiator said he did not know the basis for the factor but merely accepted it when it was offered.

We are concerned that FAA did not deem it necessary to document the negotiation of the 9.45-percent price increase. Moreover, we learned that Raytheon in developing proposals uses a 90-percent learning curve. As shown below, use of this curve to compute the compensation for the reduced quantity of displays would have resulted in a contract price approximately \$250,000 less than ultimately negotiated.

Applying the 90-percent learning curve to a change in quantity situation to determine the resultant cost increase or decrease involved dividing the logarithm of the new quantity by that of the original. Accordingly, in this case, the reduced procurement results in a 3.54-percent cost increase.

$$\frac{\text{New quantity}}{\text{Old quantity}} = \frac{70 \text{ units}}{88 \text{ units}} = \frac{.52425}{.50633} = 1.0354$$

The use of a 3.54-percent factor would have resulted in a contract price of \$4,579,360 or \$252,420 less than negotiated. Following is the computation of the \$4,579,360.

Unit price for 88 displays	\$ 60,985
Multiplication by 1.0354	<u>x1.0354</u>
Revised unit price	63,144
Times 70 units	<u>x70</u>
Recurring price for 70 units	4,420,080
Add nonrecurring cost	<u>+159,280</u>
Price for 70 displays	<u>\$4,579,360</u>

A Raytheon official said the 90-percent learning curve is applicable only to a small portion of the proposed labor costs; however, a Defense Contract Audit Agency official disputed this, saying that Raytheon usually applies learning curves to all costs. We believe its use in this negotiation would have resulted in a more equitable price. While we acknowledge FAA's lack of success in negotiating a lower factor, we believe that FAA would have been more successful in negotiating a lower factor if cost or pricing data had been requested from Raytheon to support the factor rather than engaging in "give and take" negotiations.

CONTRACT OVERPRICING DUE TO NONCURRENT  
PRICES AND DUPLICATE PARTS

Raytheon's proposed material costs were inflated by approximately \$23,000. The material consisted of parts which had been purchased or for which quotations were received at lower than those proposed. Also, the pricing of some parts were included twice, as individual parts and as components of assemblies. The prices of 24 parts were overstated by about \$9,300. Each of these parts had been purchased before contract negotiations at a lower price. The prices of three additional parts were inflated by about \$1,400. In the latter instances, vendors had offered to supply the items at prices below those proposed. Also, we noted that Raytheon inadvertently priced 22 parts worth about \$12,200 both individually and as components of higher assemblies. Enclosure II lists each of the foregoing items and shows the extent to which each resulted in overpricing.

Because of the approximately \$23,000 in overpriced material, material overhead, general and administrative expenses, and profit were overstated by about \$9,100 as shown below.

Material overhead	\$3,220.13
General & administrative expenses	3,196.35
Profit	<u>2,711.11</u>
Total	<u>\$9,127.59</u>

Enclosure III shows the detailed calculation of what we consider to be the total material overpricing--about \$32,000 applicable to this contract.

Raytheon officials said that the limited time allowed to prepare its proposal resulted in the overpricing. FAA officials said that adequate time was available because identical items had been purchased by Raytheon and at least 5 weeks had elapsed between the proposal submission and the start of negotiations. During this time, revisions could have been made to the proposal.

CONTRACT OVERPRICING DUE  
TO QUESTIONABLE JUDGMENT

During our review, we also noted an instance where questionable judgment may have resulted in overpricing of about \$40,000. (See enc. IV.) In this case, Raytheon proposed to provide 70 power supply units for \$152,880--\$2,184 each--notwithstanding the availability of a lower vendor quotation of \$1,775 each or \$124,250 for the total quantity being purchased. Raytheon officials said they used the \$2,184 quote because that vendor's specifications were closest to those of the vendor who had formerly supplied the item. They also discussed the other quotes with FAA, but did not inform the agency about the lower prices. An FAA official likewise said the matter was discussed during negotiation. Neither FAA nor Raytheon could, however, provide any documentation to indicate they had in fact discussed this particular situation and that use of the higher quotation in the proposal was justified.

In responding to our draft report, according to an FAA official, at the time of negotiations, FAA was aware that Raytheon had found a cheaper power supply unit. He also said that neither Raytheon nor FAA had any assurance that this cheaper unit could meet the agency's requirements since it had not been tested and certified. He further said that FAA accepted Raytheon's proposed price because FAA's technical officer considered it to be reasonable. The official, however, provided no documentary support for his statements.

We believe FAA's acceptance of the higher price was questionable since Raytheon had decided on September 20, 1977, before signing the contract with FAA, to buy the cheaper unit to satisfy a contract based on the lowest competitive price. Also, the vendor, with the cheaper unit, agreed to retain that price for the subsequent purchase for FAA. Raytheon ultimately purchased and used the cheaper power supply units to satisfy the FAA contract requirements.



PARTS CONSIDERED TO BE OVERPRICEDParts Which Were Purchased Before Negotiations  
at Less Than the Proposed Prices

<u>Part number</u>	<u>Description</u>	<u>Proposed unit price</u>	<u>Previously purchased unit price</u>	<u>Difference in unit prices</u>	<u>Quantity</u>	<u>Amount over- priced</u>
JAN1N3891	Diode	\$ 4.62	\$ 2.25	\$2.37	280	\$ 663.60
JAN2N3251A	Transistor	1.30	.20	1.10	910	1,001.00
JAN2N3739	Semiconductor	3.75	3.04	.71	280	198.80
MS3124E-24-61P	Connector	21.03	17.10	3.93	70	275.10
428677-6	Jack tips	.61	.403	.207	2,030	420.21
453351-1	Digital module	15.00	10.50	4.50	70	315.00
453351-10	do.	15.00	10.50	4.50	70	315.00
453351-11	do.	15.00	10.50	4.50	70	315.00
453351-12	do.	15.00	10.50	4.50	70	315.00
453351-13	do.	15.00	10.50	4.50	70	315.00
453351-14	do.	15.00	10.50	4.50	70	315.00
453351-2	do.	15.00	10.50	4.50	70	315.00
453351-3	do.	15.00	10.50	4.50	70	315.00
453351-4	do.	15.00	10.50	4.50	70	315.00
453351-5	do.	15.00	10.50	4.50	70	315.00
453351-6	do.	15.00	10.50	4.50	70	315.00
453351-7	do.	15.00	10.50	4.50	70	315.00
453351-8	do.	15.00	10.50	4.50	70	315.00
453351-9	do.	15.00	10.50	4.50	70	315.00
463106-3	Integrated cir.	2.84	.27	2.57	70	179.90
463110-1	do.	1.26	.89	.37	198	73.26
463882-1	do.	8.13	2.20	5.93	140	830.20
463882-3	do.	8.13	.35	7.78	132	1,026.96
463883-3	do.	.91	.24	.67	374	250.58
Total						<u>\$9,329.61</u>

Parts Which Were Quoted Before Negotiations  
for Less Than the Proposed Prices

<u>Part Number</u>	<u>Description</u>	<u>Proposed unit price</u>	<u>Quoted unit price</u>	<u>Difference in unit prices</u>	<u>Quantity</u>	<u>Amount over- priced</u>
CSR13H156KL	Capacitor	\$ 2.98	\$ 1.80	\$1.18	420	\$ 495.60
RJR12CY201M	Resistor	8.02	5.91	2.11	210	443.10
463319-1	Cap	\$25.76	18.67	7.09	70	496.30
Total						<u>\$1,435.00</u>

Parts Which Were Costed Individually  
and as Part of Assemblies

<u>Part number</u>	<u>Description</u>	<u>Price</u>	<u>Quantity</u>	<u>Amount overpriced</u>
MS15795-807	Washer	\$ .004	560	\$ 2.24
MS21209-C0145	Screw insert	.27	280	75.60
MS21209-C0815	Screw insert	.009	420	3.78
MS21266-2N	Grommet	.60	14	8.40
MS35338-137	Lock washer	.002	560	1.12
MS35649-284	Nut	.018	560	10.08
MS51959-47	Screw	.012	560	6.72
NAS43DD4-12	Spacer	.08	140	11.20
203-1163P7	Clinch nut	.193	210	40.53
203-1163P16	Clinch nut	.23	560	128.80
203-1163P21	Clinch nut	.195	140	27.30
203-1163P25	Clinch nut	.305	980	298.90
236-1131P2	Washer	.014	1,890	26.46
327604-1	Clinch nut	.225	3,500	787.50
327604-3	Clinch nut	.248	560	138.88
364-1001P12	Clinch nut	1.80	140	252.00
364-1015P9	Nut	1.50	70	105.00
385526-1	Eyelet	.151	280	42.28
385836-1	Spacer	.65	140	91.00
453072-1	Screw	1.41	140	197.40
463328-1	Support	142.00	70	9,940.00
490312-1	Decal	.588	70	41.16
				<u>12,236.35</u>
<b>Total</b>				<u><u>\$23,000.96</u></u>

MATERIALSCALCULATION OF EFFECT OF NONCURRENT AND DUPLICATEPRICING ON FAA CONTRACT

Material overhead:		
Material overprices	\$23,000.96	\$23,000.96
Material overhead	<u>14.00%</u>	
Excess overhead	<u>3,220.13</u>	3,220.13
General & Administrative (G&A) expenses:		
Material overprices	\$23,000.96	
Material overhead	<u>3,220.13</u>	
Material and overhead G&A expenses	<u>26,221.09</u> <u>12.19%</u>	
Excess G&A expenses	<u>3,196.35</u>	3,196.35
Profit:		
Material overprices	23,000.96	
Material overhead	3,220.13	
G&A expenses	<u>3,196.35</u>	
Material, overhead, and G&A	<u>29,417.44</u>	
Profit	<u>9.216%</u>	<u>2,711.11</u>
Excess profit	<u>\$ 2,711.11</u>	
Total overpricing		<u><u>\$32,128.55</u></u>

CALCULATION OF EFFECT OF POWER SUPPLYOVERPRICING ON FAA CONTRACT

Power supply quote used in proposal		\$ 2,184.00
Power supply quote onhand but not used		<u>1,775.00</u>
Difference		409.00
Quantity to be purchased		<u>70</u>
Cost questioned		<u>28,630.00</u>
Material overhead:		
Cost questioned for power supply	\$28,630.00	28,630.00
Material overhead	<u>14.00%</u>	
Excess overhead	<u>4,008.20</u>	4,008.20
G&A expenses:		
Cost questioned for power supply	28,630.00	
Material overhead	<u>4,008.20</u>	
Material and overhead	32,638.20	
G&A expenses	<u>12.19%</u>	
Excess G&A expenses	<u>3,978.60</u>	3,978.60
Profit:		
Cost questioned for power supply	28,630.00	
Material overhead	4,008.20	
G&A expenses	<u>3,978.60</u>	
Material overhead and G&A	36,616.80	
Profit	<u>9.216%</u>	
Excess profit	<u>\$ 3,374.60</u>	<u>3,374.60</u>
Total overpricing		<u>\$39,991.40</u>