

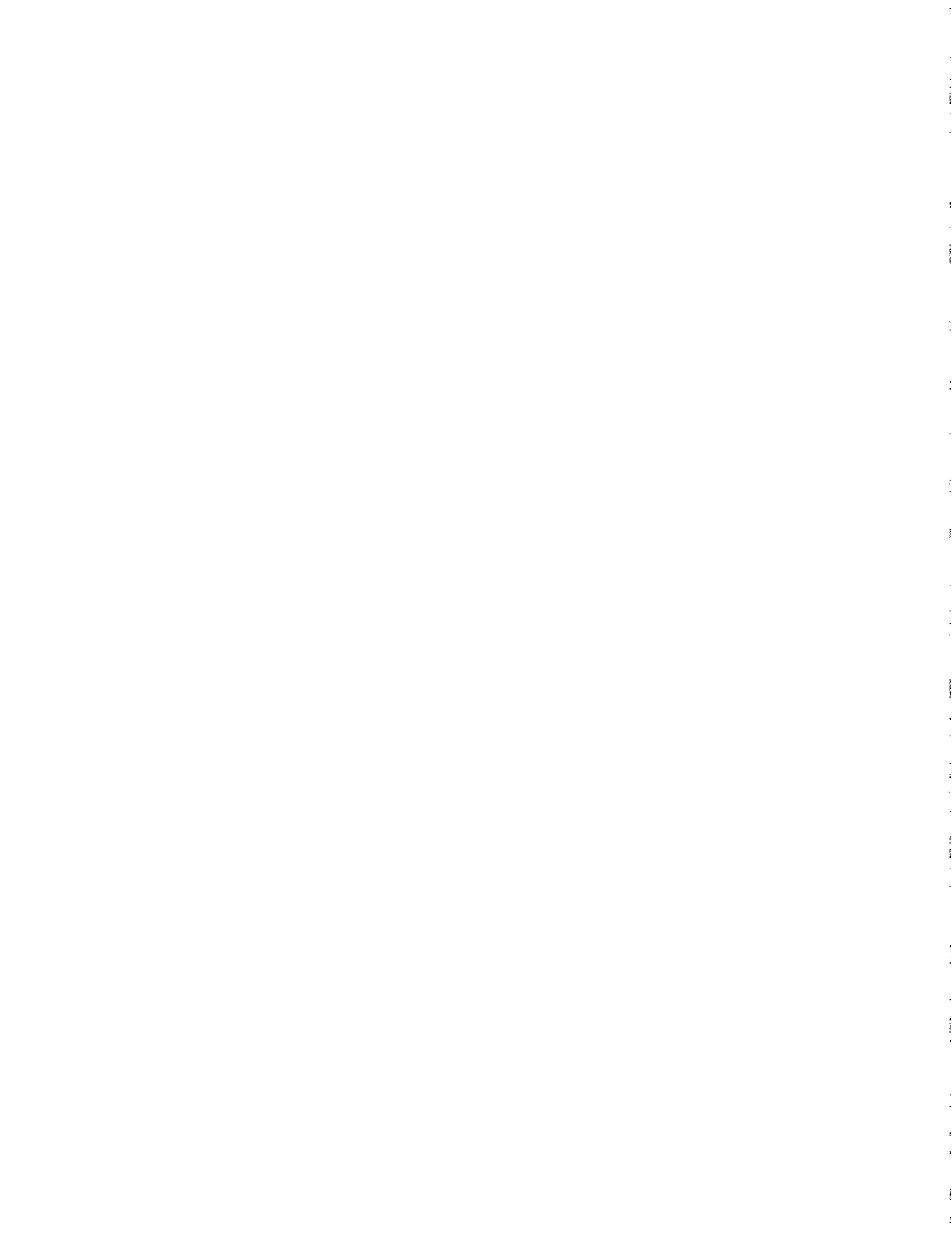
BY THE U.S. GENERAL ACCOUNTING OFFICE

**Report To The Chairman, Subcommittee
On Oversight And Investigations
Committee On Energy And Commerce
House Of Representatives**

**Observations On The Air Force Acquisition Of
Certain F-16 Support Equipment From General
Dynamics**

GAO found that the Air Force's use of an unpriced contract modification, without timely price negotiation, to obtain certain items of support equipment for the F-16 aircraft resulted in excessive prices for many of the items. The excessive prices occurred primarily because (1) the issuance of an unpriced contract modification put the government in an unfavorable negotiating position when prices were finalized, (2) General Dynamics did not follow proper procedures and recommended items for development that were already in existence, and (3) the Air Force did not follow its regulations and reviewed and approved the recommendations in a mechanical manner instead of ensuring thoughtful consideration of need, value, and price.







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

NATIONAL SECURITY AND
INTERNATIONAL AFFAIRS DIVISION

B-219874

The Honorable John D. Dingell
Chairman, Subcommittee on Oversight
and Investigations
Committee on Energy and Commerce
House of Representatives

Dear Mr. Chairman:

In your letter of January 8, 1985, you expressed concern regarding the prices paid for certain F-16 support equipment items the Air Force procured from the General Dynamics Corporation, Fort Worth, Texas. You requested that we review this procurement and determine who was responsible for buying these items.

Our principal observations and conclusions are presented below. Additional information on the items purchased, including prices, and photographs or drawings, are shown in appendix I. The objectives, scope, and methodology for our review are described in appendix II.

In summary, we believe that the Air Force's use of an unpriced contract modification without timely price negotiation to obtain certain items of support equipment for the F-16 aircraft resulted in excessive prices for many of the items. The excessive prices occurred primarily because (1) the issuance of an unpriced contract modification put the government in an unfavorable negotiating position when prices were finalized, (2) General Dynamics did not follow required procedures and recommended items for new development that were already in existence, and (3) the Air Force did not follow its regulations and reviewed and approved the recommendations in a mechanical manner instead of ensuring thoughtful consideration of need, value, and price. Also, we found errors in General Dynamics' cost recording procedures and we found anomalies on some of the individual equipment items.

Our review was limited to one contract modification for support equipment items for one weapon system and, therefore, cannot be the basis for recommendations for reform of a system involving hundreds of thousands of items for hundreds of weapons systems. However, it does raise questions about aspects of the acquisition system. We have initiated a review of the Department of Defense's use of unpriced contract agreements to address these and other questions.

HISTORY OF THE ACQUISITION

General Dynamics, under its F-16 contract (F33657-82-C-2034), is specifically obligated to recommend support equipment to maintain the aircraft. General Dynamics recommended that the Air Force procure 24 items ranging from tools such as alignment pins and a simple modified hexagon wrench to boresight fixtures and a vacuum/heat maintenance stand. Recommendations for most of the items were submitted in January 1982. The majority of these items (15) were for use in depot-level repair of the AN/APG-66 Fire Control Radar Antenna. The other nine items were test assemblies, fixtures, and adapters mostly for other types of maintenance. The Air Force planned to begin its own repair of the radar antenna in late 1984. Repair work associated with the antenna was being performed by Westinghouse Electric Corporation, Baltimore, Maryland, the manufacturer of the radar. According to F-16 System Program Office (SPO) officials, this action was to reduce reliance on contractors during times of emergency.

The recommendations were reviewed and approved by the F-16 SPO, Wright-Patterson Air Force Base, Ohio, and for the radar antenna related items by the Ogden Air Logistics Center, Utah, where the repair was scheduled to take place. On the basis that this equipment was urgently needed, the SPO approved an unpriced modification (PK0011) to the F-16 contract in September 1982 to buy the items. That modification authorized General Dynamics and its subcontractors, including Westinghouse, to incur costs for the design, fabrication, and/or procurement of the items, up to a not-to-exceed price of \$1,685,558. The approval of this unpriced contract modification was the critical action in the chain of events in the acquisition because it committed the government to payment for incurred costs before the matter was reviewed by officials whose primary responsibility was to evaluate prices.

Although regulations require prices to be definitized within 180 days, price negotiations with General Dynamics for these items took about 13 to 20 months to complete. By the time the prices were negotiated, most of the Westinghouse items had been manufactured and delivered. The final prices agreed to were substantially determined by the level of costs claimed by General Dynamics and its subcontractors, plus overhead and profit. Final definitized prices for 16 items and drawings for 4 items that were purchased from General Dynamics totaled \$835,835. Two of each of the four items were ultimately made by the Air Force for \$995.

The following schedule shows the disposition of the 24 items included in the contract modification.

<u>Manufacturer</u>	<u>Purchased</u>		<u>Cancelled</u>		<u>Total</u>
	<u>Hardware and data package</u>	<u>Drawings only</u>	<u>Before original price proposal</u>	<u>After original price proposal</u>	
General Dynamics and subcontractors other than Westinghouse	8	-	1	-	9
Westinghouse	<u>8</u>	<u>4</u>	<u>-</u>	<u>3</u>	<u>15</u>
	<u>16</u>	<u>4</u>	<u>1</u>	<u>3</u>	<u>24</u>

REQUIREMENTS DETERMINATION
PROCESS INADEQUATE

Our review disclosed that the requirements determination process did not assure that only needed items were authorized and that the authorized items were obtained in the most cost-effective manner. At several steps in the requirements process, neither General Dynamics nor the Air Force followed proper procedures nor did they comply with regulations intended to assure cost-effective acquisition of support equipment. These deviations set in motion the recommendation, approval, and purchase of equipment items at excessive prices. Also, some items were not needed.

General Dynamics recommended these items for procurement as contractor-furnished equipment, which is often the least desirable and usually the most expensive method for obtaining equipment when compared to obtaining the items by other means, such as directly from the manufacturer or through local manufacture. Under its contract, General Dynamics was responsible for recommending the most appropriate source for obtaining needed equipment. While General Dynamics officials believe they complied with contract requirements, they were unable to document that the assessments required were conducted prior to recommending that the items be acquired as contractor-furnished equipment.

Air Force officials approved the recommended items without ensuring that General Dynamics had recommended the most cost-effective source, as required by regulations. Although the General Dynamics recommendations clearly showed that equivalent tools were already in use at Westinghouse, the recommendations do not explain why the tools recommended to the Air Force were being assigned different numbers from those already in use at Westinghouse or why General Dynamics was recommending development of existing tools. The existing tools had been developed and several sets of the tools had been manufactured by Westinghouse under its radar manufacturing contract with General Dynamics.

Westinghouse had used most of these tools to repair radar antennas for several years prior to the General Dynamics recommendations to develop new tools.

We were told by Westinghouse that General Dynamics did not ask them to supply the tools they used. Westinghouse, we were told, did not offer to do so because the tools were not made to Air Force specifications. Instead, General Dynamics recommended and negotiated with the Air Force prices for development (design engineering hours, manufacture, compatibility tests, etc.) for items that already existed at Westinghouse and were already being used for the purposes recommended by General Dynamics.

In approving the recommendations submitted by General Dynamics, the SPO relied on the Ogden Air Logistics Center to review the recommendations which included the questions of whether (1) the items were needed for the purposes recommended and (2) the recommended source for the items was appropriate. At the time Ogden personnel reviewed the General Dynamics recommendations, we believe the officials involved had insufficient knowledge to make informed decisions about whether the items were needed to repair the antenna. They had not received any of the technical manuals describing repair procedures, did not have contractor cost estimates for the items, nor assurance that General Dynamics had made the assessments required before recommending the development of items to be furnished by General Dynamics.

We were told by one of the reviewing officials that the Ogden support equipment recommendation review committee relied heavily on the contractor's recommendations that the items were needed. This process resulted in some items being authorized which were not needed. For example, one item which was subsequently cancelled, the antenna clamp alignment tool, was recommended by General Dynamics, approved by the Air Force and later discovered to duplicate the function of one of the other items recommended and approved in the same package--the antenna tape block tool. Two additional items were recommended by General Dynamics and approved as needed by the F-16 SPO and Ogden, but were later cancelled because they were not needed. The Air Force paid \$838 in termination costs for the three cancelled items. In addition, we found that three of the approved items were not used at the Westinghouse Electronic Repair Center to repair the radar antennas. These were the vacuum/heat maintenance stand, brush assembly tool, and the alignment pins.

We were told by Ogden officials that their concurrence in the General Dynamics recommendations for support equipment extended only to the need for the item and not to procurement source or cost. The F-16 SPO engineering official who approved

contractor recommendations for Westinghouse support equipment said he relied on Ogden officials to review the contractor recommendations and did not participate in the depot review process because of the small number of items and the relatively low-dollar amount involved.

PRICE CONTROL OPPORTUNITIES WERE LOST

The procurement process has several features which are intended to insure the reasonableness of prices. These features did not work in this procurement.

Air Force Systems Command regulations specifically prohibit use of unpriced modifications, except in urgent situations. While the decision to issue the unpriced modification in this case implied urgency of the requirement, the extent of that urgency is questionable since 15 of the items were ordered in September 1982 to support the Air Force's depot-level repair of the antennas which was not scheduled to begin until late in 1984. As of July 1985, Ogden had not started repairing antennas.

Contracting officers are required by these regulations to negotiate a firm price within 180 days of approval of an unpriced modification. The regulations provide that after-the-fact pricing will always be avoided. The use of unpriced modifications puts the government in the unfavorable position of having to accept costs incurred by the contractor to perform under the unpriced modifications unless the government can demonstrate the unreasonableness of the price. In the absence of competition, negotiating a price in advance is the preferred method of contracting since it places the government in a stronger position to ascertain whether the prices are fair and reasonable. In the context of this procurement, negotiating a price before authorizing work to be performed would have allowed the contracting officer to consider, through negotiation, whether \$8,832 was a fair and reasonable price for a pulley puller.

In this case, and contrary to regulatory requirements, the prices were not negotiated for about 13 to 20 months after the date of the unpriced modification. Negotiations with General Dynamics for the items manufactured by General Dynamics and subcontractors other than Westinghouse were completed in October 1983 and negotiations for the Westinghouse manufactured items were completed in May 1984. The Westinghouse items took the longest to negotiate and all but one item had been manufactured and delivered by the time final prices were negotiated. Thus, the final prices agreed to were substantially determined by the costs claimed by the prime contractor and subcontractors, plus overhead and profit.

In authorizing General Dynamics to proceed with support equipment development without pricing the items, the Air Force compromised its right to challenge the reasonableness of item prices. Instead of being in a position to negotiate fair and reasonable prices, the Air Force was virtually faced with accepting actual costs the contractors incurred. Decisions of the Armed Services Board of Contract Appeals and federal courts have consistently held that contractor-incurred costs are presumed to be reasonable, and, if the government desires to challenge such costs, it has the burden of proving that the costs are unreasonable. The leading case in this area is *Bruce Construction Company v. United States*, 163 Ct. Cl. 97, 102, 324 F. 2d 516, 521 (1963). In ruling on the government's disallowance of certain contractor-incurred costs, the court stated:

"Since the presumption is that a contractor's claimed cost is reasonable, the government must carry the very heavy burden of showing that the claimed cost was of such a nature that it should not have been expended, or that the contractor's costs were more than were justified in the particular circumstances."

The fact that the government has a "very heavy burden" stems from the Board's and the courts' consideration of the specific factual circumstances, and the court's extreme reluctance to substitute, in hindsight, the judgment of the government for that of the contractor. This point is illustrated by the decision in *Telecomputing Services* (68-1 BCA 7023 at pg. 32, 466) wherein the Board noted:

"...the test of 'reasonableness' of a given cost must be addressed, primarily, to the discretion and sound judgement of the contractor. ...If the cost does not violate the terms of the contract, and passes the test of ASPR,¹ the contracting officer should determine that the cost is allowable and approve it for reimbursement even if in his own judgement he would not have incurred such a cost for reasons that appear plausible to him (citation omitted)."

As a general rule, as long as a contractor can present a reasonable rationale justifying the incurred costs, it is extremely difficult for the government to successfully challenge

¹ASPR is the acronym for Armed Services Procurement Regulations which were converted to Defense Acquisition Regulations (DAR). On April 1, 1984, the DAR was superseded by the Federal Acquisition Regulation.

the costs. For this reason, the instruction to contracting officers to avoid the use of unpriced modifications, absent some urgency, is well founded.

The procurement process included a review of price proposals by the Defense Contract Audit Agency and the Air Force Plant Representative Office. In this case, both organizations raised concerns about the prices for the items. Defense Contract Audit Agency conclusions dealt with the tentative nature of vendor quotes from Westinghouse and a general observation that 11 percent price reductions should be achieved from the subcontractor. However, the Defense Contract Audit Agency concluded that the General Dynamics proposal was acceptable as a basis for negotiation.

The Air Force Plant Representative Office raised questions about the reasonableness of the prices of the Westinghouse items and recommended that the items be bought directly from Westinghouse or through local manufacture. In April 1983 the Air Force Plant Representative Office sent a letter to General Dynamics stating that the prices to the Air Force for single piece items were in the \$9,000 to \$11,000 category which, from all appearances, should have been priced between \$2 and \$150. The letter also stated that the assemblies were priced between \$13,000 and \$28,000 which, on the surface, should have been in the \$200 to \$500 range.

After the Plant Representative Office's letter, General Dynamics wrote Westinghouse in June 1983 and strongly recommended that Westinghouse reevaluate the prices proposed for the items. Later that month Westinghouse advised General Dynamics that simplicity of the item does not dictate costs, but that requirements do. Westinghouse told General Dynamics to reexamine its requirements on any of the items and eliminate some and Westinghouse would delete commensurate costs, as appropriate. In November 1983, before the price negotiation period, significant questions were raised about the reasonableness of the prices for the Westinghouse items in a congressional hearing.² In response to the hearing, the Air Force stated that the prices for the Westinghouse items would be vigorously reviewed and negotiated.

Subsequently, the F-16 SPO designated four items for local manufacture and bought engineering drawings only for \$176. The four items were locally manufactured and the SPO was billed

²Senate Hearing before the Committee on Governmental Affairs on purchasing of spare parts and support equipment, 98th Cong., 1st Sess., pt. 6 (1983).

\$995 for the items. In contrast, General Dynamics had proposed a total price of \$41,514 for the four items, or a difference of \$40,519. However, we found no evidence that local manufacture was considered for the remaining eight noncomplex items. Furthermore, negotiations for these items resulted in the General Dynamics proposed price being reduced from \$254,707 to \$249,462, a reduction of \$5,245, or 2.1 percent.

Although public pressure and controversy had an impact on prices finally paid for some items, the final negotiated prices for many of the noncomplex items do not reflect their intrinsic value. The Air Force Plant Representative Office at General Dynamics recognized this situation early in the procurement process and so advised General Dynamics and Air Force procurement officials at the F-16 SPO. Why the F-16 procurement officials did not follow the Plant Representative Office's recommendations is not clear, but the fact that substantial costs had been incurred by the contractor apparently was an overriding reason to continue with the procurement.

PROBLEMS IN CONTRACTOR COST RECORDING

We reviewed cost records related to this procurement at General Dynamics and Westinghouse. At General Dynamics, three of the equipment items manufactured by General Dynamics met the monetary threshold to be assigned unique work orders so that costs were recorded and traceable at the individual item level. For the remaining equipment items, composite work orders were assigned which commingled the costs of the items. We tested labor and material charges recorded for two of the three unique work orders and found errors in both direct labor charges and direct material charges. Similar cost charging errors were also identified on a broader basis in two previous reports on General Dynamics' cost accounting practices.³

Our review revealed that two items manufactured by General Dynamics (both radar boresight fixtures) were defectively priced. The defective price occurred because General Dynamics proposed and negotiated material prices based on noncurrent

³Audit Report on Comprehensive Review of Labor Charging Practices at General Dynamics, Fort Worth Division, Defense Contract Audit Agency (May 6, 1985, Report No. 1361-5E-130-104).

Joint Cost Monitoring Review of Support Equipment Manufacturing Activities, General Dynamics, Fort Worth Division, Defense Contract Audit Agency and Air Force Plant Representative's Office (January 30, 1984, Report No. 27/1361-AU-83-02).

purchase orders. General Dynamics has proposed a reduction in the price for these items of \$30,858 in response to our finding.

We also identified 359 engineering hours recorded by General Dynamics for work related to the Westinghouse items, but General Dynamics purposely excluded the costs for these hours from the final price proposal and negotiated price. However, General Dynamics routinely records such engineering hours in cost records which are used as a basis for progress payments by the Air Force on the F-16 contract, and these 359 engineering hours had been so recorded. Therefore, the Air Force could end up paying the costs for these hours even though they were excluded from the proposed and negotiated price. After we brought this matter to General Dynamics' attention, \$11,700, the amount involved, was transferred from the cost accounts for progress payments to an unallowable account so as to preclude future payments.

At Westinghouse, we tested summary records by tracing over 50 percent of labor and material costs to subsidiary records, purchase orders, and invoices. While our review of records disclosed that the charges were accurately recorded and they supported Westinghouse cost records, the fact that most of the items already existed and were in use in the repair and manufacture of radar antennas at Westinghouse raises significant questions. One question concerns the government incurring these costs when it had already paid for the earlier development and manufacture of like items. We asked Westinghouse about the number, source, and financing of these earlier items. We were informed that they had been developed under a "tooling" line in a previous purchase order which did not require part-by-part break-out or data retention. Therefore, Westinghouse could not identify how many items were in existence or what their original cost to the government might have been. Under the purchase order, Westinghouse retained title to the tooling.

In addition, examination of the complexity (or non-complexity) of some of the Westinghouse items raises further questions about whether the kind of costs recorded are consistent with a realistic assessment of design requirements. For example, prior to the decision to buy drawings for the alignment pins, Westinghouse recorded 63 hours of engineering effort on the pin. It is difficult to understand how this level of effort was required when an Ogden technician was able to make a suitable alternative alignment pin in minutes from stock materials.

OBSERVATIONS ABOUT SPECIFIC EQUIPMENT ITEMS

Our review revealed a number of anomalies concerning specific items in this procurement which raise significant

questions about the thoroughness of the Air Force's or General Dynamics' consideration and evaluation of need, value, source and utilization.

General Dynamics recommended the purchase of an antenna motor brush assembly tool at a price of \$10,624, for use in repair of the antenna. However, Westinghouse does not use such a tool in conducting the repair function. Instead, Westinghouse uses a 3 by 8 inch sheet of flexible plastic.

General Dynamics also recommended the purchase of two metal antenna motor assembly alignment pins at \$9,376. Although the Air Force subsequently bought only the drawings for the item for \$44, and manufactured two pins for \$91, we were told that Westinghouse uses wooden sticks to perform the function the alignment pins were designed to perform. A technician at Ogden told us that, before the alignment pins were received, he cut two pieces of wire from stock material which he used as alignment pins. In a similar instance, a hexagon antenna wrench was proposed by General Dynamics for procurement at \$9,609. The Air Force subsequently bought the drawings for \$44 and made two wrenches for \$211. Before a wrench was received at Ogden, a technician made a similar tool from a commercial wrench for his use. We were told that in both instances the locally made items worked satisfactorily.

General Dynamics procured the vacuum/heat maintenance stand from Westinghouse for which the Air Force paid \$163,843. However, the Westinghouse Electronic Repair Center does not use such a stand to repair antennas. Instead, Westinghouse uses an alternate method of repair, or returns the antenna to its manufacturing unit. The maintenance stand was manufactured and delivered to Ogden in August of 1984. As of July 1985, it was still stored unused at Ogden, because they had not yet received a technical order showing how to use it.

In September 1984, the Secretary of the Air Force sent a letter to numerous major defense suppliers in which he cited the pulley puller as an example of a tool that cost too much. He stated that the Air Force paid \$8,832 for the pulley puller which should cost only a few dollars and that Air Force applied for and received a refund (General Dynamics lowered the price to \$370 and gave the Air Force a refund of \$8,462). The Secretary also stated that the Air Force should have noted the exorbitant price before ordering, but that responsibility for the price is shared equally with those who set the price in the first place.

The pulley puller delivered to Ogden has a bolt head requiring a screwdriver rather than a wrench. The technician demonstrated to us that he cannot get enough torque with a screwdriver to use the tool as intended. This error occurred

despite the fact that General Dynamics is contractually required to test and ensure performance of support equipment provided under its contract.

We noted that General Dynamics recommended two items, the antenna tape block tool and the antenna clamp alignment tool, that were similar to each other and designed to perform the same function. The latter tool was cancelled, but not until after both had been approved as needed by Ogden and the SPO.

Finally, the inflight refueling adapter, procured from General Dynamics for \$3,626, was shipped to the San Antonio Air Logistics Center in January 1984. Although San Antonio records show that the item was received, it is now lost. We also found that this item appeared on a San Antonio list of excess property in June 1985 so, if it is found, the possibility exists that it would be disposed of.

RESPONSIBILITY FOR THE ACQUISITION

We were asked, in undertaking this work, to determine responsibility for the acquisition of these support equipment items and their resulting cost to the Air Force. As in the case of any acquisition action, responsibility lies at several levels and, in this case, involves many officials ranging from the Director of the SPO and the Deputy Director of the SPO who authorized the unpriced modification, to an engineer at General Dynamics who submitted the recommendations for contractor-furnished equipment, to an equipment specialist at Ogden who agreed the items were required. In accordance with your request, appendix III shows organizations and officials who were involved in this acquisition.

Our review raises serious questions about the performance in this case of the General Dynamics Corporation under its F-16 aircraft contract obligation to identify and recommend procurement only of needed support equipment items through the most cost-effective method. It also raises questions about the decision to design and manufacture simple tools as newly designed, one-of-a-kind items when some of the tools were not being used by Westinghouse and others were in routine use in its ongoing manufacture and repair operations.

Our review calls into question the performance of the F-16 SPO in its responsibilities to review and approve support equipment recommendations with careful consideration to matters of need, value, and price. We also identified a serious lack of communication between the SPO and Ogden concerning Ogden's responsibilities for concurrence in the procurement of the items.

In a broader sense, our review calls into question many aspects of the system of acquisition which relies on thoughtful consideration of need, value, and price, but which, at least in this instance, operated as a mechanical process of approving contractor recommendations.

RECENT AIR FORCE INITIATIVES

SPO officials advised us that they established a Support Equipment Review Board in January 1984 to more effectively evaluate need, prices, and sources for support equipment. The Board makes two reviews of each new proposed support equipment item; the first review concerns need and acquisition method and the second review concerns prices. According to these officials, the new procedures from January 1984 to May 1985 have contributed to savings of \$3.4 million on work completed and another \$1.7 million savings is estimated on work still in process.

In addition, the Air Force Plant Representative Office at General Dynamics and Westinghouse have established contract proposal screening processes for support equipment. Responsibility for negotiating prices for support equipment for the F-16 has been transferred from the SPO to the Plant Representative Office at General Dynamics, to obtain more effective face-to-face negotiations of prices.

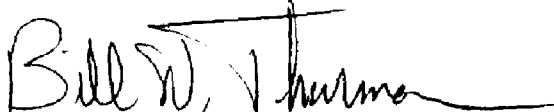
We asked SPO officials whether their new procedures would have avoided the problems we identified had they been in place at the time. Using the eight Westinghouse items as an illustration they said that it is not certain that the new procedures would have produced a better result. A procurement which started with the issuance of an unpriced contract modification, as this one did, would face many, if not all, of the risks and problems which occurred here despite the opportunities for Support Equipment Review Board analysis.

We did not obtain official comments on this report from the Air Force or their contractors. We did, however, discuss the facts we developed with appropriate Air Force and contractor officials. In general, the Air Force officials emphasized that this review involved an old procurement action, and that new procedures have been implemented to address the problems cited. They also cautioned that urgent military requirements sometimes mandate unpriced acquisition procedures, despite the risks of these procedures, to insure that defense objectives can be met.

B-219874

Unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from the date of the report. At that time we will send copies to the Secretaries of Defense and the Air Force and to the Director, Office of Management and Budget. We will also send copies to other interested parties and will make copies available to others upon request.

Sincerely yours,

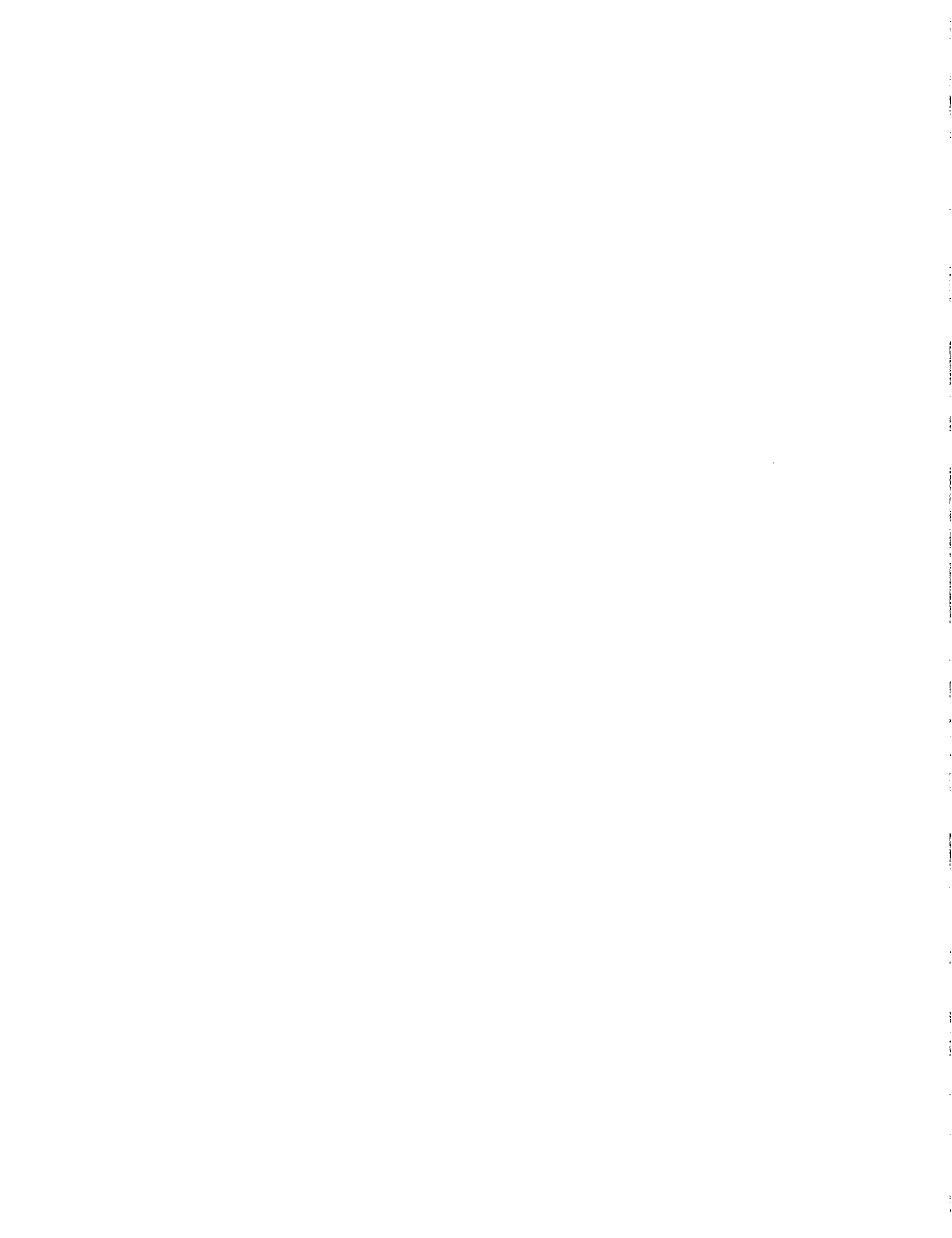

for Frank C. Conahan
Director



Contents

<u>SERD</u> ¹		<u>Page</u>
-	PROPOSED AND NEGOTIATED PRICES FOR THE F-16 SUPPORT EQUIPMENT CONTRACT COST PROPOSAL (CCP 6185)	1
-	AN/APG FIRE CONTROL RADAR ANTENNA	2
	WESTINGHOUSE MANUFACTURED ITEMS	
74882	Load RF	3
74966	Pulley Puller Tool	4
74968	Shaft Positioner Tool, Azimuth	6
74969	Shaft Positioner Tool, Elevation	8
74970	Motor Puller Tool, Azimuth	10
74971	Motor Puller Tool, Elevation	12
74979	Brush Assembly Tool	14
74980	Vacuum/Heat Maintenance Stand	16
	GENERAL DYNAMICS SUPPLIED ITEMS (EXCLUSIVE OF WESTINGHOUSE MANUFACTURED ITEMS)	
14575	Wrench, Valve-Manifold Assembly	18
46163	Adapter Assembly, Test IFR	20
46167	Adapter Assembly, Overhaul-IFR	21
46174	Installation and Removal Assembly-Rotor Bearing	22
46175	Tester Assembly, Electrical Systems-Pylon, Fuel	23
65518	Kit, Test Interface	24
74028	Fixture Kit, Boresight-Vector Radar	25
74029	Fixture Kit, Boresight-INU	27
	AIR FORCE MANUFACTURE	
74972	Height Gauge, Antenna Pulley	29
74975	Antenna Tape Block Tool	31
74977	Hexagon Wrench, Antenna	33
74978	Alignment Pin	34
	CANCELLED ITEMS	
74967	Antenna Clamp Alignment Tool	36
74973	Motor Stator Keeper, Azimuth	37
74974	Motor Stator Keeper, Elevation	38

¹SERD. Acronym for support equipment recommendation data.



PROPOSED AND NEGOTIATED PRICESFOR THE F-16 SUPPORT EQUIPMENTCONTRACT COST PROPOSAL (CCP 6185)WESTINGHOUSE MANUFACTURED ITEMS

SERD No.	Item (short title)	Quantity	Original	Revised	Final	Final
			proposed price 11/17/82	proposed price 7/12/83	proposed price 2/28/84	negotiated price 5/14/84
74882	RF load	16	\$ 51,992	\$ 23,091	\$ 19,906	\$ 19,856
74966	Pulley puller ²	1	10,630	13,717	9,007	8,832
74968	Azimuth positioner	1	41,543	40,767	13,361	13,103
74969	Elevation positioner	1	41,543	40,928	10,117	9,921
74970	Azimuth motor puller	1	19,714	23,305	12,023	11,791
74971	Elevation motor puller	1	21,146	23,217	11,718	11,492
74979	Brush assembly tool	1	10,737	14,813	10,833	10,624
74980	Maintenance test stand	1	302,106	140,874	167,743	163,843
Total			<u>\$499,411</u>	<u>\$320,712</u>	<u>\$254,708</u>	<u>\$249,462</u>

GENERAL DYNAMICS SUPPLIED ITEMS(EXCLUSIVE OF WESTINGHOUSEMANUFACTURED ITEMS)

SERD No.	Item (short title)	Quantity	Original proposed price	Revised proposed price	8/02/83	10/31/83
					price	price
46175	Test assembly ³	5	\$ 52,202	\$ 49,351	\$ 47,536	\$ 45,864
74028	Boresight fixture	6	131,615	126,330	121,866	117,570
14575	Valve wrench	30	7,470	5,820	5,816	5,610
65518	Test kit	69	351,206	301,444	301,360	290,736
74029	Boresight fixture	6	127,530	123,768	118,517	114,336
46174	Rotor bearing	1	2,857	2,202	2,193	2,116
46163	Adapter assembly	1	9,457	6,652	6,571	6,339
46167	Adapter assembly	1	8,580	3,782	3,759	3,626
Total			<u>\$690,917</u>	<u>\$619,349</u>	<u>\$607,618</u>	<u>\$586,197</u>

AIR FORCE MANUFACTURE⁴

SERD No.	Item (short title)	Quantity	Original proposed price	Revised proposed price	Drawings	Air
					price	Force cost ⁵
74972	Puller height gauge	1	\$ 11,911	\$ 11,170	\$ 44	\$ 510
74975	Tape block tool	2	16,068	10,807	44	183
74977	Hexagon wrench	1	9,609	10,161	44	211
74978	Alignment pin	2	14,835	9,376	44	91
Total			<u>\$ 52,423</u>	<u>\$ 41,514</u>	<u>\$ 176</u>	<u>\$ 995</u>

²General Dynamics refunded all but \$370.

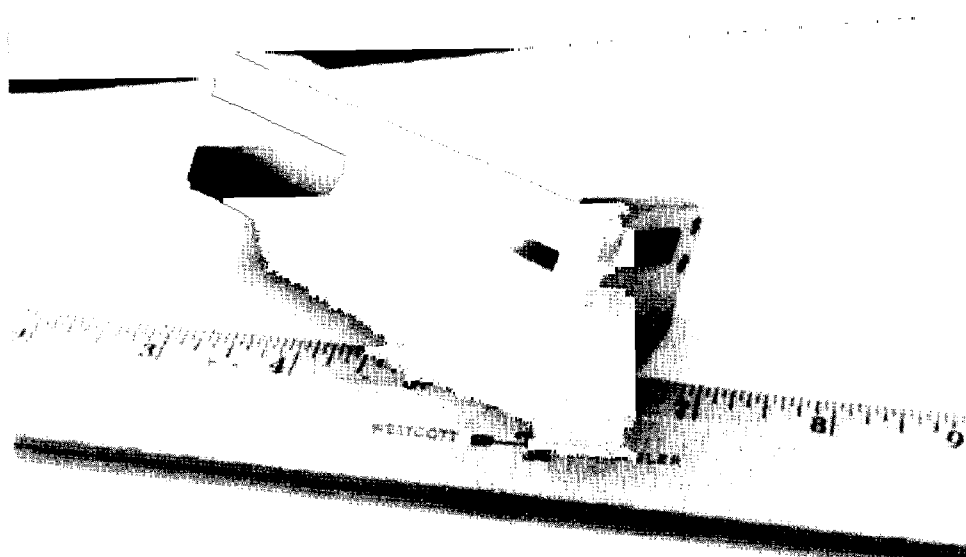
³Air Force terminated procurement on four of the five units at no cost.

⁴Hardware for these items was cancelled and drawings only were purchased from General Dynamics.

⁵Represents cost billed to F-16 SPO for two of each of the items. Actual manufacturing cost was not available for all of the items.

AN/APG-66 FIRE CONTROL RADAR ANTENNA





Vendor/Manufacturer: Westinghouse Electric Corporation (WEC)

Function: During side lobe leveling of the F-16 Fire Control Radar Antenna array, seven (7) RF loads are required to load all ports of the array that are not being balanced.

Date General Dynamics (GD) recommended item to the Air Force: March 16, 1982

Date Air Force authorized contractor effort: September 21, 1982

Number of units purchased: 16

Date items delivered to Air Force: March 8, 1984

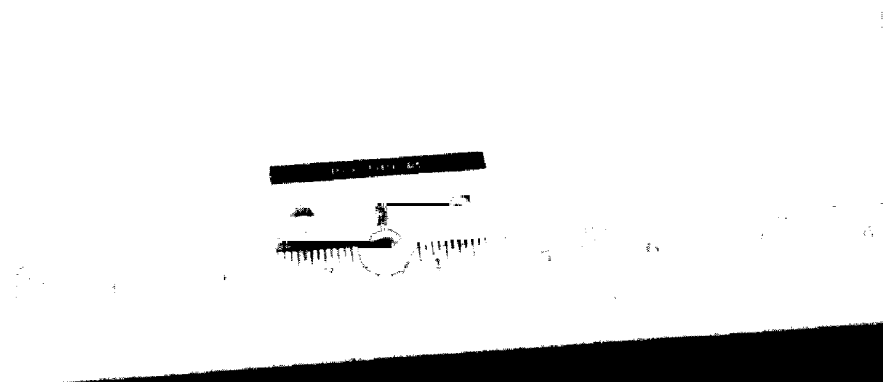
Price proposed by GD: Original (11/17/82) \$51,987
Revised (07/12/83) \$23,096
Revised (02/28/84) \$19,905

Price GD paid WEC: \$15,350

Price negotiated by Air Force March 19, 1984: \$19,856

Document definitizing price: Contract Modification PK0097
May 14, 1984

SERD 74966 - PULLEY PULLER TOOL



Vendor/Manufacturer: Westinghouse Electric Corporation (WEC)

Function: Remove, without damage, friction-bound F-16 Fire Control Radar Antenna drive pulleys during depot repair/overhaul of the antenna.

Date General Dynamics (GD) recommended item to the Air Force: January 18, 1982

Date Air Force authorized contractor effort: September 21, 1982

Number of units purchased: 1

Date items delivered to Air Force: February 23, 1984

Price proposed by GD: Original (11/17/82) \$10,630
Revised (07/12/83) \$13,717
Revised (02/28/84) \$ 9,007

Price GD paid WEC: \$7,009

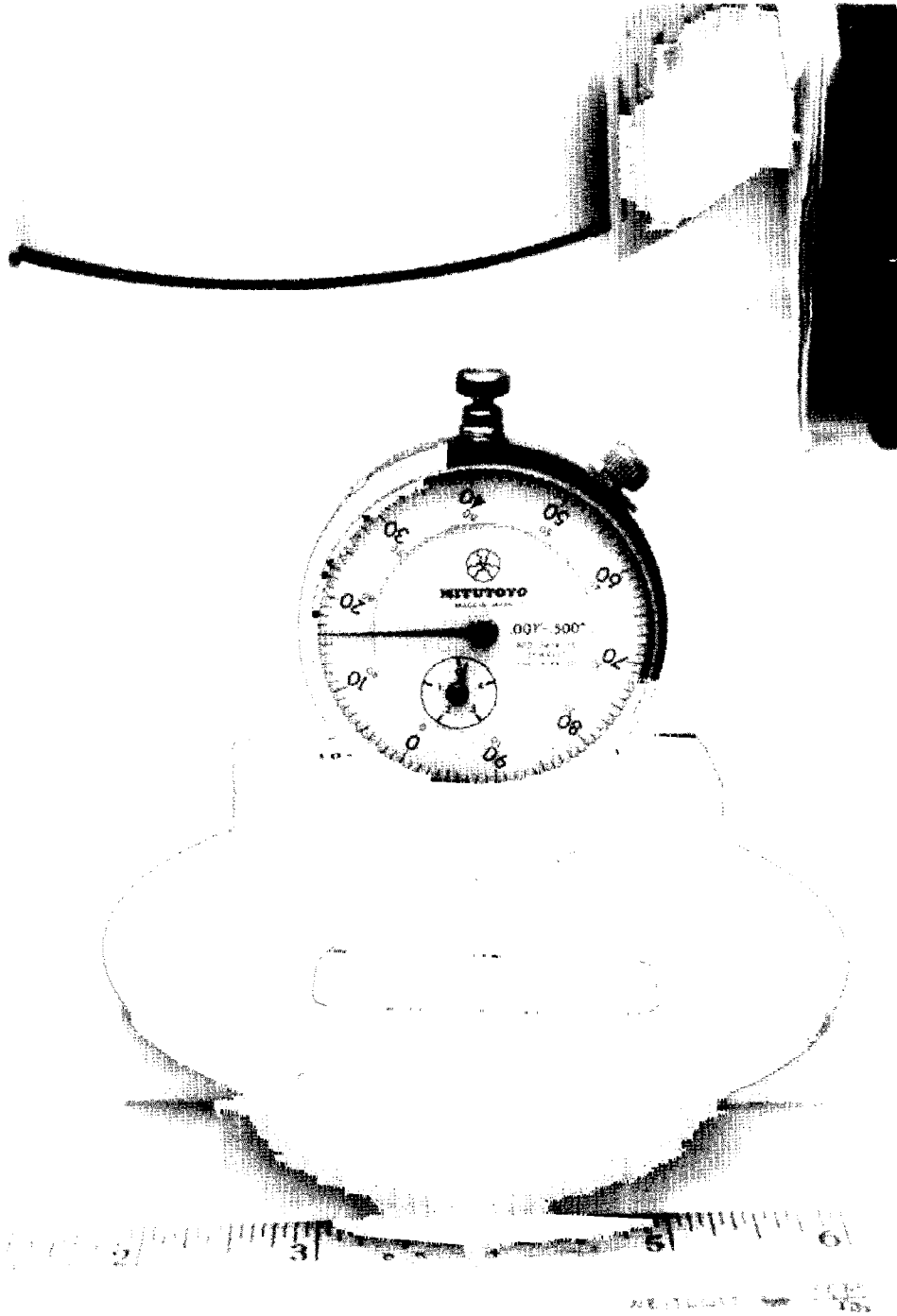
Price negotiated by Air Force March 19, 1984: \$8,832

Document definitizing price: Contract Modification PK0097
May 14, 1984

SERD 74966 - PULLEY PULLER TOOL (cont.)

GAO observations: This item does not work as intended. The pulley puller delivered has a bolt head requiring a screwdriver rather than a wrench which does not allow the user to get enough torque to remove the pulley.

SERD 74968 - SHAFT POSITIONER TOOL, AZIMUTH



SERD 74968 - SHAFT POSITIONER TOOL, AZIMUTH (cont.)

Vendor/Manufacturer: Westinghouse Electric Corporation (WEC)

Function: To insure that the F-16 antenna azimuth drive motor shaft is properly positioned (centered and seated precisely) when installed during repair/overhaul at the depot.

Date General Dynamics (GD) recommended item to the Air Force:
January 18, 1982

Date Air Force authorized contractor effort: September 21, 1982

Number of units purchased: 1

Date items delivered to Air Force: February 23, 1984

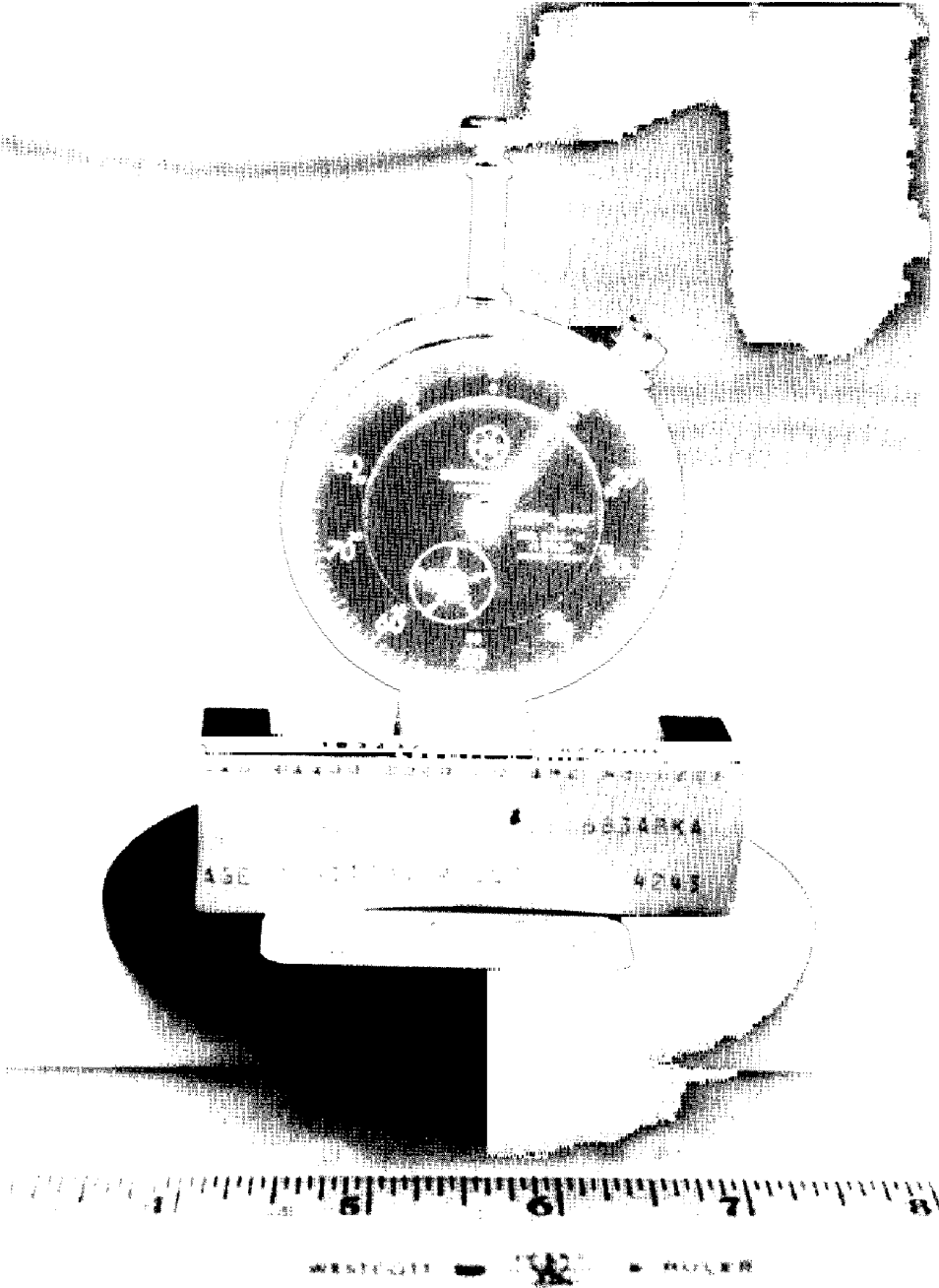
Price proposed by GD: Original (11/17/82) \$41,543
Revised (07/12/83) \$40,767
Revised (02/28/84) \$13,361

Price GD paid WEC: \$10,209

Price negotiated by Air Force March 19, 1984: \$13,103

Document definitizing price: Contract Modification PK0097
May 14, 1984

SERD 74969 - SHAFT POSITIONER TOOL, ELEVATION



SERD 74969 - SHAFT POSITIONER TOOL, ELEVATION (cont.)

Vendor/Manufacturer: Westinghouse Electric Corporation (WEC)

Function: To insure that the F-16 antenna elevation drive motor shaft is properly positioned (centered and seated precisely) when installed during repair/overhaul at the depot.

Date General Dynamics (GD) recommended item to the Air Force:
January 18, 1982

Date Air Force authorized contractor effort: September 21, 1982

Number of units purchased: 1

Date items delivered to Air Force: February 23, 1984

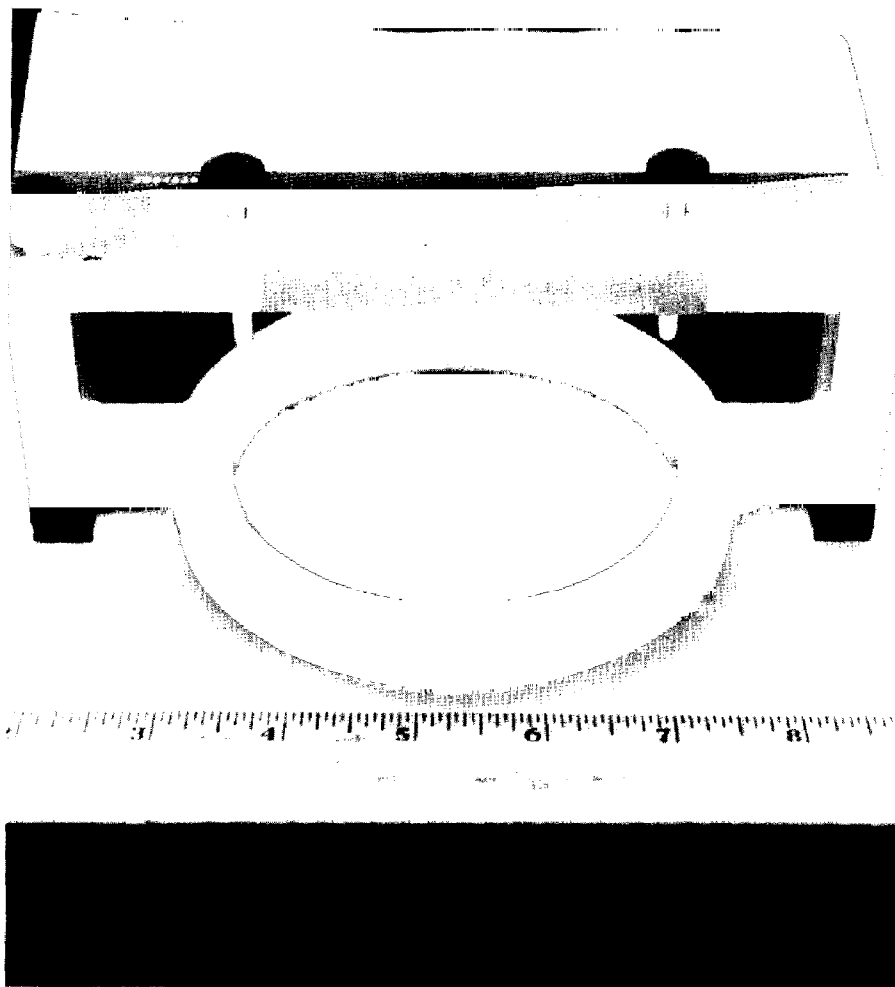
Price proposed by GD: Original (11/17/82) \$41,543
Revised (07/12/83) \$40,928
Revised (02/28/84) \$10,117

Price GD paid WEC: \$7,740

Price negotiated by Air Force March 19, 1984: \$9,921

Document definitizing price: Contract Modification PK0097
May 14, 1984

SERD 74970 - MOTOR PULLER TOOL, AZIMUTH



Vendor/Manufacturer: Westinghouse Electric Corporation (WEC)

Function: Used to remove antenna drive motor (azimuth) from its cavity when repair or replacement is required at the depot.

Date General Dynamics (GD) recommended item to the Air Force:
January 18, 1982

Date Air Force authorized contractor effort: September 21, 1982

Number of units purchased: 1

SERD 74970 - MOTOR PULLER TOOL, AZIMUTH (cont.)

Date items delivered to Air Force: February 23, 1984

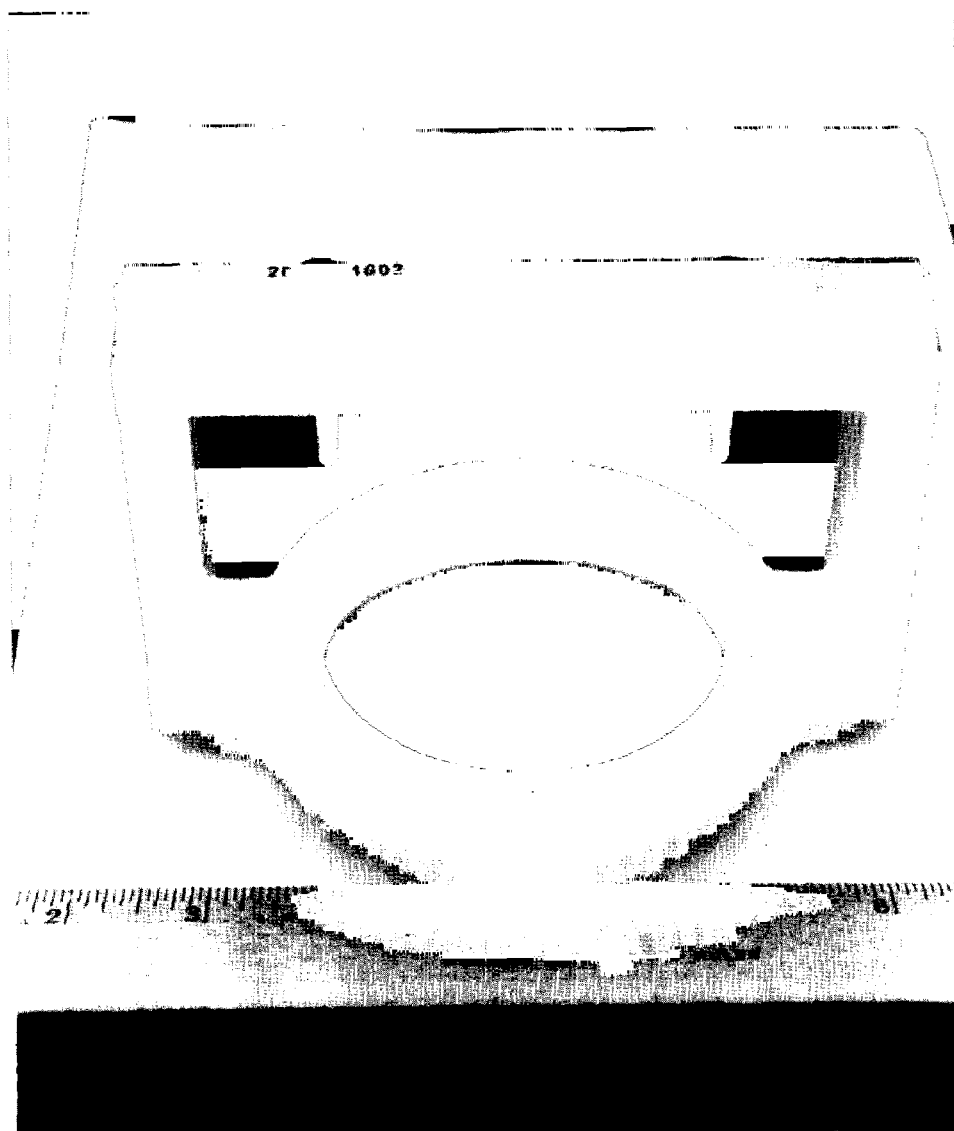
Price proposed by GD: Original (11/17/82) \$19,714
Revised (07/12/83) \$23,305
Revised (02/28/84) \$12,023

Price GD paid WEC: \$9,344

Price negotiated by Air Force March 19, 1984: \$11,791

Document definitizing price: Contract Modification PK0097
May 14, 1984

SERD 74971 - MOTOR PULLER TOOL, ELEVATION



Vendor/Manufacturer: Westinghouse Electric Corporation (WEC)

Function: Used to remove antenna drive motor (elevation) from its cavity when repair or replacement is required at the depot.

Date General Dynamics (GD) recommended item to the Air Force: January 18, 1982

SERD 74971 - MOTOR PULLER TOOL, ELEVATION (cont.)

Date Air Force authorized contractor effort: September 21, 1982

Number of units purchased: 1

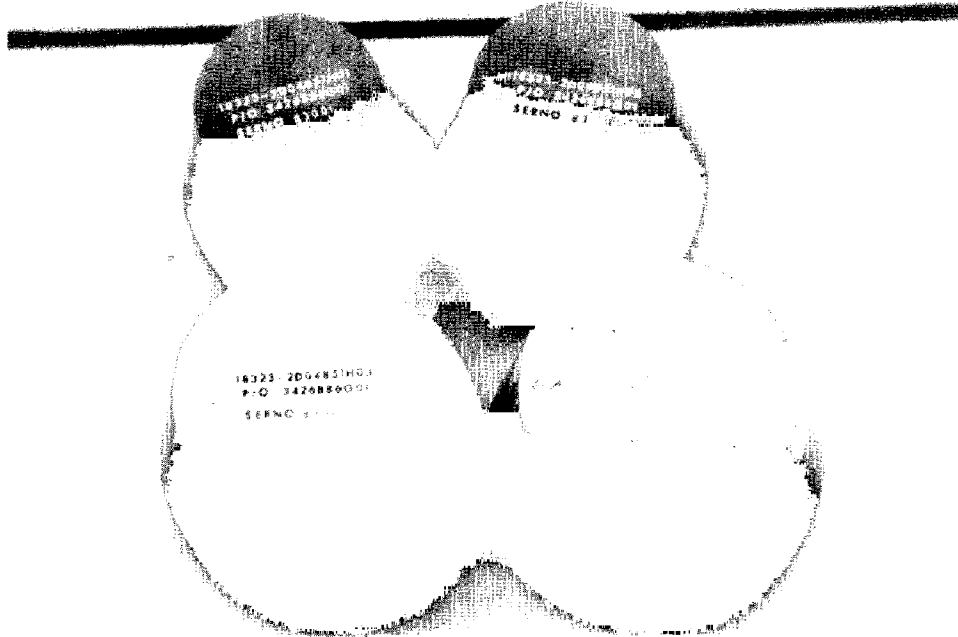
Date items delivered to Air Force: February 23, 1984

Price proposed by GD: Original (11/17/82) \$21,146
Revised (07/12/83) \$23,217
Revised (02/28/84) \$11,718

Price GD paid WEC: \$9,103

Price negotiated by Air Force March 19, 1984: \$11,492

Document definitizing price: Contract Modification PK0097
May 14, 1984

SERD 74979 - BRUSH ASSEMBLY TOOL

Vendor/Manufacturer: Westinghouse Electric Corporation (WEC)

Function: Retract F-16 antenna azimuth and elevation drive motor brush assemblies during assembly of the motors at the depot.

Date General Dynamics (GD) recommended item to the Air Force: January 18, 1982

Date Air Force authorized contractor effort: September 21, 1982

Number of units purchased: 1

Date items delivered to Air Force: February 23, 1984

Price proposed by GD: Original (11/17/82) \$10,737
Revised (07/12/83) \$14,813
Revised (02/28/84) \$10,833

SERD 74979 - BRUSH ASSEMBLY TOOL (cont.)

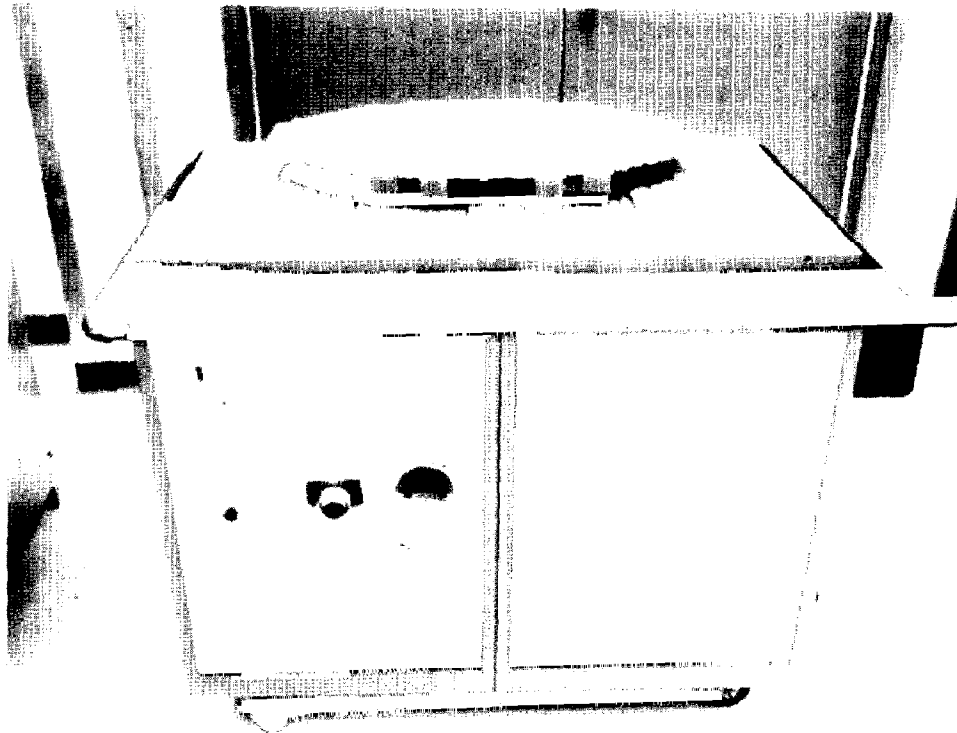
Price GD paid WEC: \$8,408

Price negotiated by Air Force March 19, 1984: \$10,624

Document definitizing price: Contract Modification PK0097
May 14, 1984

GAO observations: Westinghouse Electronic Repair Center does
not use this tool for antenna repair.

SERD 74980 - VACUUM/HEAT MAINTENANCE STAND



Vendor/Manufacturer: Westinghouse Electric Corporation

Function: Re-seals the F-16 antenna array by covering the antenna array slots with a film bond during depot repair/overhaul of antenna.

Date General Dynamics (GD) recommended item to the Air Force: January 18, 1982

Date Air Force authorized contractor effort: September 21, 1982

Number of units purchased: 1

Date items delivered to Air Force: August 30, 1984

SERD 74980 - VACUUM/HEAT MAINTENANCE STAND (cont.)

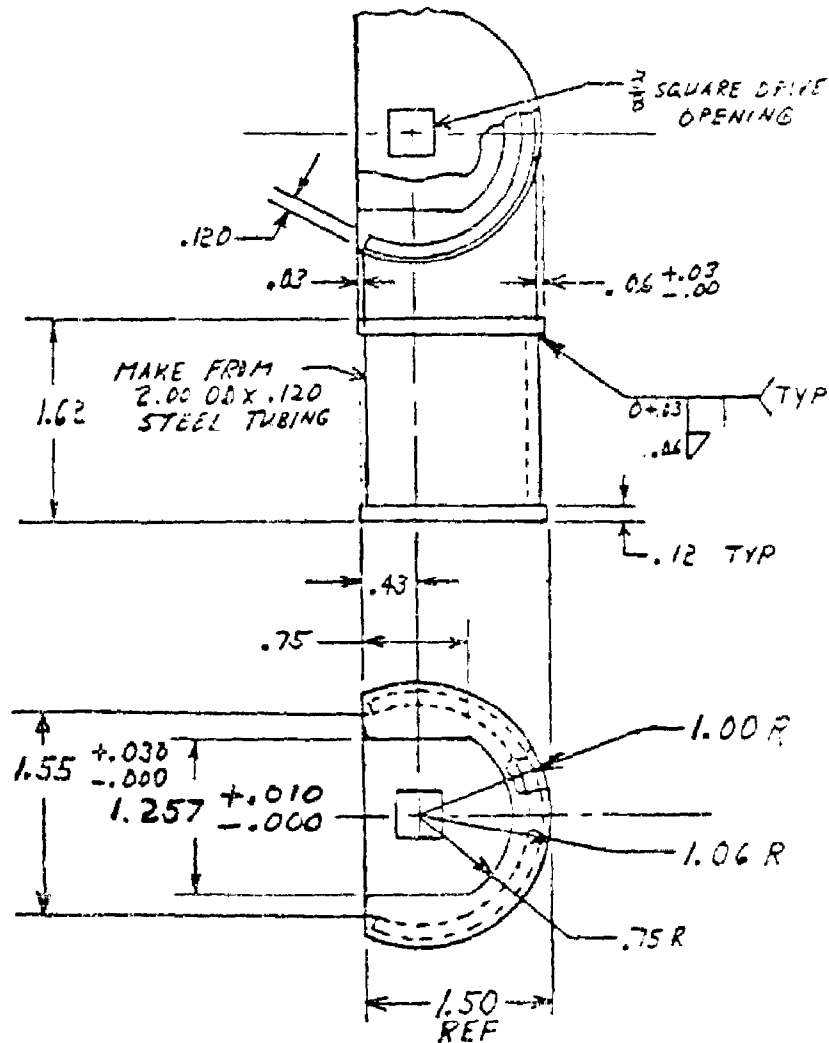
Price proposed by GD: Original (11/17/82) \$302,106
Revised (07/12/83) \$140,874
Revised (02/28/84) \$167,743

Price GD paid WEC: \$137,535

Price negotiated by Air Force March 19, 1984: \$163,843

Document definitizing price: Contract Modification PK0097
May 14, 1984

GAO observations: Westinghouse Electronic Repair Center does not use this item for antenna repair. As of July 1985, the maintenance stand was stored unused at Ogden because the technical order on how to use the stand had not been received.

SERD 14575 WRENCH, VALVE-MANIFOLD ASSEMBLY

Vendor/Manufacturer: Turnkey Industries

Function: Use at intermediate level to remove, re-install, and torque valves used in the pneumatic sensor assembly, pneumatic test manifold

Date General Dynamics (GD) recommended item to Air Force:
May 16, 1980

Date Air Force authorized contractor effort: September 21, 1982

Number of units purchased: 30

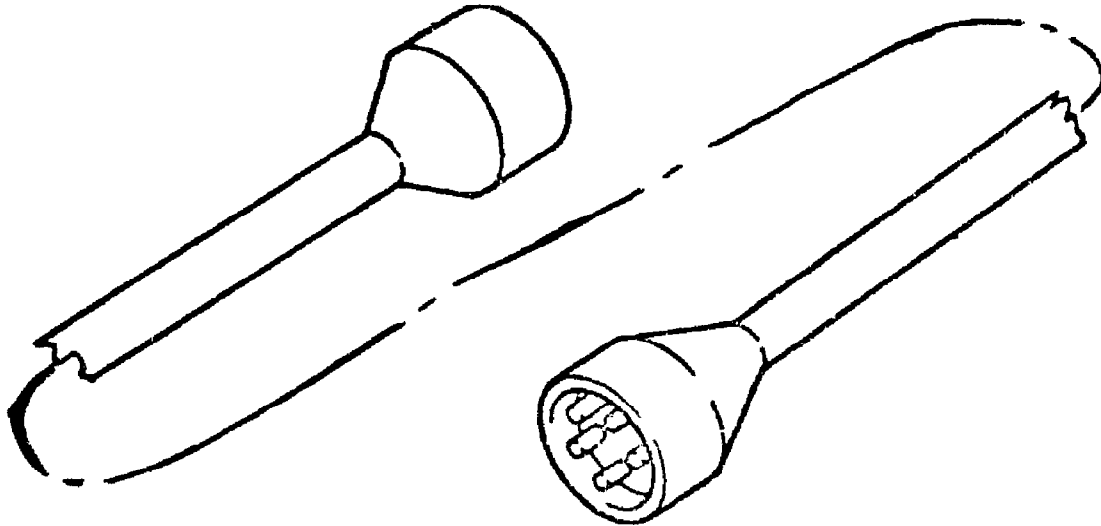
Date items delivered to Air Force: November 18-22, 1983

Price proposed by GD: Original (11/17/82) \$7,450
Revised (07/12/83) \$5,816

SERD 14575 WRENCH, VALVE-MANIFOLD ASSEMBLY (cont.)

Price negotiated by Air Force August 16, 1983: \$5,610 (\$187
each)

Document definitizing price: Contract Modification PK0061
October 31, 1983

SERD 46163 ADAPTER ASSEMBLY, TEST IFR

Vendor/Manufacturer: Multi-Tronics Corp., Fort Worth, Texas

Function: Provides a connection between the electrical connector of the aerial refueling receptacle and the electrical panel of the fuel component test stand during the depot functional test portion for overhaul of the receptacle.

Date General Dynamics (GD) recommended item to Air Force:
January 18, 1982

Date Air Force authorized contractor effort: September 21, 1982

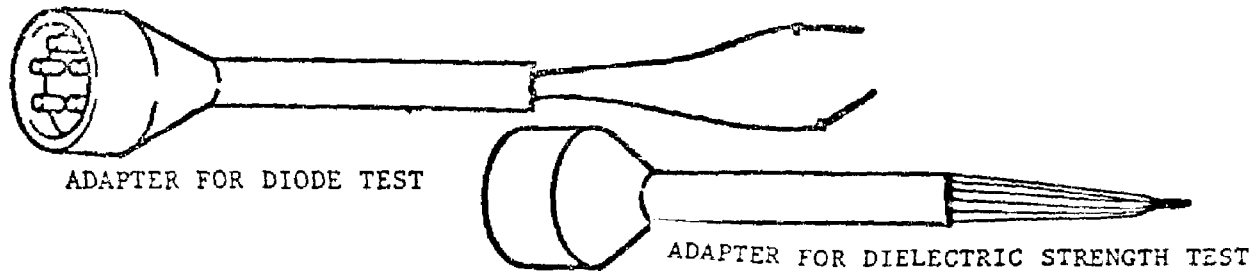
Number of units purchased: 1

Date items delivered to Air Force: January 6, 1984

Price proposed by GD: Original (11/17/82) \$9,457
Revised (07/12/83) \$6,652
Revised (08/02/84) \$6,571

Price negotiated by Air Force August 16, 1983: \$6,339

Document definitizing price: Contract Modification PK0061
October 31, 1983

SERD 46167 - ADAPTER ASSEMBLY, OVERHAUL-IFR

Vendor/Manufacturer: Multi-Tronics Corp., Fort Worth, Texas

Function: Used to accomplish depot dielectric strength tests applicable to the electrical connector and connector ease of the in-flight receptacle (IFR), and the diode test applicable to the electrical connector of the IFR.

Date General Dynamics (GD) recommended item to Air Force: January 18, 1982

Date Air Force authorized contractor effort: September 21, 1982

Number of units purchased: 1

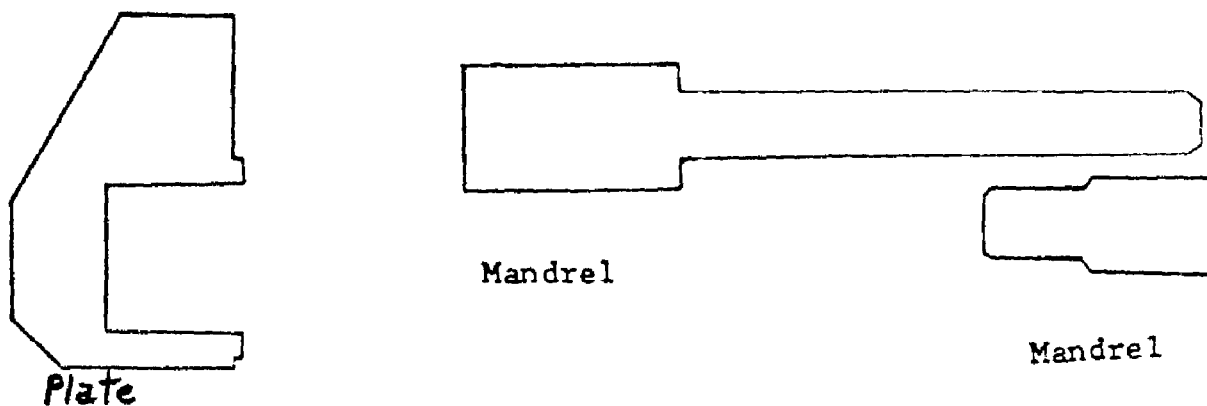
Date Items delivered to Air Force: January 6, 1984

Price proposed by GD: Original (11/17/82) \$8,580
 Revised (07/12/83) \$3,782
 Revised (08/02/84) \$3,759

Price negotiated by Air Force August 16, 1983: \$3,626

Document definitizing price: Contract Modification PK0061
 October 31, 1983

GAO observations: This item is lost and in June 1985 appeared on a San Antonio Air Logistics Center excess property list. Therefore, if the item is found the possibility exists that it could be disposed of.

SERD 46174 - INSTALLATION AND REMOVAL ASSEMBLY-ROTOR BEARING

Vendor/Manufacturer: J.C. Carter, Div. ITT, Costa Mesa,
California

Function: Used to remove and install the four rotor bearings of
the fuel flow proportioner during depot level
overhaul.

Date General Dynamics (GD) recommended item to Air Force:
May 26, 1982

Date Air Force authorized contractor effort: September 21, 1982

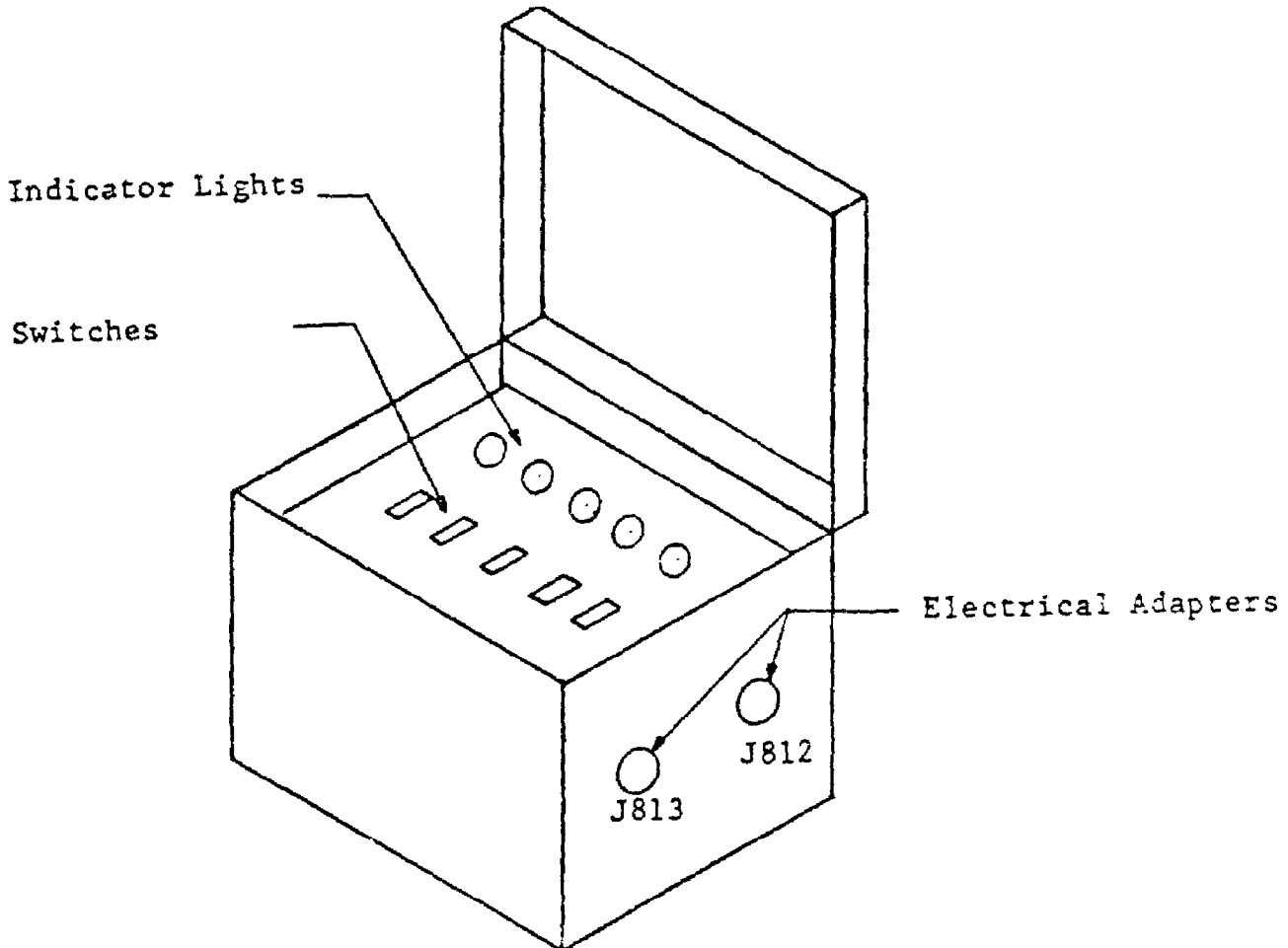
Number of units purchased: 1

Date items delivered to Air Force: April 8, 1983

Price proposed by GD: Original (11/17/82) \$2,857
Revised (07/12/83) \$2,202
Revised (08/02/84) \$2,193

Price negotiated by Air Force August 16, 1983: \$2,116

Document definitizing price: Contract Modification PK0061
October 31, 1983

SERD 46175 - TESTER ASSEMBLY, ELECTRICAL SYSTEMS - PYLON, FUEL

Vendor/Manufacturer: General Dynamics (GD), Fort Worth, Texas

Function: Checks out the electrical systems of the 370 gallon external fuel tank pylon during intermediate level maintenance.

Date GD recommended item to Air Force: April 30, 1982

Date Air Force authorized contractor effort: September 21, 1982

Number of units purchased: 1

Date items delivered to Air Force: Not yet delivered (scheduled for April 1985)

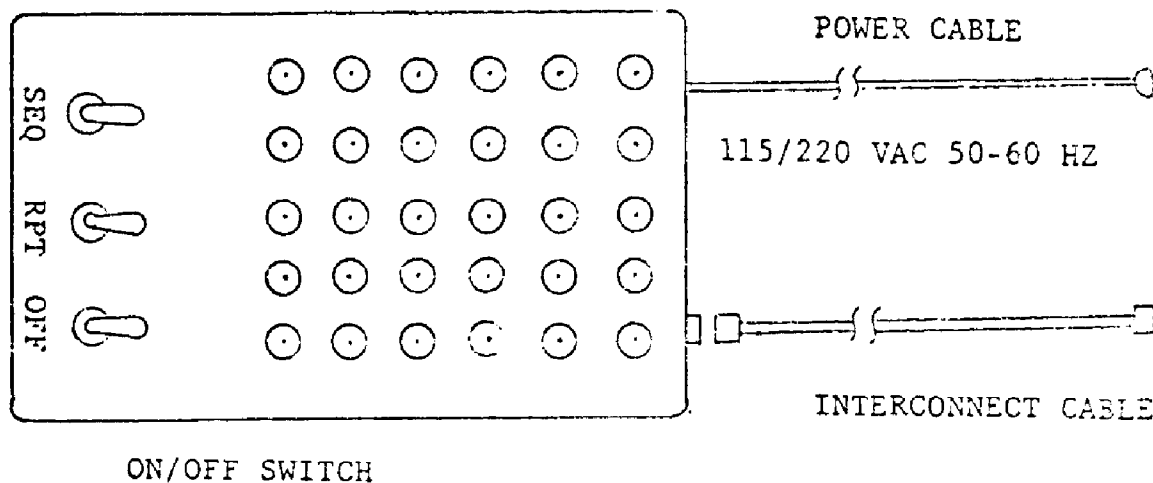
Price proposed by GD: Original (11/17/82) \$26,422
 Revised (07/12/83) \$25,279
 Revised (08/02/84) \$24,191

Price negotiated by Air Force August 16, 1983: \$22,524

Document definitizing price: Contract Modification PK0061
 October 31, 1983

SERD 65518 KIT, TEST INTERFACE

CONTROL SWITCHES



Vendor/Manufacturer: Teledyne Electronics, Newbury Park,
California

Function: Facilitates troubleshooting and fault isolation by
controlling operation of the transponder set test set
that is used to evaluate F-16A and F-16B IFF systems
on the flightline.

Date General Dynamics (GD) Recommended Item to the Air Force:
June 16, 1981

Date Air Force authorized contractor effort: September 21, 1982

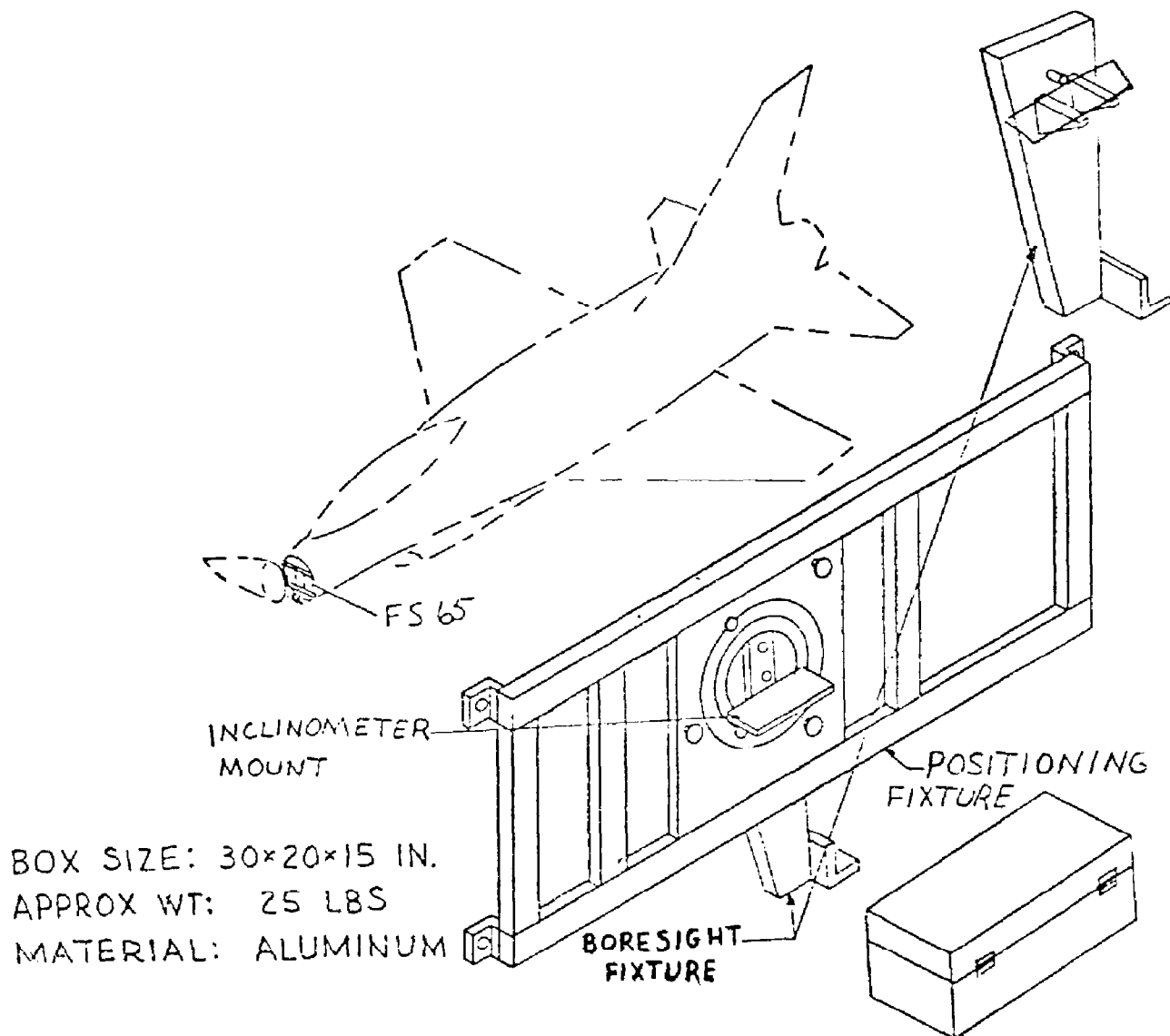
Number of units purchased: 69

Date items delivered to Air Force: May 13-December 22, 1983

Price proposed by GD: Original (11/17/82) \$351,148
Revised (07/12/83) \$301,435
Revised (08/02/84) \$301,360

Price negotiated by Air Force August 16, 1983: \$290,736

Document definitizing price: Contract Modification PK0061
October 31, 1983

SERD 74028 FIXTURE KIT, BORESIGHT - VECTOR RADAR

Vendor/Manufacturer: General Dynamics (GD), Fort Worth, Texas

Function: Used in realigning the mounting pins of the F-16 vector radar during unscheduled maintenance of the airplane.

Date GD recommended item to the Air Force: January 22, 1976

Date Air Force authorized contractor effort: September 21, 1982

Number of units purchased: 6

SERD 74028 FIXTURE KIT, BORESIGHT - VECTOR RADAR (cont.)

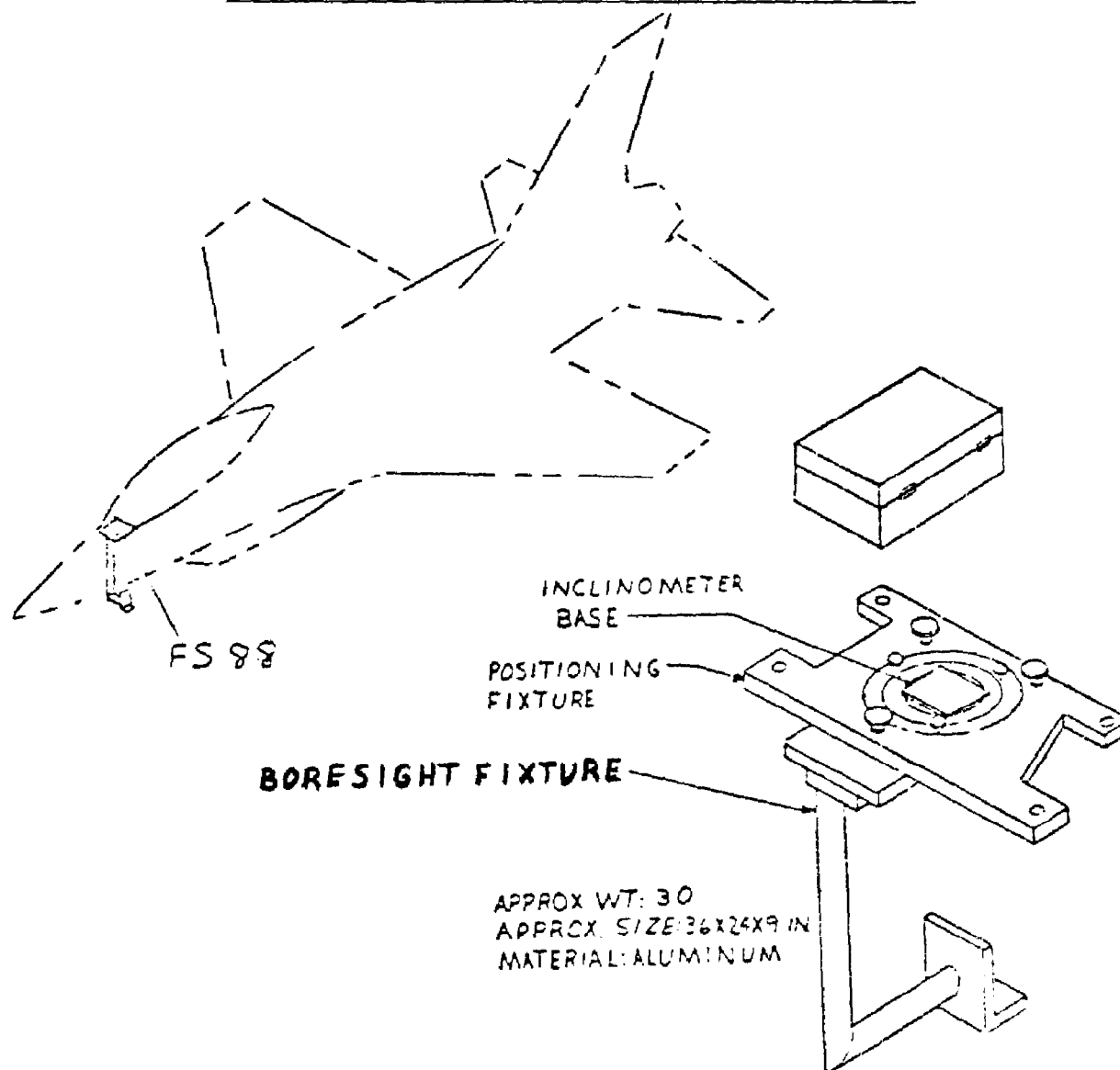
Date items delivered to Air Force: March 19-May 29, 1984

Price proposed by GD: Original (11/17/82) \$131,615
Revised (07/12/83) \$126,328
Revised (08/02/84) \$121,866

Price negotiated by Air Force August 16, 1983: \$117,570

Document definitizing price: Contract Modification PK0061
October 31, 1983

GAO observations: This item was defectively priced because GD proposed and negotiated material prices based on noncurrent purchase orders. GD reduced the price for this item in response to our finding.

SERD 74029 FIXTURE KIT, BORESIGHT - INU

Vendor/Manufacturer: General Dynamics (GD), Fort Worth, Texas

Function: Used in aligning the mounting pins of the inertial navigation unit (INU) mounting platform during unscheduled maintenance of the airplane.

Date GD recommended item to the Air Force: December 31, 1975

Date Air Force authorized contractor effort: September 21, 1982

Number of units purchased: 6

Date items delivered to Air Force: February 22-May 2, 1984

Price proposed by GD: Original (11/17/82) \$127,526
 Revised (07/12/83) \$123,767
 Revised (08/02/84) \$118,517

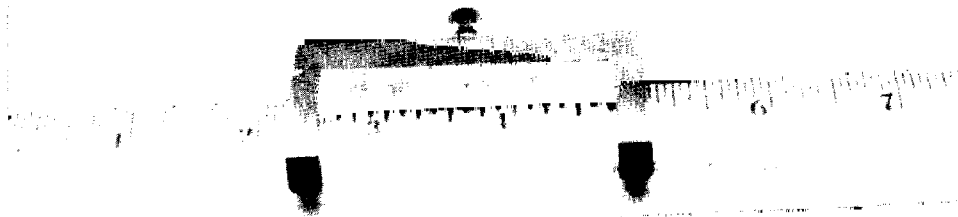
SERD 74029 FIXTURE KIT, BORESIGHT - INU (cont.)

Price negotiated by Air Force August 16, 1983: \$114,336

Document definitizing price: Contract Modification PK0061
October 31, 1983

GAO observations: This item was defectively priced because GD proposed and negotiated material prices based on noncurrent purchase orders. GD reduced the price for this item in response to our finding.

SERD 74972 - HEIGHT GAUGE, ANTENNA PULLEY



Vendor/Manufacturer: Westinghouse Electric Corporation (WEC)

Function: Ensures that the drive pulley is positioned at the proper height when it is mounted on the motor shaft during depot repair/overhaul of the F-16 antenna.

Date General Dynamics (GD) recommended item to the Air Force: January 18, 1982

Date Air Force authorized contractor effort: September 21, 1982

Number of units purchased: 1

Price proposed by GD: Original (11/17/82) \$11,911
Revised (07/12/83) \$11,170

Price proposed by WEC: \$8,338

Air Force revised order January 25, 1984: Hardware deleted, only drawings purchased.

Price proposed by GD for drawings: \$44

Price GD paid WEC: \$38

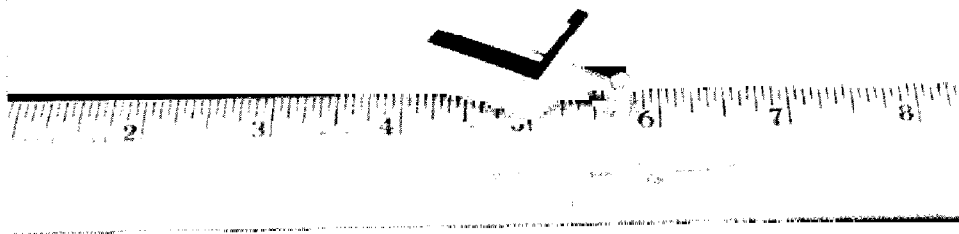
SERD 74972 - HEIGHT GAUGE, ANTENNA PULLEY (cont.)

Document definitizing price: Contract Modification PK0091
February 13, 1984

Date drawings delivered to Air Force: March 22, 1984

Source for hardware: Manufactured, Wright-Patterson Air Force
Base

Cost: \$255

SERD 74975 - ANTENNA TAPE BLOCK TOOL

Vendor/Manufacturer: Westinghouse Electric Corporation (WEC)

Function: Retain F-16 antenna azimuth and elevation drive tapes in place and properly tension them when replacement of tapes is necessary during repair/overhaul of the antenna.

Date General Dynamics (GD) recommended item to the Air Force: January 18, 1982

Date Air Force authorized contractor effort: September 21, 1982

Number of units purchased: 2

Price proposed by GD: Original (11/17/82) \$16,068
Revised (07/12/83) \$10,807

Price proposed by WEC: \$8,232

Air Force revised order January 25, 1984: Hardware deleted,
only drawings
purchased.

Price proposed by GD for drawings: \$44

SERD 74975 - ANTENNA TAPE BLOCK TOOL (cont.)

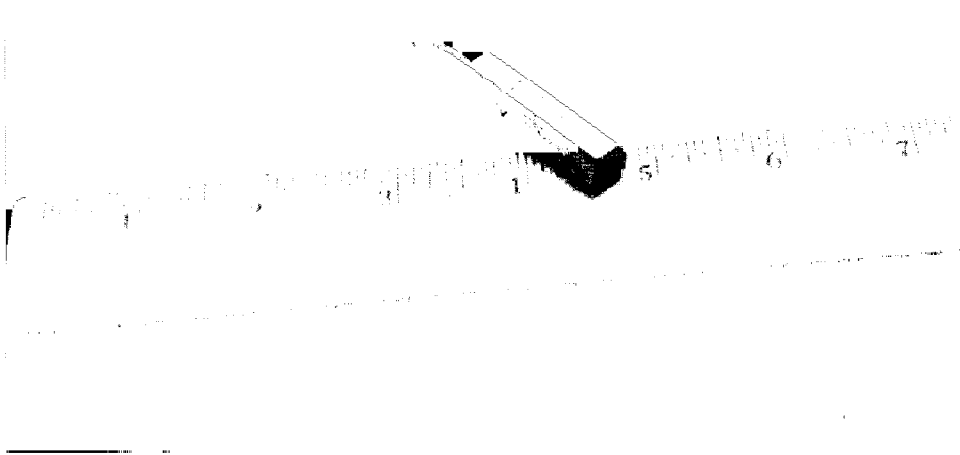
Price GD paid WEC: \$38

Document definitizing price: Contract Modification PK0091
February 13, 1984

Date drawings delivered to Air Force: March 22, 1984

Source for hardware: Manufactured, Wright-Patterson Air Force
Base

Cost: \$91.50

SERD 74977 - HEXAGON WRENCH, ANTENNA

Vendor/Manufacturer: Westinghouse Electric Corporation (WEC)

Function: To access a set screw that holds in place the clamp that secures antenna motor pulleys to their respective drive shafts.

Date General Dynamics (GD) recommended item to the Air Force: January 18, 1982

Date Air Force authorized contractor effort: September 21, 1982

Number of units purchased: 1

Price proposed by GD: Original (11/17/82) \$ 9,609
Revised (07/12/83) \$10,161

Price proposed by WEC: \$8,028

Air Force revised order January 25, 1984: Hardware deleted, only drawings purchased.

Price proposed by GD for drawings: \$44

Price GD paid WEC: \$38

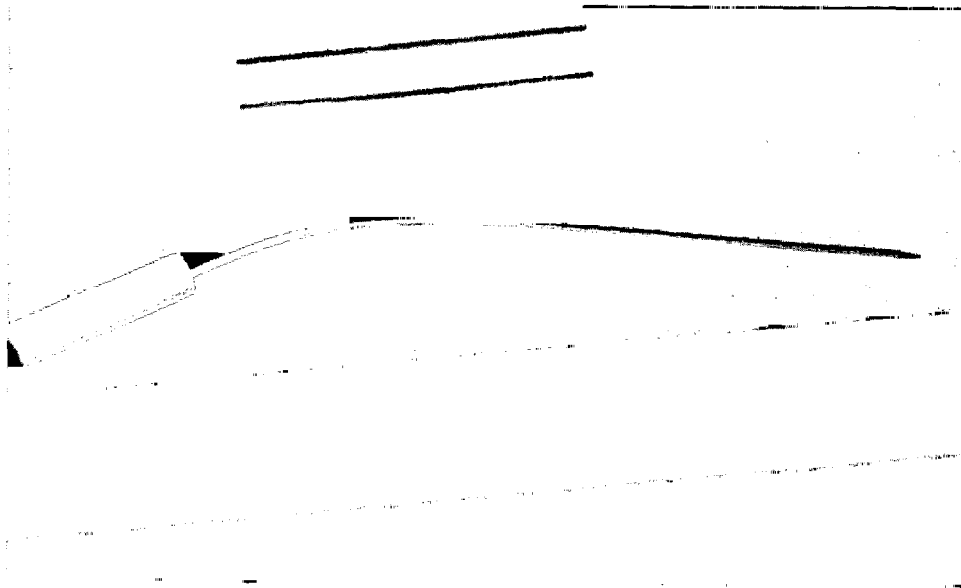
Document definitizing price: Contract Modification PK0091
February 13, 1984

Date drawings delivered to Air Force: March 22, 1984

Source for hardware: Manufactured, Wright-Patterson Air Force Base

Cost: \$105.50

GAO observations: An Ogden technician made a similar tool for his use from a commercial wrench before the manufactured item was delivered.

SERD 74978 - ALIGNMENT PIN

Vendor/Manufacturer: Westinghouse Electric Corporation (WEC)

Function: Act as guide and assure proper positioning of antenna motor stator when its reinstallation is required during motor reassembly at depot.

Date General Dynamics (GD) recommended item to the Air Force: January 18, 1982

Date Air Force authorized contractor effort: September 21, 1982

Number of units purchased: 2

Price proposed by GD: Original (11/17/82) \$14,835
Revised (07/12/83) \$ 9,376

Price proposed by WEC: \$7,150

Air Force revised order January 25, 1984: Hardware deleted, only drawings purchased.

Price proposed by GD for drawings: \$44

Price GD paid WEC: \$38

Document definitizing price: Contract Modification PK0091
February 13, 1984

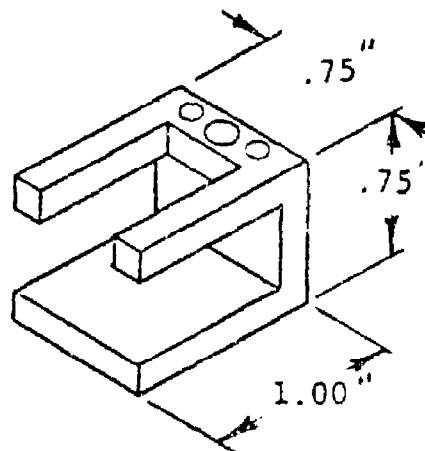
SERD 74978 - ALIGNMENT PIN (cont.)

Date drawings delivered to Air Force: March 22, 1984

Source for hardware: Manufactured, Wright-Patterson Air Force
Base

Cost: \$45.50

GAO observations: The WEC manufactured alignment pin in the picture was inadvertently bent. The two smaller alignment pins in the picture were made by an Ogden technician by cutting two pieces of wire. WEC does not use metal alignment pins it uses wooden sticks.

SERD 74967 - ANTENNA CLAMP ALIGNMENT TOOL

Vendor/Manufacturer: Westinghouse Electric Corporation

Function: To prevent F-16 antenna azimuth and elevation drive tapes from twisting when they are replaced at the depot.

Date General Dynamics (GD) recommended item to the Air Force: January 18, 1982

Date Air Force authorized contractor effort: September 21, 1982

Number of units purchased: 1

Price proposed by GD: \$10,137

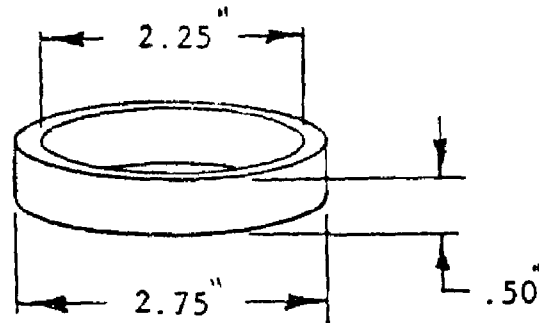
Item terminated by the Air Force: Contract Modification PK0068
October 11, 1983

Basis for termination: Change in maintenance procedures

Termination settlement: Contract Modification A00026
March 22, 1985

Amount: Total of \$838 for 74967,
74973, 74974

GAO observations: Westinghouse told us this item performed the same function as the antenna tape block tool (SERD 74975). The item was approved as needed by both GD and the Air Force then cancelled.

SERD 74973 - MOTOR STATOR KEEPER, AZIMUTH

Vendor/Manufacturer: Westinghouse Electric Corporation

Function: To preclude demagnetization of the stator when the rotor of an azimuth motor is removed.

Date General Dynamics (GD) recommended item to the Air Force: January 18, 1982

Date Air Force authorized contractor effort: September 21, 1982

Number of units purchased: 1

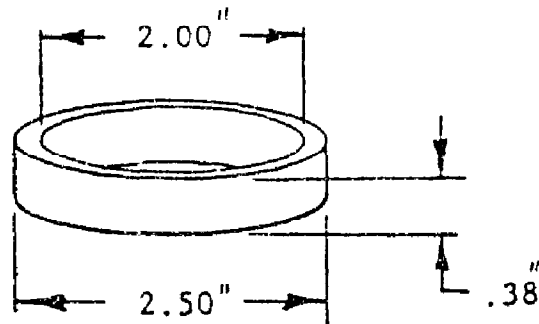
Price proposed by GD: \$9,836

Item terminated by the Air Force: Contract Modification PK0068
October 11, 1983

Basis for termination: Redetermination of maintenance procedures made item obsolete.

Termination settlement: Contract Modification A00026
March 22, 1985

Amount: Total of \$838 for 74973,
74974, 74967

SERD 74974 - MOTOR STATOR KEEPER, ELEVATION

Vendor/Manufacturer: Westinghouse Electric Corporation

Function: To preclude demagnetization of the stator when the rotor of an elevation motor is removed.

Date General Dynamics (GD) recommended item to the Air Force: January 18, 1982

Date Air Force authorized contractor effort: September 21, 1982

Number of units purchased: 1

Price proposed by GD: \$9,836

Item terminated by the Air Force: Contract Modification PK0068
October 11, 1983

Basis for termination: Redetermination of maintenance procedures made item obsolete.

Termination settlement: Contract Modification A00026
March 22, 1985

Amount: Total of \$838 for 74974,
74973, 74967

OBJECTIVES, SCOPE, AND METHODOLOGY

The objectives of our review were to (1) determine whether the support equipment procured by the Air Force from General Dynamics under Contract Cost Proposal (CCP) 6185 were excessively priced and (2) identify the individuals or organizational units responsible for procuring the equipment.

To accomplish the first objective we reviewed

- pertinent contract files maintained by the Air Force;
- General Dynamics' contract cost proposal for 23 equipment items, revisions to the proposal, and supporting documentation;
- Westinghouse Electric Corporation proposals submitted to General Dynamics;
- General Dynamics and Westinghouse purchase orders and supporting documents for equipment items purchased from vendors;
- the Air Force's price analysis of the initial General Dynamics cost proposal, which included a Defense Contract Audit Agency audit report on its audit of the proposal;
- an Air Force Plant Representative Office evaluation of the Westinghouse detailed cost proposal supporting General Dynamics' Provisioned Buy Notice 08-20 for 11 of the Westinghouse manufactured items and the Defense Contract Audit Agency audit of the proposal, which was performed in conjunction with the Plant Representative Office's evaluation; and
- cost incurred by General Dynamics and Westinghouse Electric Corporation for the selected equipment.

Concerning costs incurred, at General Dynamics we traced and verified \$436,371 in purchase orders placed with vendors (including Westinghouse). This represented about 52 percent of the total price of \$835,835 negotiated and definitized for 16 equipment items delivered, engineering drawings for 4 items for which the hardware was cancelled. One equipment item was withdrawn by General Dynamics prior to cost proposal. We also tested direct labor and material charges for two of three equipment items manufactured by General Dynamics and traced engineering labor hours incurred to summary labor records. We did not verify time charges recorded in the summary labor records to individual time and attendance records. At Westinghouse, we verified in total the engineering and

manufacturing labor hours recorded in the cumulative Contract Cost Reports for the 12 items. For 4 of the items, which comprised 68 percent of the total labor costs, we verified the labor hours recorded to the monthly subsidiary cost records which contain hours charged by each Westinghouse cost center and employee. We did not verify time charges recorded in the subsidiary cost records to individual time and attendance records. We also verified material costs of \$500 or more for the items which accounted for about 50 percent of the total manufacturing material costs for the 12 items. We did not independently review the basis for the labor and overhead rates, general and administrative expense rates, and a cost of money expense rate at General Dynamics or Westinghouse. These rates are reviewed by the Defense Contract Audit Agency and the Plant Representative Offices.

We also interviewed responsible Air Force and contractor personnel concerning the above matters.

To accomplish the second objective we reviewed

- General Dynamics documentation on support equipment recommendation data submittals to the F-16 Systems Program Office and the Ogden Air Logistics Center,
- documentation on the Ogden Air Logistic Center's review of the support equipment recommendation data including approval and recommendation for procurement of the equipment items,
- price negotiation memoranda prepared by the Air Force for the equipment items procured from General Dynamics, and
- correspondence and price negotiation memoranda prepared by General Dynamics for its subcontract with Westinghouse and General Dynamics purchase orders placed with other vendors and supporting records.

We interviewed a local vendor that provided General Dynamics two of the items. We also interviewed Air Force and contractor personnel involved in the equipment requirements approval process and in the procurement process.

We performed our work at the following locations:

- F-16 System Program Office, Wright-Patterson Air Force Base, Ohio.
- Ogden Air Logistics Center, Hill Air Force Base, Utah.

- Air Force Plant Representative Office, Westinghouse Electric Corporation, Baltimore, Maryland.
- Air Force Plant Representative Office, General Dynamics, Fort Worth Division, Fort Worth, Texas.
- General Dynamics, Fort Worth Division, Fort Worth, Texas.
- Westinghouse Electric Corporation, Defense Systems Division, Baltimore, Maryland.

Our review, which was conducted from February 1985 through September 1985, was performed in accordance with generally accepted government auditing standards.

ORGANIZATIONS AND INDIVIDUALS INVOLVED IN THE ACQUISITION

In accordance with the request of the subcommittee, we have identified some of the organizations and individuals involved in the acquisition. It should be emphasized, however, that inclusion of an individual's name in this list should not be interpreted as an indication of individual irresponsibility for the outcome of this acquisition.

The Air Force F-16 Systems Program Office at Wright-Patterson Air Force Base, Ohio, contracted for the items. It was under the command of Brigadier General G. L. Monahan, Jr., from July 1980 to August 1983 and has been commanded by Brigadier General R. W. Yates since that time. The Assistant Director was Mr. William Tully. Major Gregory Waeber was the contract negotiator and Mr. Frank E. Aber the contracting officer.

The Air Force Ogden Air Logistics Center, Hill Air Force Base, Utah, concurred in the acquisition of the items for antenna repair. A committee at Ogden reviewed the recommendations. The members of that committee were Mr. Wayne W. Walker, Ms. Linda Kennon, Mr. Kent Sutherland, Mr. Blain A. Harris, and Ms. Shirley H. Brown.

General Dynamics Corporation's Fort Worth Division recommended the acquisition of the items as support equipment. The Vice President and General Manager of the Fort Worth Division was Mr. H. F. Rogers. T. S. Webb was the F-16 Program Director. The engineer approving the recommendations for the support equipment was Mr. R. D. Smith. Subcontractor buyers included F. L. Ashabranner and N. E. Frost.

Westinghouse Electric Corporation's Defense and Electronics Center manufactured the antenna repair items. The President of the Center was Mr. H. B. Smith and Mr. Mark Shull was the F-16 Program Manager. Mr. J. R. Lantz was the contracts management representative, Mr. D. Tillman was the Manager, Contracts Management, and Mr. R. B. Spiker succeeded Mr. Barry Mikesell as the Manager, Integrated Logistics Support Division, in 1983.

For sale by:

**Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402**

Telephone (202) 783-3238

**Members of Congress; heads of Federal, State,
and local government agencies; members of the press;
and libraries can obtain GAO documents from:**

**U.S. General Accounting Office
Document Handling and Information
Services Facility
P.O. Box 6015
Gaithersburg, Md. 20760**

Telephone (202) 275-6241

