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

NATIONAL SECURITY AND INTERNATIONAL AFFAIRS DIVISION

JANUARY 17, 1984

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The Honorable Bob Packwood
United States Senate

Dear Senator Packwood:

Subject: Air Force Decision to Produce Liquid Oxygen In-House at Andersen Air Force Base, Guam (GAO/NSIAD-84-33)

In your letters of November 24, 1982, and March 11, 1983, you expressed concern that the Air Force may have violated Office of Management and Budget (OMB) Circular A-76 which prescribes the policies for acquiring commercial products and services needed by the government. In particular, you were concerned that the cost comparison which was the basis for the decision to produce liquid oxygen (LOX) in-house appeared to contain many serious flaws and that the Air Force did not properly notify the supplier, Island Equipment Company, of the results of the cost comparison in time for the company to appeal the results. You requested that we review this matter.

FINDINGS AND CONCLUSIONS

In our opinion, the Air Force complied with the provisions of OMB Circular A-76 and performed its cost comparison in accordance with the circular. We believe that several adjustments of various cost items in the comparison were warranted which would have reduced the estimated savings of in-house performance. However, even with these adjustments, the cost comparison still showed in-house production to be less costly. The Air Force cost comparison showed that over a 3-year period about $487,000 could be saved from the contracting cost of $1.9 million by producing LOX in-house. We estimate a potential savings of about $316,000.

Island Equipment was also concerned that because it was not properly notified of the results of the cost comparison, it was not afforded the opportunity to appeal the results. As required by Defense Acquisition Regulations, the Air Force announced the results of the cost comparison at bid opening. Although Island

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Equipment did not have a representative at the bid opening, an Air Force official said that as a good faith gesture Island Equipment was notified of the cost comparison results by telephone.

Even though Island Equipment did not file an appeal, the Air Force subsequently considered the cost comparison issues raised by the company and did not deem them significant enough to reverse its decision.

Our findings and conclusions are discussed in detail in enclosure I. A comparison of our estimate and Island Equipment's estimate with that of the Air Force is shown in enclosure II.

OBJECTIVES, SCOPE, AND METHODOLOGY

Our objectives were to (1) determine whether the Air Force complied with OMB Circular A-76 in its decision to begin producing LOX in-house, (2) evaluate the Air Force cost comparison, and (3) determine if Island Equipment was properly notified of the results of the Air Force cost comparison.

We reviewed the policies and procedures in OMB Circular A-76 and the OMB Circular A-76 Cost Comparison Handbook. We made our review at Strategic Air Command Headquarters, Offutt Air Force Base, Omaha, Nebraska, where the cost comparison was prepared and the change from commercial acquisition to in-house production of LOX was decided. We reviewed selected documentation supporting the cost comparison and other pertinent records and correspondence. We also discussed this matter with responsible officials at Offutt Air Force Base. In addition, we reviewed the results of an evaluation of this matter by the Air Force Inspector General's Office and information provided by Island Equipment Company. Our review was made in accordance with generally accepted government auditing standards.

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As requested by your office, we did not obtain official agency comments on this report. However, our findings were discussed with Air Force officials involved in the decision and their comments were considered in preparing the report.

As arranged with your office, we are sending a copy of this report today to Representative Antonio B. Won Pat. Unless you publicly announce its contents earlier, we plan no further distribution of this report until 7 days from the date of the report. At that time, we will send copies to the Secretaries of Defense and the Air Force; the Director, Office of Management and Budget; and the Administrator, Office of Federal Procurement Policy. We will also make copies available to others upon request.

Sincerely yours,

for Bill W. Thurman

Frank C. Conahan
Director

Enclosures-2

EVALUATION OF THE AIR FORCE DECISION TO PRODUCE LOX IN-HOUSE AT ANDERSEN AFB, GUAM

OMB Circular A-76, revised[1] March 29, 1979, establishes the policies and procedures used to determine whether needed commercial products or services should be obtained by contract or performed in-house with government employees. The circular directs the government to rely on private sources for its commercial goods and services as long as it is the more economical method. It states that a comparison of contract costs versus in-house costs should be used, when appropriate, to decide how the work will be done. The procedures for performing cost comparisons are set out in the OMB Circular A-76 Cost Comparison Handbook. Affected parties have the right to appeal cost comparison decisions to the agency making the decision. However, the decision of the agency on disputed matters in cost comparisons is final.

BACKGROUND

Since 1954 Island Equipment Company has been supplying the military services' cylinder gas needs on Guam. The Air Force has been purchasing LOX and about 25 other gas items from Island Equipment on a requirements contract negotiated by Navy. No other commercial source for these items is available on Guam. For several months in 1972 during the Southeast Asia conflict Island Equipment was unable to meet the Air Force's LOX requirements due to equipment breakdowns, and the Air Force had to airlift LOX from other areas. Also, Island Equipment was unable to provide quality LOX for a 2-week period in 1977. Because this company is the sole commercial source of LOX on Guam, Air Force Headquarters authorized Andersen AFB to install equipment with the capacity to produce 1.5 tons of LOX a day. The equipment was installed in September 1979 and placed in standby status.

Island Equipment's contract price for LOX increased from $1.25 a gallon in 1975 to $7.33 a gallon for the contract period beginning March 16, 1982. Because of the increase in the contract price, the Air Force in early 1982 initiated a cost comparison in accordance with OMB Circular A-76 to determine whether it was more economical to continue obtaining LOX from

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[1]This revision of the circular was in effect at the time of the Air Force decision. A further revised circular was issued on August 4, 1983.

the contractor or to produce the LOX in-house. The Air Force solicited bid invitations; Island Equipment submitted a bid to provide LOX at $7.33 a gallon and $7.00 a gallon for quantities over 6,000 gallons monthly. On April 5, 1982, the in-house estimate and Island Equipment's bid were opened and a comparison of estimated in-house costs with the costs of contracting with Island Equipment showed that in-house production would result in a savings of $486,889 over a 3-year period. For this reason the Air Force decided to produce LOX in-house.

The Air Force Inspector General's Office reviewed the decision and based on this review the Air Force on March 7, 1983, concluded that it was in the best interest of the Air Force to proceed with in-house production and save a significant sum of taxpayer dollars.

OUR ADJUSTMENTS TO THE AIR FORCE COST COMPARISON

We believe the Air Force's $486,889 estimated cost savings was overstated by about $170,621, primarily because the Air Force understated material and related costs by $84,029 and overstated contract administration and related costs by $76,959. Other items in the cost comparison were over or understated by $9,633. However, even with these adjustments to the Air Force estimate, savings of $316,268 should result by in-house production.

Material costs

The Air Force cost comparison included costs for direct materials needed to produce its annual requirements of LOX. The material costs were based on the amount of materials required to operate two LOX equipment systems--a diesel system and an electric system--at 100 percent efficiency.

The Air Force had some experience in operating its diesel equipment installed in September 1979. The electric equipment was installed after the study. Production data obtained on both systems after the study was made showed that the diesel equipment is producing at about 75 percent efficiency and the electric equipment is producing at about 95 percent efficiency. As a result, a greater number of hours of equipment operation is needed to produce the Air Force LOX requirements which also increases the amount of diesel fuel, electricity, and other materials needed to produce the LOX. (Labor costs will not be affected because of the additional hours of operation.[2]) Air Force officials recognize that they should have considered a reduction in equipment efficiency. Using the 75 and 95 percent efficiency rates for the equipment, we estimate increased material costs of about $63,308. With the addition of indirect costs of $20,721 relating to material increases, costs were understated by $84,029. Another $1,788 for depreciation costs (included in operations overhead) discussed later brings understated in-house performance costs to $85,817.

Administrative costs

The Air Force also included contract administration costs and related general and administrative expenses of about $76,959 (contract administration costs of $70,368 and general and administrative expenses of $6,591) in its estimate. The OMB Circular A-76 Cost Comparison Handbook states that to estimate contract administration costs 4 percent of the contract price, or less if the cost can be determined, should be added to the contract price. The Air Force used 4 percent of the contract price in developing the contract administration costs. In our opinion, such costs in this case would be minimal. The contract with Island Equipment is negotiated by Navy and is for use by all military services so the LOX is an item available on the contract whether or not Air Force obtains its LOX from the contract. Therefore, contract administration would be required on the contract whether or not the Air Force used it to acquire LOX and costs would not increase or decrease.

Other items

Air Force did not apply the quantity discount offered by Island Equipment in computing the contract price. On the basis of the contractor's offer, we reduced the Air Force estimate of the contract price by $8,088, and the federal income taxes related to this amount by $243. Also, Air Force did not include an amount for transportation and installation costs of electric equipment. We increased the Air Force in-house cost estimate by $1,788 for the depreciation of these costs.

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[2]The LOX facility is required to be staffed around-the-clock in order to provide LOX for aircraft whenever it is needed. Since these employees also monitor LOX equipment operation, labor costs will not increase as a result of the equipment being operated a greater number of hours.

ISLAND EQUIPMENT ANALYSIS OF AIR FORCE COST COMPARISON

Island Equipment questioned various costs in the Air Force's cost comparison. Island Equipment's suggested adjustments would reduce the Air Force's estimated cost savings by $465,044 but still showed a cost savings by in-house performance of $21,845 over a 3-year period. Island Equipment's suggested adjustments are discussed below.

In-house performance

Island Equipment suggested adjustments would increase the Air Force's in-house cost estimate by $258,360. Of this, $171,987 was for direct materials. Whereas Air Force assumed the equipment would operate at 100 percent efficiency, Island Equipment estimated a 35 and 30 percent loss of efficiency for the diesel and electric equipment, respectively. Island Equipment based its estimation of reduced efficiency on the high degree of heat and humidity on Guam and on a statement attributed to an Air Force official concerning the agency's experience with the diesel plant. We agree that the Air Force cost comparison should have recognized lower equipment efficiencies. As stated earlier, we adjusted the Air Force estimate using equipment efficiencies based on Air Force experience.

Island Equipment increased operations overhead by $54,581. Of this amount, $36,975 was for larger annual depreciation costs formulated by using a 10-year depreciation period for the electric equipment instead of 25 years used by Air Force. Island Equipment said it used the shorter period because the industry standard is 10 years and the Internal Revenue Service allows an average 9.5 years for depreciation. The 25-year life expectancy used by the Air Force for the new equipment was the manufacturer's estimate based on new technology and advanced engineering. The depreciation period established by the Internal Revenue Service for a capital asset is the minimum period in which a business can depreciate the asset for tax purposes, but it is not necessarily the useable life of the asset. Government agencies, however, are required to depreciate a capital asset over its expected useful life. Based on the manufacturer's estimate, we believe the life expectancy of this equipment will exceed the minimum depreciation period established by the Internal Revenue Service and that the depreciation period established by the Air Force is not unrealistic. The remaining $17,606 increase in operations overhead was for indirect materials and supplies and overhead maintenance and repairs.

An additional $31,792 increase in the in-house estimate resulted from applying predetermined percentages for material overhead, general and administrative expenses, and inflation to the revised cost estimates for the above cost categories.

Contract performance

Island Equipment reduced the Air Force contracting-out cost estimate by $206,684. The reductions included $70,368 for contract administration costs that should not have been added because contract administration costs will be incurred whether or not the Air Force buys its LOX from the contract. As discussed earlier, we agree with this reduction.

Also, Island Equipment said that none of the $13,676 for general and administrative expenses in the Air Force study was justified. In our opinion, only the amount ($6,591) included in the expenses which was attributable to the contract administration costs should be deleted.

According to Island Equipment another reduction of $32,757 was for increased federal income taxes that would be realized by the government. The Air Force computed estimated income taxes in accordance with prescribed guidance included in the OMB Circular A-76 Cost Comparison Handbook. We believe the Air Force followed the proper procedures in estimating income taxes.

Island Equipment eliminated $75,423 in costs associated with periodic testing of the standby diesel equipment by the Air Force. Island Equipment contended this was an unreasonable charge because it was based on operating the equipment 100 hours a month when 8 hours every month would be sufficient to test the equipment. Island Equipment also said that the Air Force did not need the standby equipment. Air Force officials maintain that to have in-house capability and trained personnel is a prerogative which they chose to exercise following interruptions in contractor deliveries. They further maintain that operating 100 hours a month was to insure equipment dependability and to maintain operator proficiency. We believe that the need for the standby equipment is an Air Force management decision and that the costs associated with its operation is properly included as an added cost of acquiring LOX by contract.

Island Equipment also made a reduction of $14,460 for quantity discounts. As discussed previously, the Air Force's contract price did not include an amount for quantity discounts and we reduced the Air Force estimate by $8,088. The difference between the amount of our reduction and Island Equipment's reduction occurred because Island Equipment used a different methodology in developing its estimate than it used in its bid price.

NOTIFICATION OF COST COMPARISON RESULTS

Island Equipment said that Air Force did not properly notify the company of the results of the cost comparison and, therefore, the company did not have an opportunity to appeal within the required 5 days. However, under Defense Acquisition Regulations §4-1203.4 (a) and (c), the results of cost comparisons are announced at bid opening and documentation is made available to interested parties who have 5-15 days to file an appeal. Although Island Equipment may not have had actual knowledge of these regulations, the fact that they are in the Federal Register gives legal notice to affected parties of their contents (44 U.S.C. §1507).

The bid solicitation to Island Equipment contained the date of the bid opening. An Air Force official present at the bid opening said that Island Equipment did not have a representative at the bid opening. He said that, as a show of good faith, Island Equipment was telephoned after the bids were opened and the cost comparison made. According to the official, Island Equipment was advised of the results and told that the cost information was available to the company. The Air Force could not provide us any written record of the call.

Even if Island Equipment had filed an appeal within the 5-day period, the decision to produce LOX in-house would not have been affected. The cost comparison issues raised by Island Equipment after the 5-day period were considered by the Air Force and were not deemed significant enough to cause the Air Force to reverse its decision. We believe the Air Force would have come to this same conclusion had an appeal been filed within the 5-day period.

CONCLUSIONS

We believe the Air Force complied with OMB Circular A-76. Its decision to perform the work in-house was based on a cost comparison which showed this method to be the most economical. While various cost items in the comparison were subject to dispute and we adjusted them accordingly, we believe the in-house production will be less costly. We believe, also, that the Air Force followed Defense Acquisition Regulations regarding notification to bidders of the results of the cost comparison.

COMPARISON OF ESTIMATED IN-HOUSE COSTS AND CONTRACTING COSTS FOR LOX BY AIR FORCE, CONTRACTOR, AND GAO (3-Year Period)

Cost element	Air Force cost study	Contractor adjustments to Air Force cost study[a]		GAO adjustments to Air Force cost study	
		Adjustment	Estimate[b]	Adjustment	Estimate
In-house performance					
Direct material	$ 343,707	$ 171,987	$ 515,694	$ 63,308	$ 407,015
Material overhead	5,586	1,464	7,050	1,456	7,042
Direct labor	548,131	-	548,131	-	548,131
Fringe benefits	121,354	-	121,354	-	121,354
Operations overhead	59,780	54,581	114,361[c]	8,622	68,402
General & administrative expense	101,168	21,391	122,559	6,977	108,145
Inflation	19,928	8,937	28,865	2,111	22,039
Cost of capital	76,935	-	76,935	175	77,110
New start costs[d]	102,413	-	102,413	3,168	105,581
Total	$1,379,002	$ 258,360	$1,637,362	$ 85,817	$1,464,819
Contract performance					
Contract price	$1,759,200	$ -14,460	$1,744,740	$ -8,088	$1,751,112
Contract administration	70,368	-70,368	-	-70,368	-
Other costs	75,423	-75,423	-	-	75,423
General & administrative expense	13,676	-13,676	-	-6,591	7,085
Federal income taxes	-52,776	-32,757	-85,533	243	-52,533
Total	$1,865,891	$-206,684	$1,659,207	$-84,804	$1,781,087
Cost savings by in-house performance	$ 486,889		$ 21,845		$ 316,268

[a]Island Equipment's estimate dated November 3, 1982, was used in our evaluation.

[b]Island Equipment's estimate was qualified on the basis that additional information was needed from Air Force concerning whether costs for four employees and costs for installation of the electric equipment were included in the study. The four employees were permanent employees being used in the standby LOX operation. Air Force could have added these costs to both the in-house performance costs and to the contracting out costs as part of the standby operation. However, since the net effect of this would be to cancel each other out, Air Force did not include the costs on either side.

[c]A subsequent Island Equipment estimate provided to us showed an increase from $114,361 to $182,561 for operations overhead. There was no explanation for this increase.

[d]When a comparative cost analysis is conducted for a "new start," a cost margin equal to 10 percent of the estimated government personnel-related costs plus 25 percent of the estimated cost of ownership of the required facilities and equipment must be added to the cost of in-house performance.