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UNITED STATES GENERAL ACCOUNTING OFFICE
REGIONAL OFFICE
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DENVER, COLORADO 80211

LM104925

FEB - 1977

Dr. W. R. Lucas, Director
George C. Marshall Space Flight Center
National Aeronautics And Space Administration
Marshall Space Flight Center, Alabama 35812

Dear Dr. Lucas:

The General Accounting Office has completed a review of Contract NAS 8-31665 awarded August 13, 1975, by the Marshall Space Flight Center (Marshall) to the Martin Marietta Corporation (Martin Marietta), Denver Division. The basic contract was for 322 Pyrotechnic Initiator Controllers (PIC), three test sets and data at a value of $1,900,000. The current value of the contract through modification 30 is $2,600,911.

This contract was selected as part of a survey of procedures and practices used by civil agencies to negotiate noncompetitive contracts with prices exceeding $100,000. Our objectives were to determine whether the Marshall Space Flight Center required Martin Marietta to furnish current, complete, and accurate cost or pricing data as required by Title 10 U.S.C. 2304, Truth in Negotiations Act, and the National Aeronautics and Space Administration's implementing procurement regulations, and whether Marshall evaluated and relied upon that data in negotiating the contract price.

The Truth in Negotiations Act, requires that with certain exceptions, contractors be required to submit cost or pricing data in support of proposed prices for noncompetitive contracts and contract modifications expected to exceed $100,000. In addition, contractors are required to certify at the time of negotiations that data submitted is current, complete, and accurate. A clause is inserted in the contract which gives the Government a right to a price reduction where it is determined that the price was increased because the data submitted were not in accord with the certification.

Our conclusions and recommendations are summarized below. Briefly, we believe that had Martin Marietta provided current, complete, and accurate data concerning the cost reduction studies ongoing at the time of negotiations, the contracting officer would have had a sound basis for reducing the current price by $83,649. Additionally, Martin Marietta will realize a substantial unanticipated profit resulting from savings on material purchases, because the contracting officer at Marshall failed to follow up on recommendations contained in the Defense Contract Audit Agency (DCAA) audit report.

OVERPRICING CAUSED BY CHANGES
IN PIC MANUFACTURING PROCESS

Prior to negotiations held on July 1 and 2, 1975, Martin Marietta project personnel on the PIC program became aware of a potential overrun in PIC production hours on an existing contract. Martin Marietta could not provide documented data on the exact date or amount of the overrun; however, subsequent information disclosed that the potential amount could be $150,300. As a result, studies were started in the Electronics Manufacturing Facility to determine how to reduce production hours. The recommendations for reduction in production hours had been developed about June 23, 1975, but were not disclosed to Marshall. Participants in these studies included responsible Martin Marietta personnel in the following positions:

PIC Project
PIC Project Manager
Chief, Electronics Manufacturing Facility
Manufacturing
Manufacturing Engineers
Material Engineer
Quality Control
Packaging Engineer

The recommendations for actions to be taken to reduce production hours, which were arrived at by personnel in the Electronics Manufacturing Facility, were submitted in writing to the PIC Project Manager on July 7 and 9, 1975. These submissions identified the following cost reduction actions:

1. Transformer - stripping of magnetic wires
2. Cure cycles - changes in materials, times, and temperatures
3. Insulation tape - investigate new type material
4. Part sleeving - eliminate sleeving
5. Wicking of conformal coating - evaluate wicking onto heat sink
6. Go/no go tool - design tool
7. Weighing - restrict to sampling
8. Removal of parts - unsolder and reuse rather than clip
9. Kitting by PIC assembly - use of bins
10. Dedicated fabricators - need for monitoring and motivating
11. Torque - use of a new torque tool
12. Flow solder - machine (wave) soldering in place of hand soldering.

The machine (wave) soldering study, dated June 23, 1975, was the only study for which there was documentation. This study began at least 2 to 3 weeks prior to June 23, 1975.

Problems in PIC production and possible solutions were presented to the Executive Management Review panel on July 24, 1975, by the PIC project manager. The proposed recommendations for the reduction of production hours presented at that meeting were the areas covered in the memorandum of July 9, 1975, and identified a potential reduction of 8.7 hours per PIC in manufacturing labor.

As a result, a PIC study committee was formed to review production costs and make recommendations. This committee concluded that the PIC could be manufactured at a profit provided their recommendations were implemented. Their recommendations included those cost reduction actions identified by the Electronics Manufacturing Facility studies and implementation began on August 8, 1975.

We determined the overpricing by using prices, rates, and factors in Martin Marietta's revised proposal dated May 19, 1975. The amount was determined as follows:

Estimated labor hour reduction per PIC	8.7	
Total PICs in basic contract	322	
Total estimated labor hour savings	2,801	
Average hourly manufacturing labor rate	$8.28	
Estimated labor hour dollar savings		$23,192
Average manufacturing overhead rate	167%	
Estimated overhead dollar savings		38,731
Subtotal		61,923
Average general and administrative rate	21.7%	
Estimated general and administrative dollar savings		13,437
Estimated cost savings		75,360
Profit rate (determined reasonable by Marshall)	11%	
Profit on estimated savings		8,289
Total amount attributable to cost reduction actions		$83,649

In response to our draft report, the contractor contends that the "studies" referred to were only preliminary efforts on the part of Martin Marietta personnel to resolve an overrun position in the PIC program, and were not pursued as in-depth studies prior to final contract negotiations with Marshall. However, NASA Procurement Regulations define cost or pricing data as consisting of any management decisions or facts ". . . which could reasonably be expected to have a significant bearing on costs under the proposed contract." Therefore, we believe that the cost reduction studies, which were in process prior to final negotiations and Martin Marietta's signing the Certificate of Current Cost or Pricing Data, are data which could reasonably be expected to have a significant impact on negotiations.

UNANTICIPATED PROFIT ON MATERIAL PURCHASES

In the initial proposal, Martin Marietta proposed material costs of $532,026. Marshall requested the Air Force Plant Representative Office

(AFPRO) at Martin Marietta to conduct a price analysis. The AFPRO price analysis included an audit of rates and factors by the DCAA at Martin Marietta.

DCAA's audit report number 7501-03-5-0123 dated April 22, 1975, was reported to the AFPRO. One of the recommendations in the report was that current prices for all anticipated and potential material quantities be obtained. DCAA found that Martin Marietta's material costs were proposed on quantities necessary to produce only 70 PICs. The AFPRO reported their price analysis to Marshall on April 24, 1975, and included DCAA's audit report as an enclosure. The AFPRO's report concurred with the DCAA audit report recommendations.

Marshall performed a technical analysis without making a visit to the Martin Marietta plant facilities. A cost analysis report was prepared by the price analyst at Marshall on June 20, 1975, which incorporated the Marshall technical evaluation and the AFPRO price analysis. The Marshall cost analysis report accepted the material costs; however, it questioned the material adjustment factor and the escalation rate. It did not include a follow-up on the earlier AFPRO price analysis recommending that current material prices be obtained.

The total material costs in the revised proposal were $484,393. Martin Marietta provided the General Accounting Office data on nine material items which were proposed at a cost of $124,402. The actual cost for these items was $93,724 or 24.7 percent less than proposed. The nine items selected by Martin Marietta were the following:

	COST		
Part Number	Proposed	Actual	Difference
M38510/01201 BAC/BAB	$ 4,104	$ 1,137	$ 2,967
M38510/00205 BAC	3,278	1,191	2,087
SS99D108A-1	34,357	31,878	2,479
SS990111-1	41,181	36,708	4,473
ST9904N23-1/ JANTXV4N23	28,336	15,224	13,112
JANTXV2N2219A	1,288	502	786
JANTXV2N2222A	4,444	2,801	1,643
JANTXV2N2970A	4,346	1,868	2,478
JANTXV2N2920	3,068	2,415	653
Totals	$124,402	$93,724	$30,678

Martin Marietta's material cost savings were the result of:

--procuring parts on one lot buy,
--obtaining price options and delaying deliveries until funding was available.

--obtaining more favorable prices by contacting more suppliers, and
--taking advantage of the general reduction of electronic prices being experienced.

CONCLUSIONS AND RECOMMENDATIONS

We believe that as a result of Martin Marietta's overrun position on an existing PIC contract, cost reduction studies were initiated but not disclosed to Marshall officials prior to negotiating contract NAS 8-31665. Had Martin Marietta provided the contracting officer current, complete, and accurate data concerning the cost reduction studies ongoing at the time of negotiations, the contracting officer would have had a sound basis for reducing the contract price by $83,649.

In addition, as a result of the Marshall contracting officer not following up on the recommendations in DCAA's audit report, NASA incurred excess material costs.

Accordingly, we recommend that you determine whether the Government is entitled to a price adjustment or recovery of costs attributable to the cost reduction actions under contract NAS 8-31665. Additionally, we recommend that you emphasize to contracting officials the importance of obtaining, evaluating, and using current, complete, and accurate cost or pricing data to negotiate noncompetitive contract prices.

We would appreciate receiving your comments on these matters.

Sincerely yours,

William D. Martin, Jr.
Regional Manager