

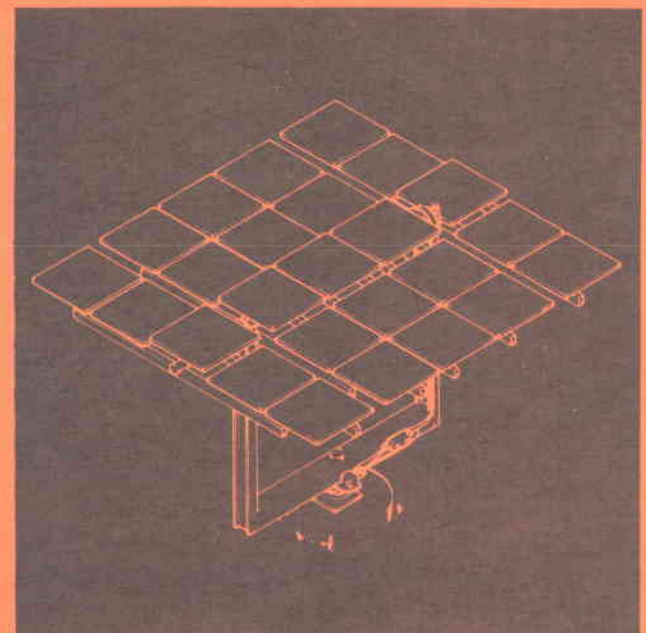
Volume III

Cost  
Proposal

December 1975

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# Heliostat Array and Control System for 5-MW Solar Thermal Test Facility



**MARTIN MARIETTA**

Volume III

Cost  
Proposal

# Heliostat Array and Control System for 5-MW Solar Thermal Test Facility

**MARTIN MARIETTA**

P75-48341-3

Volume III

Cost  
Proposal

December 1975

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**HELIOSTAT ARRAY  
AND CONTROL  
SYSTEM FOR 5-MW  
SOLAR THERMAL  
TEST FACILITY**

**MARTIN MARIETTA CORPORATION**  
**DENVER DIVISION**  
Denver, Colorado 80201

## FOREWORD

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Submitted in response to Sandia Laboratories, Albuquerque, New Mexico request for quotation (RFQ) 03-3731, this document outlines Martin Marietta's plan for design, test, manufacture, installation, focusing, alignment, and calibration of a Helio-stat Array and Control System for ERDA's 5-Megawatt Solar Thermal Test Facility.

Our proposal is submitted in four volumes:

Volume I - Technical Proposal;

Volume II - Program Plans;

Volume III - Cost Proposal;

Volume IV - Addenda for P75-48341.

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# 1. Introduction

## 1.1 INTRODUCTION

This volume is Martin Marietta's Cost Proposal for the program described in Request for Quotation No. 03-3731/FGH for a Solar Test Facility Heliostat Array and Control System. The Program is separated into Eight Zone Combinations. The configuration is the same for each Zone. The difference between Zones is the Quantity per Zone. The effort includes Management, Systems Engineering, Software Definition, Software Analysis, Software Development, Electronic Design, Systems Verification, Safety Engineering, Mechanical Design, Fabrication, Assembly, Test and Evaluation and Overall Systems Integration.

To demonstrate that our proposed cost is complete and realistic, the following paragraphs in Section 1.2 Estimating Approach present (1) the arrangement of our volume; (2) a discussion of our costing approach, and (3) our basis for proposal which describes the disciplines/functions performed.

The Supporting Cost Data provided in Section 3.0 of this Volume represents costs by each individual Zone.



## 1.2 ESTIMATING APPROACH

### 1. Arrangement of Our Volume

The arrangement of the balance of this volume is discussed to provide better visibility of, and improved accessibility to, specific financial topics and supporting cost data to assist in the evaluation of our cost volume.

#### a. Cost Summary

Section 2.0 contains a Cost Matrix which shows the cost by Item (Focus and Alignment, Calibration, Spares, etc.) by Zone. There is a Funding Matrix by Zone, as well as a Special Equipment List and an Option Price for the Calibration System Tower.

#### b. Supporting Cost Data

Section 3.0 contains a "Summary of Estimated Cost/Price" form for each Zone. In addition, this section contains a Bill of Materials for Zone A and for the all up combination Zones A, B, C, D & E. The "Engineering and/or Inspection" and the "Manufacturing and Assembly" forms contain a Basis For Estimate and the associated labor effort for each Zone.

#### c. Rates and Factors

Section 4.0 contains supplementary financial data for development of labor, overhead and general and administrative (G&A) rates; also, travel factors, computer rates, and other rates and factors. The addresses of the Cognizant Administrative

c. Rates and Factors (Continued)

Contracting Officer and the Defense Contract Audit Agency are also provided.

d. Contractual Information

Section 6.0 provides the detailed contractual information in support of this contract.

2. Costing Approach

Our approach for the proposal began with a detailed technical understanding of the program requirements. Our experience in offsite field installations for the Titan ICBM's, Skylab and Viking launch operations provides the basis for our low risk cost approach to this program. A thorough technical understanding is the foremost pre-requisite for an accurate and complete cost proposal.

The next step in our costing approach was to define the work to be performed to the lowest task level of the Work Breakdown Structure (WBS) as shown in Section 1.3. Each task representative developed estimates for the activities within the WBS. The estimates were prepared and correlated with master schedules and reviewed by the program manager, his staff and senior division management to assure an accurate estimate and the division's solid commitment to the program.

2. Costing Approach (Continued)

Past application of this costing approach has contributed to our cost performance record (as cited in the Congressional Record) and gives us confidence that we can perform the program for the cost proposed herein.

3. Basis for Proposal

a. Labor Categories

The labor categories used in our proposal and a listing of the disciplines/functions performed are provided to enable a better evaluation of our labor estimates:

Engineering - This primarily covers the labor required for conceptual and preliminary design, all analytical analyses, test requirements, software development and testing.

Other Technical Services - This covers the labor required to accomplish the following functions:

1) Finance - Cost management, budget control and financial reports.

2) Planning - Master program plan, detail schedule control.

Tooling - Process plan development.

Manufacturing - Fabrication and Assembly effort on the Heliostat Control Box and Harnesses.

Test - Digidat testing of the Heliostat Control Boxes.

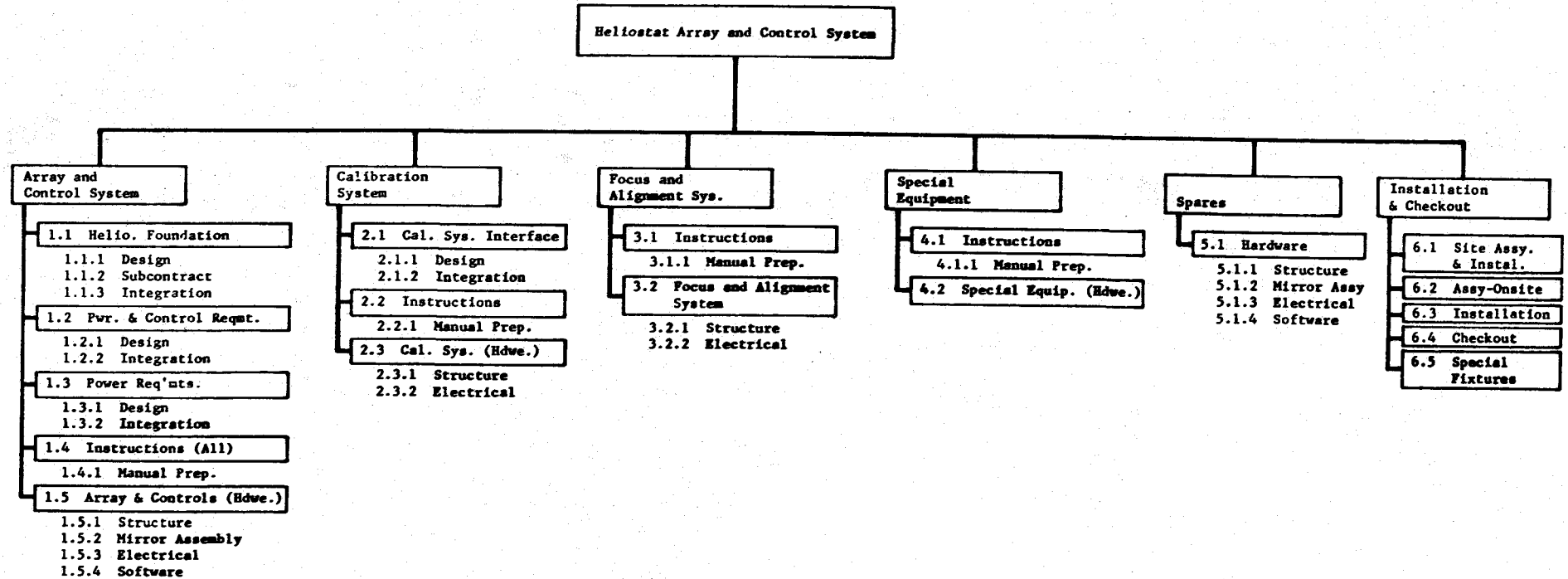
Quality and Safety - Test monitoring and safety monitoring.

Denver Data Center - This covers labor for keypunch effort.

b. Other Direct Costs

These include costs for travel, freight and Denver Data Center computers.

1.3 Work Breakdown Structure



## 2. Cost Summary

2.1 CONTRACT OFFER

The Martin Marietta Corporation is pleased to submit this proposal in accordance with Request For Quotation No. 03-3731/FGH issued by Sandia Laboratories; to provide a Solar Test Facility Heliostat Array and Control System.

We propose to accomplish this program under an incrementally funded Cost-Plus-Fixed Fee Contract for the following:

<u>Zones</u>	<u>Estimated Cost</u>	<u>Fixed Fee</u>	<u>Total CPFF</u>
A	\$ 2,488,703	199,096	\$ 2,687,799
C	\$ 2,529,387	202,351	\$ 2,731,738
D	\$ 2,715,108	217,209	\$ 2,932,317
E	\$ 2,535,622	202,850	\$ 2,738,472
B	\$ 3,807,625	304,610	\$ 4,112,235
A & B	\$ 4,754,711	356,603	\$ 5,111,314
A,C,D, & E	\$ 5,174,614	388,096	\$ 5,562,710
A,B,C,D, & E	\$ 7,268,956	545,172	\$ 7,814,128

In reply to Article A5 - Allowable Costs and Fixed Fee, we will have some Martin Marietta personnel charging direct to this contract whose salaries amount to \$25,000 or more annually.

2.3 CONTRACT SUMMARY FUNDING BY ZONE

<u>ZONES</u>	<u>CY-1976</u>	<u>CY-1977</u>	<u>TOTAL FUNDS</u> <sup>(1)</sup>
A	\$ 2,687,799	\$ -	\$ 2,687,799
C	\$ 2,630,762	\$ 100,976	\$ 2,731,738
D	\$ 2,747,134	\$ 185,183	\$ 2,932,317
E	\$ 2,467,074	\$ 271,398	\$ 2,738,472
B	\$ 3,652,199	\$ 460,036	\$ 4,112,235
A & B	\$ 4,871,596	\$ 239,718	\$ 5,111,314
A,C,D, & E	\$ 5,397,849	\$ 164,861	\$ 5,562,710
A,B,C,D, & E	\$ 7,388,800	\$ 425,328	\$ 7,814,128

(1) Includes Fixed Fee

2.6 OPTION PRICE - CALIBRATION SYSTEM TOWER

Tower Support Structure - Calibration System

Subject - Budgetary estimate for Structural Tower supports for Calorimeter System/calibration targets.

This portion of structure is considered to be a part of Government Furnished Equipment (GFE). The governments facility plan includes a tower to accept our calorimeter system. It is feasible to assume that necessary modification to avoid interference with receiver will be provided as GFE.

In the event that customer would prefer that Martin Marietta provide the supporting structure we have compiled a budgetary estimate for Tower Structure as follows:

Engineering labor:

Burdened  
Dollars

Design/Drawings, Stress & Dynamics

Liaison during Fabrication (8.0 M/M's) = \$ 30,000

Fabrication labor:

Provide Frame/supports and ring segments - assemble, test, package and

Q/A monitor workmanship. (30.0 M/M's) = 114,000

Material

Provide structural steel and drivers/

bearings (\$19,500) = 26,000

Total Budgetary Estimate \$170,000





**2.7 CERTIFICATE OF CURRENT COST OR PRICING DATA**

This is to certify that, to the best of my knowledge and belief, cost or pricing data<sup>1</sup> submitted in writing, or specifically identified in writing if actual submission of the data is impracticable (see FPR 1-3.807-3 (h) (2)), to Sandia in support of Request for Quotation No. 03-3731/FGH<sup>2</sup> are accurate, complete, and current as of December 5, 1975<sup>3</sup>.  
(Date)

Firm MARTIN MARIETTA CORPORATION  
Name M. Marx Hintze  
M. Marx Hintze  
Title Program Manager

December 5, 1975<sup>4</sup>  
(Date of Execution)

<sup>1</sup> For definition of "cost or pricing data," see FPR 1-3.807-3.

<sup>2</sup> Describe the proposal, quotation, request for price adjustments, or other submission involved, giving appropriate identifying number (e.g., RFQ No. \_\_\_\_\_).

<sup>3</sup> This date shall be the date when the price negotiations were concluded and the contract price was agreed to. The responsibility of the Contractor is not limited by the personal knowledge of the Contractor's negotiator if the Contractor had information reasonably available (see FPR 1-3.807-5(a)) at the time of agreement showing that the negotiated price is not based on accurate, complete, and current data.

<sup>4</sup> This date should be as close as practicable to the date when the price negotiations were concluded and the contract price was agreed upon.

### 3. Supporting Cost Data



CONTRACTOR		PROCUREMENT NO.		
Martin Marietta Corporation		RFQ 03-3731/FGH		
ITEM NO.	QUANTITY	PRODUCT		
1 thru 6	78	Heliostat Array and Control System		
ITEMS OF COST			REFERENCE FORM	
COST ELEMENTS	TOTAL COST	UNIT COST		
DIRECT MATERIAL OTHER MAT'L	Purchased Commercial Parts Services	777,043	9,962	SF 6432-AC
	Subcontracted Items	173,950	2,230	SF 6432-AC
	Raw Material	76,789	985	SF 6432-AB
	Interdivisional Transfers (at other than cost)			SF 6432-AC
	Interdivisional Transfers (at cost)			SF 6432-AC
MATERIAL OVERHEAD				
DIRECT ENGINEERING/ INSPECTION LABOR *		472,038	6,052	SF 6432-AD
ENGINEERING/ INSPECTION OVERHEAD *		422,599	5,418	SF 6432-AD
DIRECT MANUFACTURING/ ASSEMBLY LABOR		54,853	703	SF 6432-AE
MANUFACTURING ASSEMBLY OVERHEAD		93,797	1,202	SF 6432-AE
FACILITIES	To Be Purchased		.	SA 6432-AF
	To Be Manufactured			SA 6432-AF
OTHER COSTS (Itemize on separate sheet)		81,031	1,039	Attach. A
SUBTOTALS		2,152,100	27,591	
GENERAL AND ADMINISTRATIVE EXPENSES		336,603	4,315	Attach. A
ROYAL TIES (Itemize on separate sheet)		---		
SUBTOTALS		2,488,703	31,906	
PROFIT OR FEE		199,096		
TOTAL PRICE		2,687,799	34,459	

1. IF THE DEPARTMENT OF DEFENSE, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, OR THE ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION HAVE PERFORMED ANY REVIEW OF YOUR ACCOUNTS OR RECORDS IN CONNECTION WITH ANY GOVERNMENT PRIME CONTRACT OR SUBCONTRACT WITHIN THE PAST TWELVE MONTHS, PLEASE IDENTIFY LISTING NAME, ADDRESS AND TELEPHONE NUMBER. IF NONE, SO INDICATE.

Mr. A. Mohn, Resident Auditor, Defense Contract Audit Agency,  
P. O. Box 179, Station A183, Denver, Colorado 80201

2. LIST ANY CONTRACTS OR SUBCONTRACTS FOR SIMILAR ITEMS AWARDED TO YOU WITHIN THE PAST THREE YEARS SHOWING CUSTOMER(S) DATE(S) AND CONTRACT NUMBERS.

Customer	Date	Contract No.
a. ERDA	20 June 1975	LC E(04-3)-1110
b. ERDA	5 June 1975	E(04-3)-1068

3. CONTRACTOR CERTIFIES THAT THE ABOVE COST SUMMARY CONFORMS TO THE COST PRINCIPLES SET FORTH IN THE ERDAPR'S UNLESS OTHERWISE STATED BELOW. EXPLAIN ANY DEVIATIONS.

No Deviations

4. INDICATE AND JUSTIFY ANY CHARGES INCLUDED IN THE AMOUNTS LISTED ON THIS FORM WHICH INVOLVE (i) ANY CHARGE FOR PROPERTY WHICH DUPLICATES ANY CHARGE AGAINST ANY PRIOR OR CURRENT GOVERNMENT CONTRACT OR SUBCONTRACT OR (ii) ANY RENTAL OR USE CHARGE ON GOVERNMENT PROPERTY. IF NONE, SO INDICATE.

None

SIGNED BY (Authorized Representative)

*M. Marx Hintze*

TITLE M. Marx Hintze  
Program Manager

DATE December 5, 1975

\* Includes Offsite Labor and Overhead Cost

Zone A

OTHER COSTS

<u>Item</u>		<u>Dollars</u>
Travel	(Ref. Section 4.3)	\$ 7,000
Freight	(Ref. Section 4.5)	3,200
TDY Cost	(Ref. Section 4.3)	39,576
Equipment Rental	(Ref. Section 2.4)	21,150
Computer:		
CDC 6000 (11 Units @ \$725/Unit)		7,975
IBM 370 ( 6 Units @ \$342/Unit)		2,050
Keypunch (5.7 Units @ \$14/Unit)		80
		<hr/>
	Total Other Costs	\$ 81,031

GENERAL AND ADMINISTRATIVE EXPENSE

	<u>CY 1976</u>			
	<u>Base</u>	<u>Rate</u>	<u>\$</u>	<u>Total G&amp;A \$</u>
Denver G&A	1,080,044	22.7	245,256	\$ 245,256
Offsite Flow Down	831,752	10.8	89,828	89,828
DDC M&A	10,105	15.0	1,519	<hr/> 1,519
		Total G&A Expense		\$ 336,603

Note: Variance in dollars is due to computer rounding.







PROC. NO. \_\_\_\_\_

**MANUFACTURING and ASSEMBLY  
LABOR and BURDEN ESTIMATE**

78                      HELIOSTAT ARRAY  
 QUANTITY                      PRODUCT  
MARTIN MARIETTA CORP., DENVER DIVISION  
 SUPPLIER

ITEM NO. \_\_\_\_\_  
 PHASE NO. ZONE A  
 PAGE \_\_\_\_\_ OF \_\_\_\_\_

SANDIA PART NO. OR DESCRIPTION	QTY TO BE MFD	DEPT	LABOR HOURS		LABOR COST		BURDEN		TOTAL Labor & Burden
			Per Unit	Total	Rate	Amount	Rate	Amount	
TASK WBS 1.0 - ARRAY AND CONTROL SYSTEM									
Electrical -									
● Fabricate,									
Assemble and									
Test of the									
Control Boxes	78		101.9						
<b>TOTALS</b>				7,952	6.898	\$54,853	171%	\$93,797	\$148,650

COMMENTS:









**ENGINEERING and/or INSPECTION**  
**DIRECT LABOR and BURDEN ESTIMATE**  
78 **HELIOSTAT ARRAY**

QUANTITY \_\_\_\_\_ PRODUCT \_\_\_\_\_  
**MARTIN MARIETTA CORP., DENVER DIVISION**  
SUPPLIER \_\_\_\_\_

PROC. NO. \_\_\_\_\_

ITEM NO. \_\_\_\_\_

PHASE NO. ZONE A

PAGE \_\_\_\_\_ OF \_\_\_\_\_

TYPE OF LABOR (Separate Engrg Labor from Inspection Labor)	DEPT	LABOR			BURDEN		TOTAL Labor & Burden
		Hrs., Wks., or Mos.	Rate	Amount	Rate	Amount	
TASK WBS - 3.0							
Focus & Alignment System:							
Engineering Labor							
• Alignment Target							
Design & Drafting							
• Fabrication of Target							
• Interface Coordination							
& Verification/Reviews							
• Subsystem Vendor							
Interface, Light Source							
& Mobile Positioner							
• Reflector Optimization							
Studies, Test & Analysis							
• Documentation Preparation							
Instructions-Operating,							
Handling & Maintenance							
• Prepare Test Reports							
• Liaison Support During							
Fabrication & Procurement							
Cycles				3-10			
• Program Support							
TOTAL INSPECTION	<del>X</del>	*					
TOTAL ENGINEERING	<del>X</del>	3,471	9.678	\$33,591	96%	\$32,245	\$65,836

COMMENTS: Due to non-recurring nature of fabrication task, the target assembly & test will be accomplished in our Engineering Lab.

\* Inspection tasks are performed by Engineering Supervision & Lead Personnel.



BASIS FOR ESTIMATE

Heliostat Array - Zone A & All Zones

Denver - Field Team Labor

Task 6.0- Installation and Checkout

Based on our extensive experience of offsite field installations involving Titan ICBM sites, Skylab integration and Viking launch operations we are extremely confident of our ability to properly evaluate and perform the Heliostat Array installation and checkout.

Denver Field Preparation Effort:

Due to the magnitude of Task in the field and the importance of the successful accomplishment of a fully operational system we plan a minimal but necessary Denver preparation prior to sending people to the site. This planning and staging effort will be performed by our top managerial personnel which will assure proper staffing and coordination of the entire field operation.

(See summary manpower display)









**PURCHASED PARTS and/or SERVICES ESTIMATE**

78      HELIOSTAT ARRAY  
 QUANTITY      PRODUCT  
 MARTIN MARIETTA CORP., DENVER DIVISION  
 SUPPLIER

FILE NO. \_\_\_\_\_  
 PROC. NO. \_\_\_\_\_  
 ITEM NO. \_\_\_\_\_  
 PHASE NO.      ZONE A  
 PAGE \_\_\_\_\_ OF \_\_\_\_\_

SANDIA PART NO. OR DESCRIPTION	VENDOR (if known)	QTY TO BE PUR	PARTS COST		OTHER COST		TOTAL COST	PRICE CODE (1)
			Price	Amount	Set-up	Tooling		
Housing	Zero Mfg.	78	9.60	749			749	2
Cover	Zero Mfg.	78	4.38	342			342	2
Xtal Osc	Accutronics	78	25.00	1,950			1,950	2
UART Dip	General Inst.	83	6.40	531			531	2
U-D Counter	T.I.	498	3.60	1,793			1,793	2
4Bit Comp.	T.I.	498	3.40	1,693			1,693	2
4 Bit Shift Reg.	T.I.	328	3.80	1,246			1,246	2
8 Bit Shift Reg.	T.I.	400	2.00	800			800	2
Counter	T.I.	172	4.71	810			810	2
Line Rec.	T.I.	79	1.53	121			121	2
F.F. I.C.	T.I.	251	5.75	1,443			1,443	2
Hex. Inv.	T.I.	245	1.04	255			255	2
NAND	T.I.	410	.67	275			275	2
Triac	G.E.	312	.77	240			240	2
Opt. Coupler	T.I.	318	4.80	1,526			1,526	2
Resistor	Allen Bradley	6055	.044	266			266	2
Transistor	Motorola	166	.25	42			42	2
Capacitor	Kemet	2025	.21	425			425	2
Fuse	Littlefuse	78	.08	6			6	1
Circuit Breaker	Wood Elect.	78	3.90	304			304	1
Connector	Amphenol	395	1.07	423			423	2
Connector	Amphenol	324	1.28	415			415	2

TOTALS

(1) INDICATE APPROPRIATE CODE NUMBER:  
 1. BEST ESTIMATE, 2. VENDOR QUOTE,  
 3. CATALOG PRICE, 4. RECENT PURCHASE

COMMENTS:

**PURCHASED PARTS and/or SERVICES ESTIMATE**

78      HELIOSTAT ARRAY  
QUANTITY      PRODUCT

MARTIN MARIETTA CORP., DENVER DIVISION  
SUPPLIER

FILE NO. \_\_\_\_\_  
PROC. NO. \_\_\_\_\_

ITEM NO. \_\_\_\_\_  
PHASE NO. ZONE A

PAGE \_\_\_\_\_ OF \_\_\_\_\_

SANDIA PART NO. OR DESCRIPTION	VENDOR (if known)	QTY TO BE PUR	PARTS COST		OTHER COST		TOTAL COST	PRICE CODE (1)
			Price	Amount	Set-up	Tooling		
Conn. Clamp	Amphenol	316	1.08	341			341	2
Limit Sw.	Microswitch	936	1.20	1,123			1,123	1
Elect Wire	Belden	39000FT	12.75MFT	497			497	1
Fuse Holder		78	1.36	106			106	1
P.C.Board	Centerline CKT.	78	8.25	644			644	2
Instr Case	Zero Mfg.	3	46.82	140			140	2
SW DT	JBT	12	1.60	19			19	1
Light		3	5.19	16			16	1
SW SP	Microswitch	3	1.95	6			6	1
TW Switch	Arrow	8	29.50	236			236	2
Cable	Belden	125 Ft	11.25CFT	14			14	1
Latch Cover		3	1.00	3			3	1
Conn Clamp	Amphenol	6	1.08	6			6	2
Lamp		27	.24	6			6	1
Hinge, Piano		1 Lot	3.76Lot	4			4	1
Pwr Supply	Power-One Inc.	312	22.48	7,014			7,014	2
PC Board	Centerline CKT.	78	8.25	644			644	2
Potentiometer	Spectral	8	1.46	12			12	2
Resistor	IRC	40	.18	7			7	2
Resistor	IRC	8	.47	4			4	2
Capacitor	Aerovox	8	.30	2			2	2
			<b>TOTALS</b>					

(1) INDICATE APPROPRIATE CODE NUMBER:  
1. BEST ESTIMATE. 2. VENDOR QUOTE,  
3. CATALOG PRICE, 4. RECENT PURCHASE

COMMENTS:

**PURCHASED PARTS and/or SERVICES ESTIMATE**

78      HELIOSTAT ARRAY  
QUANTITY      PRODUCT

MARTIN MARIETTA CORP., DENVER DIVISION  
SUPPLIER

FILE NO. \_\_\_\_\_  
PROC. NO. \_\_\_\_\_

ITEM NO. \_\_\_\_\_

PHASE NO. ZONE A

PAGE \_\_\_\_\_ OF \_\_\_\_\_

SANDIA PART NO. OR DESCRIPTION	VENDOR (if known)	QTY TO BE PUR	PARTS COST		OTHER COST		TOTAL COST	PRICE CODE (1)
			Price	Amount	Set-up	Tooling		
Capacitor	Sprague	8	.14	1			1	2
Capacitor	Aerovax	8	.58	5			5	2
MOS/FET	RCA	8	1.39	11			11	2
I.C.	National Semi	8	1.55	12			12	2
Photodiode	United Detector Tech	8	44.75	358			358	2
Red Resistor LED	Hewlett Packard	8	.80	6			6	2
SW SPDT	Raytheon	8	.97	8			8	2
Cable	Belden	96 Ft	.0512FT	5			5	2
Connector	Amphenol	8	1.19	10			10	2
Connector	Amphenol	16	.52	8			8	2
Diffuser	Cadillac	8	1.26	10			10	2
PC Board		8	5.00	40			40	1
Bearings	McGill	312	3.78	1,179			1,179	2
Mirror	<sup>20X78-1950</sup> Gardner Mirror Corp.	1950	<sup>82/FT</sup> 32.00	62,400	HIGH?		62,400	2
5/16-24Bolt	A&I Bolt & Nut	1950	.061	119			119	2
5/16 Nut	All Metal Screw	13650	.008	109			109	2
5/16 Washer	All Metal Screw	13650	.008	109			109	2
5/16-24Stud	All Metal Screw	3900	.26	1,014			1,014	2
5/16-24Stud	All Metal Screw	1950	.134	261			261	2
Azimuth Drive Mechanism	Milwaukee Gear Co.	78	1000.00	78,000	CHECK	8,945	86,945	2
Elevation Drive Mechanism	Milwaukee Gear Co.	78	1150.00	89,700	"	9,000	98,700	2
Azimuth Tracking Motor	Sigma	78	63.75	4,973	TYPE		4,973	2
			TOTALS					

(1) INDICATE APPROPRIATE CODE NUMBER:  
1. BEST ESTIMATE, 2. VENDOR QUOTE,  
3. CATALOG PRICE, 4. RECENT PURCHASE

COMMENTS:

**PURCHASED PARTS and/or SERVICES ESTIMATE**

78      HELIOSTAT ARRAY  
QUANTITY      PRODUCT

MARTIN MARIETTA CORP., DENVER DIVISION  
SUPPLIER

FILE NO. \_\_\_\_\_  
PROC. NO. \_\_\_\_\_

ITEM NO. \_\_\_\_\_

PHASE NO. ZONE A

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SANDIA PART NO. OR DESCRIPTION	VENDOR (if known)	QTY TO BE PUR	PARTS COST		OTHER COST		TOTAL COST	PRICE CODE (1)
			Price	Amount	Set-up	Tooling		
Elevation Tracking Motor	Sigma	78	42.00	3,276			3,276	2
Slew Motor	Superior	156	43.14	6,730			6,730	2
Encoder	CHECK-TYPE	156	LOW 312.00	48,672			48,672	1/2
Heliostat Foundation Design Only	Bechtel	1 Lot	Per Lot	42,440	OMIT		42,440	2
Instr Case	Zero Mfg.	2	50.78	102			102	2
Computer Sys.	Modcomp ROGER	1	15749.00	15,749			15,749	2
Computer Sys.	Modcomp h	(1) Dev. Unit	45662.00	45,662			45,662	2
1/2" T. Control Valve	TEMP?	1	20.00	20		CAK-SYS ↓	20	1
S Control Valve	Atkomatic	10	44.00	440			440	2
S Control Valve	Atkomatic	1	42.00	42			42	2
S Control Valve	Atkomatic	1	106.00	106			106	2
Pump, 7.5 GPM		2	161.00	322			322	3
Water Tank 50 Gal		2	33.00	66			66	3
Water Tank 250 Gal		1	125.00	125			125	3
Heat Exchanger		1	500.00	500			500	1
1/2" Copper 90° Elbow		48	.19	9			9	3
1/2" Copper Tee		20	.32	6			6	3
Reduction Copper Tee		70	5.00	350			350	1
1/4" Copper 90° Elbow	HIGH	12	.85	10			10	1
1/2" Copper Union	SOLDER LOW	12	1.27	15			15	3
2" Copper Union		12	9.61	115			115	3
1/4" Copper Union		8	.50	4			4	1

(1) INDICATE APPROPRIATE CODE NUMBER:  
1. BEST ESTIMATE, 2. VENDOR QUOTE,  
3. CATALOG PRICE, 4. RECENT PURCHASE

TOTALS

COMMENTS:

**PURCHASED PARTS and/or SERVICES ESTIMATE**

78                      HELIOSTAT ARRAY  
QUANTITY                      PRODUCT

MARTIN MARIETTA CORP., DENVER DIVISION  
SUPPLIER

FILE NO. \_\_\_\_\_  
PROC. NO. \_\_\_\_\_  
ITEM NO. \_\_\_\_\_  
PHASE NO. ZONE A  
PAGE \_\_\_\_\_ OF \_\_\_\_\_

SANDIA PART NO. OR DESCRIPTION	VENDOR (if known)	QTY TO BE PUR	PARTS COST		OTHER COST		TOTAL COST	PRICE CODE (1)
			Price	Amount	Set-up	Tooling		
Precision Scale		1	212.50	213			213	3
Micro Switch		2	1.00	2			2	1
I.C.	Siliconix	6	38.00	228			228	3
I.C.	National	1	67.50	68			68	3
I.C.	T.I.	4	7.93	32			32	3
I.C.	T.I.	5	7.21	36			36	3
I.C.	Analog Devices	1	305.00	305			305	2
Resistor	Cramer	82	.46	38			38	3
I.C.	T.I.	25	.84	21			21	3
Resistor	Cramer	25	.29	7			7	3
I.C.	T.I.	6	5.00	30			30	2
I.C.	T.I.	11	5.20	57			57	3
Thermistor	Fenival	8	1.00	8			8	1
Switch		20	2.00	40			40	1
Amplifier	Rosemont	4	295.00	1,180			1,180	2
Temp Probe	Rosemont	4	100.00	400			400	2
Adapter Chassis	Rosemont	1	220.00	220			220	2
Data Logger	United System Corp.	1	2895.00	2,895			2,895	2
Decade Resistor	General Radio	3	145.00	435			435	2
Chassis	Bud	1	237.65	238			238	3
Solar Cell Assy		64	75.00	4,800			4,800	1
N. Density Filter	<i>REVIEW</i>	10	600.00	6,000			6,000	1
(1) INDICATE APPROPRIATE CODE NUMBER: 1. BEST ESTIMATE, 2. VENDOR QUOTE, 3. CATALOG PRICE, 4. RECENT PURCHASE			<b>TOTALS</b>					

COMMENTS:

**PURCHASED PARTS and/or SERVICES ESTIMATE**

78      HELIOSTAT ARRAY  
QUANTITY      PRODUCT

MARTIN MARIETTA CORP., DENVER DIVISION  
SUPPLIER

FILE NO. \_\_\_\_\_  
PROC. NO. \_\_\_\_\_

ITEM NO. \_\_\_\_\_

PHASE NO. ZONE A

PAGE \_\_\_\_\_ OF \_\_\_\_\_

SANDIA PART NO. OR DESCRIPTION	VENDOR (if known)	QTY TO BE PUR	PARTS COST		OTHER COST		TOTAL COST	PRICE CODE (1)
			Price	Amount	Set-up	Tooling		
Misc: PC Bds, etc.		1 Lot	250.00	250			250	1
I.C.	Motorola	4	15.00	60			60	2
I.C.	Motorola	1	69.00	69			69	2
I.C.	Motorola	1	14.00	14			14	2
I.C.	Motorola	8	18.15	145			145	2
I.C.	T.I.	1	6.30	6			6	3
I.C.	T.I.	1	5.77	6			6	3
Light Source RTV Dispenser	Optical Radiation Corp.	1	58,500	58,500		CHECK	58,500	(2)
Mirror Holders	WHO - WHO FOR 2	1950	20.00	39,000			39,000	2
Manual Control Box		2	1000.00	2,000			2,000	1
HIM (Drawer)		1	1120.00	1,120			1,120	1
Stimulus Box Tester		2	800.00	1,600			1,600	1
HIM Stim. Box Tester		2	1000.00	2,000			2,000	1
Mirror Frames	lea?	78	275.00	21,450			21,450	2
Yoke		78	400.00	31,200			31,200	2
Rio Grande Tooling		1 Lot		7,900			7,900	2
Bridge Crane	WHICH - FOCUS	1	31000	31,000			31,000	1
Leveling Device		1	8000.00	8,000			8,000	1
Reflection Screen		1	1138.00	1,138			1,138	4
Reflection Pasties		1 Lot	240.00	240			240	4
IRIS (Alum.)		1	5110	5,110			5,110	1

(1) INDICATE APPROPRIATE CODE NUMBER:  
1. BEST ESTIMATE, 2. VENDOR QUOTE,  
3. CATALOG PRICE, 4. RECENT PURCHASE

TOTALS

COMMENTS:





$$\begin{array}{r} 400 \\ \underline{50} \\ 20 \end{array}$$

Stop (col/FT) - 2  
Store 78 (N) - 0  
STORE 12 (N) - 1

enter L in X

RCL 1

STOP Blue MSOP (FT) en  
RCL 0 N

X STOP NX FT  
RCL 2 col/FT

X Total

**RAW MATERIALS ESTIMATE**

78 QUANTITY PRODUCT  
**MARTIN MARIETTA CORPORATION**  
 SUPPLIER

FILE NO.  
 PROC. NO.  
 ITEM NO.  
 PHASE NO. **ZONE A**  
 PAGE 1 OF 1

SANDIA PART NO. OR DESCRIPTION	QTY TO BE MF'D	MATERIAL REQUIRED			TOTAL COST
		Type	Quantity	Price	
Alum. Sheet 5/32		6061T4	2.5 Sq. Ft.	3.81Sq Ft	\$ 10
Alum. Angle 3/4x3/4x1/8		6061	176 Ft.	.24 Ft	42
14x14x1/2 Sq. Tube x 162		HELIOSTAT Structural Steel	1,099 Ft.	23.70Ft.	26,049
7 3/4 x 3/8 Tube x 15 EA <i>INCHES LENGTH</i>		Structural Steel	97.5 Ft	25.246 Ft	2,461
14x38 WF Beam x 146 <i>76x2</i>		? Structural Steel	2,014 Ft	8.63 Ft.	17,380
5 9/16 x .258 Tube x 216		Structural Steel	1,404 Ft	3.822 Ft.	5,366
5 9/16 x .258 Tube x 54		Structural Steel	351 Ft.	3.822 Ft.	1,342
2 x 4 x 1/8 Sq. Tube x 245 <i>20.4 ft</i>		102 Structural Steel	7962.5 Ft	1.014 Ft.	8,074
Steel Sheet 3/32		1010	4 Sht.	50.00 Sht.	200
2x4x.083 Sq. Tube x 185		Structural Steel	6012.5 Ft	.663 Ft.	3,986
Steel Strip 3/16 x 2 1/4 x 144		LC Hot Rolled	23,400 Ft	.252 Ft	5,897
1 1/2x1 1/2x.083 Sq. Tube x 46		Structural Steel	14,950 Ft	.341 Ft.	5,098
Steel Sheet 3/16		1010	2 Sht.	111.50 Sht.	223
Mixer Assembly		Make Item Raw Mat'l.	1	1.00	1
Temp. Chamber		Make Item Raw Mat'l.	2	5.00	10
1" Sq. Rod		Phenolic	102 Ft.	3.20 Ft.	326
1/2" Tube		Hard Copper	120 Ft.	.65 Ft.	78
2" Tube		Hard Copper	60 Ft.	3.94 Ft.	236
1/4" Tube		Hard Copper	20 Ft.	.50 Ft.	10

COMMENTS:

TOTAL \$76,789

CONTRACTOR Martin Marietta Corporation			PROCUREMENT NO. RFQ 03-3731/FGH	
ITEM NO. 1 thru 6	QUANTITY 83	PRODUCT HelioStat Array and Control System		
COST ELEMENTS			REFERENCE FORM	
TOTAL COST			UNIT COST	
DIRECT MATERIAL OTHER MAT'L	Purchased Commercial Parts/Services	801,045	9,651	SF 6432-AC
	Subcontracted Items	169,106	2,037	SF 6432-AC
	Raw Material	79,224	955	SF 6432-AB
	Interdivisional Transfers (at other than cost)			SF 6432-AC
	Interdivisional Transfers (at cost)			SF 6432-AC
MATERIAL OVERHEAD				
DIRECT ENGINEERING * INSPECTION LABOR		466,049	5,615	SF 6432-AD
ENGINEERING/ INSPECTION OVERHEAD *		420,245	5,063	SF 6432-AD
DIRECT MANUFACTURING/ ASSEMBLY LABOR		58,020	699	SF 6432-AE
MANUFACTURING/ ASSEMBLY OVERHEAD		99,213	1,195	SF 6432-AE
FACILITIES	To Be Purchased			SA 6432-AF
	To Be Manufactured			SA 6432-AF
OTHER COSTS (Itemize on separate sheet)		93,166	1,123	Attach. A
SUBTOTALS		2,186,068	26,338	
GENERAL AND ADMINISTRATIVE EXPENSES		343,319	4,137	Attach. A
ROYAL TIES (Itemize on separate sheet)				
SUBTOTALS		2,529,387	30,475	
PROFIT OR FEE		202,351		
TOTAL PRICE		2,731,738	32,913	

1. IF THE DEPARTMENT OF DEFENSE, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, OR THE ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION HAVE PERFORMED ANY REVIEW OF YOUR ACCOUNTS OR RECORDS IN CONNECTION WITH ANY GOVERNMENT PRIME CONTRACT OR SUBCONTRACT WITHIN THE PAST TWELVE MONTHS, PLEASE IDENTIFY LISTING NAME, ADDRESS AND TELEPHONE NUMBER. IF NONE, SO INDICATE.

Mr. A. Mohn, Resident Auditor, Defense Contract Audit Agency,  
P. O. Box 179, Station A183, Denver, Colorado 80201

2. LIST ANY CONTRACTS OR SUBCONTRACTS FOR SIMILAR ITEMS AWARDED TO YOU WITHIN THE PAST THREE YEARS SHOWING CUSTOMER(S) DATE(S) AND CONTRACT NUMBERS.

<u>Customer</u>	<u>Date</u>	<u>Contract</u>
a. ERDA	20 June 1975	LC E(04-3)-1110
b. ERDA	5 June 1975	E(04-3)-1068

3. CONTRACTOR CERTIFIES THAT THE ABOVE COST SUMMARY CONFORMS TO THE COST PRINCIPLES SET FORTH IN THE ERDAPR'S UNLESS OTHERWISE STATED BELOW. EXPLAIN ANY DEVIATIONS.

No Deviations

4. INDICATE AND JUSTIFY ANY CHARGES INCLUDED IN THE AMOUNTS LISTED ON THIS FORM WHICH INVOLVE (i) ANY CHARGE FOR PROPERTY WHICH DUPLICATES ANY CHARGE AGAINST ANY PRIOR OR CURRENT GOVERNMENT CONTRACT OR SUBCONTRACT OR (ii) ANY RENTAL OR USE CHARGE ON GOVERNMENT PROPERTY. IF NONE, SO INDICATE.

None

SIGNED BY (Authorized Representative) M. Marx Hintze TITLE M. Marx Hintze DATE December 5, 1975  
Program Manager

\* Includes Offsite Labor and Overhead Cost

Zone C

OTHER COSTS

<u>Item</u>		<u>Dollars</u>
Travel	(Ref. Section 4.3)	\$ 7,000
Freight	(Ref. Section 4.5)	3,200
TDY Cost	(Ref. Section 4.3)	51,711
Equipment Rental	(Ref. Section 2.4)	21,150
Computer:		
CDC 6000 (11 Units @ \$725/Unit)		7,975
IBM 370 (6 Units @ \$342/Unit)		2,050
Keypunch (5.7 Units @ \$14/Unit)		80
		<hr/>
	Total Other Costs	\$ 93,166

GENERAL AND ADMINISTRATIVE EXPENSE

	<u>CY 1976</u>			<u>CY 1977</u>			<u>Total G&amp;A \$</u>
	<u>Base</u>	<u>Rate</u>	<u>\$</u>	<u>Base</u>	<u>Rate</u>	<u>\$</u>	
Denver G&A	1,096,469	22.7	248,899	4,841	19.8	959	\$249,858
Offsite Flow Down	823,598	10.8	88,946	27,741	10.8	2,996	91,942
DDC M&A	10,105	15.0	1,519				<u>1,519</u>
							Total G&A Expense
							\$343,319

Note: Variance in dollars is due to computer rounding.

CONTRACTOR			PROCUREMENT NO.	
Martin Marietta Corporation			RFQ 03-3731/FGH	
ITEM NO.	QUANTITY	PRODUCT		
1 thru 6	100	Heliostat Array and Control System		
ITEMS OF COST				
COST ELEMENTS		TOTAL COST	UNIT COST	REFERENCE FORM
DIRECT MATERIAL OTHER MAT'L	Purchased Commercial Parts/Services	879,050	8,790	SF 6432-AC
	Subcontracted Items	194,755	1,948	SF 6432-AC
	Raw Material	92,276	923	SF 6432-AB
	Interdivisional Transfers (at other than cost)			SF 6432-AC
	Interdivisional Transfers (at cost)			SF 6432-AC
MATERIAL OVERHEAD				
DIRECT ENGINEERING INSPECTION LABOR *		471,338	4,713	SF 6432-AD
ENGINEERING INSPECTION OVERHEAD *		424,464	4,245	SF 6432-AD
DIRECT MANUFACTURING ASSEMBLY LABOR		67,831	678	SF 6432-AE
MANUFACTURING ASSEMBLY OVERHEAD		115,991	1,160	SF 6432-AE
FACILITIES	To Be Purchased			SA 6432-AF
	To Be Manufactured			SA 6432-AF
OTHER COSTS (Itemize on separate sheet)		105,863	1,059	Attach. A
SUBTOTALS		2,351,568	23,516	
GENERAL AND ADMINISTRATIVE EXPENSES		363,540	3,635	Attach. A
ROYALTY TIES (Itemize on separate sheet)				
SUBTOTALS		2,715,108	27,151	
PROFIT OR FEE		217,209		
TOTAL PRICE		2,932,317	29,323	

1. IF THE DEPARTMENT OF DEFENSE, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, OR THE ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION HAVE PERFORMED ANY REVIEW OF YOUR ACCOUNTS OR RECORDS IN CONNECTION WITH ANY GOVERNMENT PRIME CONTRACT OR SUBCONTRACT WITHIN THE PAST TWELVE MONTHS, PLEASE IDENTIFY LISTING NAME, ADDRESS AND TELEPHONE NUMBER. IF NONE, SO INDICATE.

Mr. A. Mohn, Resident Auditor, Defense Contract Audit Agency,  
P. O. Box 179, Station A183, Denver, Colorado 80201

2. LIST ANY CONTRACTS OR SUBCONTRACTS FOR SIMILAR ITEMS AWARDED TO YOU WITHIN THE PAST THREE YEARS SHOWING CUSTOMER(S) DATE(S) AND CONTRACT NUMBERS.

Customer	Date	Contract
a. ERDA	20 June 1975	LC E(04-3)-1110
b. ERDA	5 June 1975	E(04-3)-1068

3. CONTRACTOR CERTIFIES THAT THE ABOVE COST SUMMARY CONFORMS TO THE COST PRINCIPLES SET FORTH IN THE ERDAPR'S UNLESS OTHERWISE STATED BELOW. EXPLAIN ANY DEVIATIONS.

No Deviations

4. INDICATE AND JUSTIFY ANY CHARGES INCLUDED IN THE AMOUNTS LISTED ON THIS FORM WHICH INVOLVE (i) ANY CHARGE FOR PROPERTY WHICH DUPLICATES ANY CHARGE AGAINST ANY PRIOR OR CURRENT GOVERNMENT CONTRACT OR SUBCONTRACT OR (ii) ANY RENTAL OR USE CHARGE ON GOVERNMENT PROPERTY. IF NONE, SO INDICATE.

None

SIGNED BY (Authorized Representative) M. Marx Hintze TITLE M. Marx Hintze DATE December 5, 1975  
Program Manager

\* Includes Offsite Labor and Overhead Cost

Zone D

OTHER COSTS

<u>Item</u>		<u>Dollars</u>
Travel	(Ref. Section 4.3)	\$ 7,000
Freight	(Ref. Section 4.5)	3,200
TDY Cost	(Ref. Section 4.3)	64,408
Equipment Rental	(Ref. Section 2.4)	21,150
Computer:		
CDC 6000 (11 Units @ \$725/Unit)		7,975
IBM 370 (6 Units @ \$342/Unit)		2,050
Keypunch (5.7 Units @ \$14/Unit)		80

Total Other Costs \$ 105,863

GENERAL AND ADMINISTRATIVE EXPENSE

	<u>CY 1976</u>			<u>CY 1977</u>			<u>Total G&amp;A \$</u>
	<u>Base</u>	<u>Rate</u>	<u>\$</u>	<u>Base</u>	<u>Rate</u>	<u>\$</u>	
Denver G&A	\$1,129,834	22.7	256,467	7,869	19.8	1,560	\$ 258,027
Offsite Flow Down	923,820	10.8	99,774	39,090	10.8	4,220	103,994
DDC M&A	10,105	15.0	1,519				1,519
							<hr/>
							Total G&A Expense \$ 363,540

Note: Variance in dollars is due to computer rounding.



CONTRACTOR Martin Marietta Corporation			PROCUREMENT NO. RFQ 03-3731/FGH	
ITEM NO. 1 thru 6	QUANTITY 83	PRODUCT Heliostat Array and Control System		
ITEMS OF COST			REFERENCE FORM	
COST ELEMENTS		TOTAL COST	UNIT COST	
DIRECT MATERIAL OTHER MAT'L	Purchased Commercial Parts/Services	801,044	9,651	SF 6432-AC
	Subcontracted Items	172,889	2,083	SF 6432-AC
	Raw Material	79,224	955	SF 6432-AB
	Interdivisional Transfers (at other than cost)			SF 6432-AC
	Interdivisional Transfers (at cost)			SF 6432-AC
MATERIAL OVERHEAD				
DIRECT ENGINEERING/INSPECTION LABOR *		471,626	5,682	SF 6432-AD
ENGINEERING/INSPECTION OVERHEAD *		425,347	5,125	SF 6432-AD
DIRECT MANUFACTURING/ASSEMBLY LABOR		58,020	699	SF 6432-AE
MANUFACTURING/ASSEMBLY OVERHEAD		99,213	1,195	SF 6432-AE
FACILITIES	To Be Purchased			SA 6432-AF
	To Be Manufactured			SA 6432-AF
OTHER COSTS (Itemize on separate sheet)		82,583	995	Attach. A
SUBTOTALS		2,189,946	26,385	
GENERAL AND ADMINISTRATIVE EXPENSES		345,676	4,165	Attach. A
ROYALTIES (Itemize on separate sheet)				
SUBTOTALS		2,535,622	30,550	
PROFIT OR FEE		202,850		
TOTAL PRICE		2,738,472	32,994	

1. IF THE DEPARTMENT OF DEFENSE, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION OR THE ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION HAVE PERFORMED ANY REVIEW OF YOUR ACCOUNTS OR RECORDS IN CONNECTION WITH ANY GOVERNMENT PRIME CONTRACT OR SUBCONTRACT WITHIN THE PAST TWELVE MONTHS, PLEASE IDENTIFY LISTING NAME, ADDRESS AND TELEPHONE NUMBER. IF NONE, SO INDICATE.

Mr. A. Mohn, Resident Auditor, Defense Contract Audit Agency,  
P. O. Box 179, Station A183, Denver, Colorado 80201

2. LIST ANY CONTRACTS OR SUBCONTRACTS FOR SIMILAR ITEMS AWARDED TO YOU WITHIN THE PAST THREE YEARS SHOWING CUSTOMER(S) DATE(S) AND CONTRACT NUMBERS.

Customer	Date	Contract
a. ERDA	20 June 1975	LC E(04-3)-1110
b. ERDA	5 June 1975	E(04-3)-1068

3. CONTRACTOR CERTIFIES THAT THE ABOVE COST SUMMARY CONFORMS TO THE COST PRINCIPLES SET FORTH IN THE ERDAPR'S UNLESS OTHERWISE STATED BELOW. EXPLAIN ANY DEVIATIONS.

No Deviations

4. INDICATE AND JUSTIFY ANY CHARGES INCLUDED IN THE AMOUNTS LISTED ON THIS FORM WHICH INVOLVE (I) ANY CHANGE FOR PROPERTY WHICH DUPLICATES ANY CHARGE AGAINST ANY PRIOR OR CURRENT GOVERNMENT CONTRACT OR (II) ANY RENTAL OR USE CHARGE ON GOVERNMENT PROPERTY. IF NONE, SO INDICATE.

None

SIGNED BY (Authorized Representative) <i>M. Marx Hintze</i>	TITLE M. Marx Hintze Program Manager	DATE December 5, 1975
--	---	--------------------------

\* Includes Offsite Labor and Overhead Cost



Zone E

OTHER COSTS

<u>Item</u>		<u>Dollars</u>
Travel	(Ref. Section 4.3)	\$ 7,000
Freight	(Ref. Section 4.5)	3,200
TDY Cost	(Ref. Section 4.3)	41,128
Equipment Rental	(Ref. Section 2.4)	21,150
Computer:		
CDC 6000 (11 Units @ \$725/Unit)		7,975
IBM 370 (6 Units @ \$342/Unit)		2,050
Keypunch (5.7 Units @ \$14/Unit)		80

Total Other Costs \$ 82,583

GENERAL & ADMINISTRATIVE EXPENSE

	<u>CY 1976</u>			<u>CY 1977</u>			<u>Total G&amp;A \$</u>
	<u>Base</u>	<u>Rate</u>	<u>\$</u>	<u>Base</u>	<u>Rate</u>	<u>\$</u>	
Denver G&A	1,101,078	22.7	249,943	9,398	19.8	1,863	\$ 251,806
Offsite Flow Down	791,441	10.8	85,474	63,681	10.8	6,877	92,351
DDC M&A	10,105	15.0	1,519				1,519
							<hr/>
				Total G&A Expense			\$ 345,676

Note: Variance in dollars is due to computer rounding.

CONTRACTOR			PROCUREMENT NO.	
Martin Marietta Corporation			RFQ 03-3731/FGH	
ITEM NO.	QUANTITY	PRODUCT		
1 thru 6	216	Heliostat Array and Control System		
ITEMS OF COST				
COST ELEMENTS		TOTAL COST	UNIT COST	
DIRECT MATERIAL	Purchased Commercial Parts/Services	1,376,547	6,373	SF 6432-AC
	Subcontracted Items	354,839	1,643	SF 6432-AC
	Raw Material	170,135	788	SF 6432-AB
	Interdivisional Transfers (at other than cost)			SF 6432-AC
	Interdivisional Transfers (at cost)			SF 6432-AC
MATERIAL OVERHEAD				
DIRECT ENGINEERING/ INSPECTION LABOR *		514,314	2,381	SF 6432-AD
ENGINEERING/ INSPECTION OVERHEAD *		454,134	2,102	SF 6432-AD
DIRECT MANUFACTURING/ ASSEMBLY LABOR		127,211	589	SF 6432-AE
MANUFACTURING/ ASSEMBLY OVERHEAD		217,531	1,007	SF 6432-AE
FACILITIES	To Be Purchased		-	SA 6432-AF
	To Be Manufactured			SA 6432-AF
OTHER COSTS (Itemize on separate sheet)		106,898	495	Attach. A
SUBTOTALS		3,321,609	15,378	
GENERAL AND ADMINISTRATIVE EXPENSES		486,016	2,250	Attach. A
ROYAL TIES (Itemize on separate sheet)				
SUBTOTALS		3,807,625	17,628	
PROFIT OR FEE		304,610		
TOTAL PRICE		4,112,235	19,038	

1. IF THE DEPARTMENT OF DEFENSE, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION OR THE ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION HAVE PERFORMED ANY REVIEW OF YOUR ACCOUNTS OR RECORDS IN CONNECTION WITH ANY GOVERNMENT PRIME CONTRACT OR SUBCONTRACT WITHIN THE PAST TWELVE MONTHS, PLEASE IDENTIFY LISTING NAME, ADDRESS AND TELEPHONE NUMBER. IF NONE, SO INDICATE.

Mr. A. Mohn, Resident Auditor, Defense Contract Audit Agency,  
P. O. Box 179, Station A183, Denver, Colorado 80201

2. LIST ANY CONTRACTS OR SUBCONTRACTS FOR SIMILAR ITEMS AWARDED TO YOU WITHIN THE PAST THREE YEARS SHOWING CUSTOMER(S) DATE(S) AND CONTRACT NUMBERS.

Customer	Date	Contract
a. ERDA	20 June 1975	LC E(04-3)-1110
b. ERDA	5 June 1975	E(04-3)-1068

3. CONTRACTOR CERTIFIES THAT THE ABOVE COST SUMMARY CONFORMS TO THE COST PRINCIPLES SET FORTH IN THE ERDAPR'S UNLESS OTHERWISE STATED BELOW. EXPLAIN ANY DEVIATIONS.

No Deviations

4. INDICATE AND JUSTIFY ANY CHARGES INCLUDED IN THE AMOUNTS LISTED ON THIS FORM WHICH INVOLVE (i) ANY CHARGE FOR PROPERTY WHICH DUPLICATES ANY CHARGE AGAINST ANY PRIOR OR CURRENT GOVERNMENT CONTRACT OR SUBCONTRACT OR (ii) ANY RENTAL OR USE CHARGE ON GOVERNMENT PROPERTY. IF NONE, SO INDICATE.

None

SIGNED BY (Authorized Representative) <i>M. Marx Hintze</i>	TITLE M. Marx Hintze Program Manager	DATE December 5, 1975
--	---	--------------------------

\* Includes Offsite Labor and Overhead Cost

Zone B

OTHER COSTS

<u>Item</u>		<u>Dollars</u>
Travel	(Ref. Section 4.3)	\$ 8,800
Freight	(Ref. Section 4.5)	5,250
TDY Cost	(Ref. Section 4.3)	60,528
Equipment Rental	(Ref. Section 2.4)	21,150
Computer:		
CDC 6000 (11 Units @ \$725/Unit)		7,975
IBM 370 ( 9 Units @ \$342/Unit)		3,075
Keypunch (8.6 Units @ \$14/Unit)		120
Total Other Costs		\$ 106,898

GENERAL AND ADMINISTRATIVE EXPENSE

	<u>CY 1976</u>			<u>CY 1977</u>			<u>Total G&amp;A \$</u>
	<u>Base</u>	<u>Rate</u>	<u>\$</u>	<u>Base</u>	<u>Rate</u>	<u>\$</u>	
Denver G&A	1,326,603	22.7	301,141	16,489	19.8	3,264	\$ 304,405
Offsite Flow Down	1,566,452	10.8	169,177	99,619	10.8	10,755	179,932
DDC M&A	10,318	15.0	1,551	852	15.0	128	1,679
Total G&A Expenses							\$ 486,016

Note: Variance in dollars is due to computer rounding.

CONTRACTOR Martin Marietta Corporation			PROCUREMENT NO. RFQ 03-3731/FGH	
ITEM NO. 1 thru 6	QUANTITY 294	PRODUCT Heliostat Array and Control System		
ITEMS OF COST			REFERENCE FORM	
COST ELEMENTS	TOTAL COST	UNIT COST		
DIRECT MATERIAL OTHER MAT'L	Purchased Commercial Parts/ Services	1,727,803	5,877	SF 6432-AC
	Subcontracted Items	498,372	1,695	SF 6432-AC
	Raw Material	235,610	801	SF 6432-AB
	Interdivisional Transfers (at other than cost)			SF 6432-AC
	Interdivisional Transfers (at cost)			SF 6432-AC
MATERIAL OVERHEAD				
DIRECT ENGINEERING/ INSPECTION LABOR *	586,495	1,995	SF 6432-AD	
ENGINEERING/ INSPECTION OVERHEAD *	502,338	1,709	SF 6432-AD	
DIRECT MANUFACTURING ASSEMBLY LABOR	169,750	577	SF 6432-AE	
MANUFACTURING/ ASSEMBLY OVERHEAD	290,273	987	SF 6432-AE	
FACILITIES	To Be Purchased			SA 6432-AF
	To Be Manufactured			SA 6432-AF
OTHER COSTS (Itemize on separate sheet)	162,192	552	Attach. A	
SUBTOTALS	4,172,833	14,193		
GENERAL AND ADMINISTRATIVE EXPENSES	581,878	1,979	Attach. A	
ROYALTIES (Itemize on separate sheet)				
SUBTOTALS	4,754,711	16,172		
PROFIT OR FEE	356,603			
TOTAL PRICE	5,111,314	17,385		

1. IF THE DEPARTMENT OF DEFENSE, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, OR THE ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION HAVE PERFORMED ANY REVIEW OF YOUR ACCOUNTS OR RECORDS IN CONNECTION WITH ANY GOVERNMENT PRIME CONTRACT OR SUBCONTRACT WITHIN THE PAST TWELVE MONTHS, PLEASE IDENTIFY LISTING NAME, ADDRESS AND TELEPHONE NUMBER. IF NONE, SO INDICATE.

Mr. A. Mohn, Resident Auditor, Defense Contract Audit Agency,  
P. O. Box 179, Station A183, Denver, Colorado 80201

2. LIST ANY CONTRACTS OR SUBCONTRACTS FOR SIMILAR ITEMS AWARDED TO YOU WITHIN THE PAST THREE YEARS SHOWING CUSTOMER(S) DATE(S) AND CONTRACT NUMBERS.

Customer	Date	Contract
a. ERDA	20 June 1975	LC E(04-3)-1110
b. ERDA	5 June 1975	E(04-3)-1068

3. CONTRACTOR CERTIFIES THAT THE ABOVE COST SUMMARY CONFORMS TO THE COST PRINCIPLES SET FORTH IN THE ERDAPR'S UNLESS OTHERWISE STATED BELOW. EXPLAIN ANY DEVIATIONS.

No Deviations

4. INDICATE AND JUSTIFY ANY CHARGES INCLUDED IN THE AMOUNTS LISTED ON THIS FORM WHICH INVOLVE (I) ANY CHARGE FOR PROPERTY WHICH DUPLICATES ANY CHARGE AGAINST ANY PRIOR OR CURRENT GOVERNMENT CONTRACT OR SUBCONTRACT OR (II) ANY RENTAL OR USE CHARGE ON GOVERNMENT PROPERTY. IF NONE, SO INDICATE.

None

SIGNED BY (Authorized Representative) <i>M. Marx Hintze</i>	TITLE M. Marx Hintze Program Manager	DATE December 5, 1975
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\* Includes Offsite Labor and Overhead Cost

Zones A & B

OTHER COSTS

<u>Item</u>		<u>Dollars</u>
Travel	(Ref. Section 4.3)	\$ 8,800
Freight	(Ref. Section 4.5)	5,250
TDY Cost	(Ref. Section 4.3)	94,672
Equipment Rental	(Ref. Section 2.4)	42,300
Computer:		
CDC 6000 (11 Units @ \$725/Unit)		7,975
IBM 370 ( 9 Units @ \$342/Unit)		3,075
Key punch (8.6 Units @ \$14/Unit)		120
		<hr/>
	Total Other Costs	\$162,192

GENERAL & ADMINISTRATIVE EXPENSE

	<u>CY 1976</u>			<u>CY 1977</u>			<u>Total G&amp;A \$</u>
	<u>Base</u>	<u>Rate</u>	<u>\$</u>	<u>Base</u>	<u>Rate</u>	<u>\$</u>	
Denver G&A	1,516,836	22.7	344,310	15,182	19.8	3,005	347,315
Offsite Flow Down	2,105,942	10.8	227,438	50,440	10.8	5,446	232,884
DDC M&A	10,318	15.0	1,551	852	15.0	128	<hr/> 1,679
			Total G&A Expense				\$581,878

Note: Variance in dollars is due to computer rounding.



CONTRACTOR		PROCUREMENT NO.	
Martin Marietta Corporation		RFQ 03-3731/FGH	
ITEM NO.	QUANTITY	PRODUCT	
1 thru 6	560	Heliostat Array and Control System	
ITEMS OF COST			
COST ELEMENTS		TOTAL COST	UNIT COST
DIRECT MATERIAL	Purchased Commercial Parts/Services	2,749,516	4,910
	Subcontracted Items	847,226	1,513
	Raw Material	538,082	961
	Interdivisional Transfers (at other than cost)		
	Interdivisional Transfers (at cost)		
MATERIAL OVERHEAD			
DIRECT ENGINEERING/ INSPECTION LABOR *		664,204	1,186
ENGINEERING/ INSPECTION OVERHEAD *		558,591	997
DIRECT MANUFACTURING/ ASSEMBLY LABOR		309,115	552
MANUFACTURING/ ASSEMBLY OVERHEAD		528,543	944
FACILITIES	To Be Purchased		
	To Be Manufactured		
OTHER COSTS (Itemize on separate sheet)		201,197	359
SUBTOTALS		6,396,474	11,422
GENERAL AND ADMINISTRATIVE EXPENSES		872,482	1,558
ROYALTIES (Itemize on separate sheet)			
SUBTOTALS		7,268,956	12,980
PROFIT OR FEE		545,172	
TOTAL PRICE		7,814,128	13,954

1. IF THE DEPARTMENT OF DEFENSE, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION OR THE ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION HAVE PERFORMED ANY REVIEW OF YOUR ACCOUNTS OR RECORDS IN CONNECTION WITH ANY GOVERNMENT PRIME CONTRACT OR SUBCONTRACT WITHIN THE PAST TWELVE MONTHS, PLEASE IDENTIFY LISTING NAME, ADDRESS AND TELEPHONE NUMBER. IF NONE, SO INDICATE.

Mr. A. Mohn, Resident Auditor, Defense Contract Audit Agency,  
P. O. Box 179, Station A183, Denver, Colorado 80201

2. LIST ANY CONTRACTS OR SUBCONTRACTS FOR SIMILAR ITEMS AWARDED TO YOU WITHIN THE PAST THREE YEARS SHOWING CUSTOMER(S) DATE(S) AND CONTRACT NUMBERS.

Customer	Date	Contract
a. ERDA	20 June 1975	LC E(04-3)-1110
b. ERDA	5 June 1975	E(04-3)-1068

3. CONTRACTOR CERTIFIES THAT THE ABOVE COST SUMMARY CONFORMS TO THE COST PRINCIPLES SET FORTH IN THE ERDAPR UNLESS OTHERWISE STATED BELOW. EXPLAIN ANY DEVIATIONS.

No Deviations

4. INDICATE AND JUSTIFY ANY CHARGES INCLUDED IN THE AMOUNTS LISTED ON THIS FORM WHICH INVOLVE (i) ANY CHARGE FOR PROPERTY WHICH DUPLICATES ANY CHARGE AGAINST ANY PRIOR OR CURRENT GOVERNMENT CONTRACT OR SUBCONTRACT OR (ii) ANY RENTAL OR USE CHARGE ON GOVERNMENT PROPERTY. IF NONE, SO INDICATE.

None

SIGNED BY (Authorized Representative) M. Marx Hintze TITLE M. Marx Hintze DATE December 5, 1975  
Program Manager

\* Includes Offsite Labor and Overhead Costs

Zones A,B,C,D&E

OTHER COSTS

<u>Item</u>		<u>Dollars</u>
Travel	(Ref. Section 4.3)	\$ 9,400
Freight	(Ref. Section 4.5)	10,500
TDY Cost	(Ref. Section 4.3)	123,384
Equipment Rental	(Ref. Section 2.4)	46,530
Computer:		
CDC 6000	(11 Units @ \$725/Unit)	7,975
IBM 370	(9.6 Units @ \$342/Unit)	3,280
Key punch	(9.1 Units @ \$14/Unit)	<u>128</u>
Total Other Costs		\$201,197

Note: Variance in dollars is due to computer rounding.

GENERAL & ADMINISTRATIVE EXPENSE

	<u>CY 1976</u>			<u>CY 1977</u>			
	<u>Base</u>	<u>Rate</u>	<u>\$</u>	<u>Base</u>	<u>Rate</u>	<u>\$</u>	<u>Total G&amp;A \$</u>
Denver G&A	\$2,056,273	22.7	\$466,763	\$23,918	19.8	\$4,736	\$471,499
Offsite Flow Down	\$3,602,452	10.8	\$389,061	\$94,575	10.8	\$10,211	399,272
DDC M&A	\$ 10,318	15.0	\$ 1,551	\$ 1,065	15.0	\$ 160	<u>1,711</u>
Total G&A Expense							\$872,482

**PURCHASED PARTS and/or SERVICES ESTIMATE**

560                      HELIOSTAT ARRAY  
QUANTITY                      PRODUCT

MARTIN MARIETTA CORP., DENVER DIVISION  
SUPPLIER

FILE NO. \_\_\_\_\_  
PROC. NO. \_\_\_\_\_  
ITEM NO. \_\_\_\_\_  
PHASE NO. ZONES A, B, C, D&E  
PAGE \_\_\_\_\_ OF \_\_\_\_\_

SANDIA PART NO. OR DESCRIPTION	VENDOR (if known)	QTY TO BE PUR	PARTS COST		OTHER COST		TOTAL COST	PRICE CODE (1)
			Price	Amount	Set-up	Tooling		
Housing	Zero Mfg.	560	6.98	3909			3,909	2
Cover	Zero Mfg.	560	3.22	1803			1,803	2
Xtal Osc	Accutronics	560	16.60	9296			9,296	2
UART Dip	General Inst.	560	6.00	3360			3,360	2
U-D Counter	T.I.	3440	2.75	9460			9,460	2
4 Bit Comp	T.I.	3440	2.75	9460			9,460	2
4 Bit Shift Reg.	T.I.	2286	4.00	9144			9,144	2
8 Bit Shift Reg.	T.I.	2810	2.50	7025			7,025	2
Counter	T.I.	1176	4.00	4704			4,704	2
Line Rec.	T.I.	560	1.36	762			762	2
F.F. I.C.	T.I.	1722	4.00	6888			6,888	2
Hex. Inv.	T.I.	1716	.80	1373			1,373	2
NAND	T.I.	2870	.50	1435			1,435	2
Triac	G.E.	2240	.63	1411			1,411	2
Opt Coupler	T.I.	2276	3.50	7966			7,966	2
Resistor	Allen Bradley	42530	.044	1871			1,871	2
Transistor	Motorola	1180	.22	260			260	2
Capacitor	Kemet	14250	.15	2138			2,138	2
Fuse	Littlefuse	560	.08	45			45	1
Circuit Breaker	Wood Elect.	560	3.90	2184			2,184	1
Connector	Amphenol	2812	.78	2193			2,193	2
Connector	Amphenol	2276	.94	2139			2,139	2
			TOTALS					

(1) INDICATE APPROPRIATE CODE NUMBER:  
1. BEST ESTIMATE, 2. VENDOR QUOTE,  
3. CATALOG PRICE, 4. RECENT PURCHASE

COMMENTS:



**PURCHASED PARTS and/or SERVICES ESTIMATE**

560                      HELIOSTAT ARRAY  
 QUANTITY              PRODUCT  
 MARTIN MARIETTA CORP., DENVER DIVISION  
 SUPPLIER

FILE NO. \_\_\_\_\_  
 PROC. NO. \_\_\_\_\_

ITEM NO. \_\_\_\_\_

PHASE NO. ZONES A, B, C, D&E

PAGE \_\_\_\_\_ OF \_\_\_\_\_

SANDIA PART NO. OR DESCRIPTION	VENDOR (if known)	QTY TO BE PUR	PARTS COST		OTHER COST		TOTAL COST	PRICE CODE (1)
			Price	Amount	Set-up	Tooling		
Conn. Clamp	Amphenol	2244	.77	1728			1,728	2
Limit SW	Microswitch	6720	1.20	8064			8,064	1
Elect Wire	Belden	280000	FT11.75	MFT3290			3,290	1
Fuse Holder		560	1.36	762			762	1
PC Board	Centerline CKT	560	6.90	3864			3,864	2
Instr Case	Zero Mfg.	10	41.05	411			411	2
SW DT	JBT	40	1.60	64			64	1
Light		10	5.19	52			52	1
SW SP	Microswitch	10	1.95	20			20	1
TH Switch	Arrow	8	29.50	236			236	2
Cable	Belden	300 FT	11.25CFT	34			34	1
Latch Cover		10	1.00	10			10	1
Conn Clamp	Amphenol	20	.77	15			15	2
Lamp		34	.24	8			8	1
Hinge Piano		1 Lot	3.76 Lot	4			4	1
Pwr Supply	Power-One Inc.	2240	22.48	50355			50,355	2
PC Board	Centerline CKT	560	6.90	3864			3,864	2
Potentiometer	Spectral	56	1.46	82			82	2
Resistor	IRC	280	.18	50			50	2
Resistor	IRC	56	.47	26			26	2
Capacitor	Aerovox	56	.30	17			17	2

(1) INDICATE APPROPRIATE CODE NUMBER:  
 1. BEST ESTIMATE, 2. VENDOR QUOTE,  
 3. CATALOG PRICE, 4. RECENT PURCHASE

TOTALS

COMMENTS:

**PURCHASED PARTS and/or SERVICES ESTIMATE**

560 HELIOSTAT ARRAY

QUANTITY PRODUCT

MARTIN MARIETTA CORP., DENVER DIVISION

SUPPLIER

FILE NO.

PROC. NO.

ITEM NO.

PHASE NO. ZONES A,B,C,D&E

PAGE \_\_\_\_\_ OF \_\_\_\_\_

SANDIA PART NO. OR DESCRIPTION	VENDOR (if known)	QTY TO BE PUR	PARTS COST		OTHER COST		TOTAL COST	PRICE CODE (1)
			Price	Amount	Set-up	Tooling		
Capacitor	Sprague	56	.14	8			8	2
Capacitor	Aerovax	56	.58	32			32	2
MOS/FET	RCA	56	1.39	78			78	2
I.C.	National Semi	56	1.55	87			87	2
Photodiode	United Detector Tech	56	44.75	2506			2,506	2
Red Resistor								
LED	Hewlett Packard	56	.80	45			45	2
SW SPDT	Raytheon	56	.97	54			54	2
Cable	Belden	672 FT	.0512 FT	34			34	2
Connector	Amphenol	56	1.19	67			67	2
Connector	Amphenol	112	.52	58			58	2
Diffuser	Cadillac	56	1.26	71			71	2
PC Board		56	5.00	280			280	1
Bearings	McGill	2240	3.23	7235			7,235	2
Mirror	Carolina Mirror Co	14000	31.68	443520			443,520	2
5/16-24Bolt	A&I Bolt & Nut	14000	.057	798			798	2
5/16 Nut	All Metal Screw	98000	.0075	735			735	2
5/16 Washer	All Metal Screw	98000	.005	490			490	2
5/16-24Stud	All Metal Screw	28000	.165	4620			4,620	2
5/16-24Stud	All Metal Screw	14000	.085	1190			1,190	2
Azimuth Drive Mechanism	Milwaukee Gear Co	560	875.00	490000		8,945	498,945	2
Elevation Drive Mechanism	Milwaukee Gear Co.	560	960.00	537600		9,000	546,600	2
Azimuth Tracking Motor	Sigma	560	54.00	30240			30,240	2
			TOTALS					

(1) INDICATE APPROPRIATE CODE NUMBER:  
1. BEST ESTIMATE, 2. VENDOR QUOTE,  
3. CATALOG PRICE, 4. RECENT PURCHASE

COMMENTS:

**PURCHASED PARTS and/or SERVICES ESTIMATE**

560                      HELIOSTAT ARRAY  
 QUANTITY              PRODUCT  
 MARTIN MARIETTA CORP., DENVER DIVISION  
 SUPPLIER

FILE NO. \_\_\_\_\_  
 PROC. NO. \_\_\_\_\_

ITEM NO. \_\_\_\_\_  
 PHASE NO. ZONES A,B,C,D&E

PAGE \_\_\_\_\_ OF \_\_\_\_\_

SANDIA PART NO. OR DESCRIPTION	VENDOR (if known)	QTY TO BE PUR	PARTS COST		OTHER COST		TOTAL COST	PRICE CODE (1)
			Price	Amount	Set-up	Tooling		
Elevation Tracking Motor	Sigma	560	38.40	21504			21,504	2
Slew Motor	Superior	1120	29.50	33040			33,040	2
Encoder		1120	312.00	349440			349,440	1/2
Heliostat Foundation Design Only	Bechtel	1 Lot	Per Lot	42440			42,440	2
Inst. Case	Zero Mfg.	2	50.78	102			102	2
Computer Sys.	Modcomp	6	15155.83	90935			90,935	2
Computer Sys.	Modcomp	(1) Dev Unit	45664	45664			45,664	2
1/2" T. Control Valve		1	20.00	20			20	1
S Control Valve	Atkomatic	10	44.00	440			440	2
S Control Valve	Atkomatic	1	42.00	42			42	2
S Control Valve	Atkomatic	1	106.00	106			106	2
Pump, 7.5 GPM		2	161.00	322			322	3
Water Tank 50 Gal.		2	33.00	66			66	3
Water Tank 250 Gal.		1	125.00	125			125	3
Heat Exchanger		1	500.00	500			500	1
1/2" Copper 90° Elbow		48	.19	9			9	3
1/2" Copper Tee		20	.32	6			6	3
Reduction Copper Tee		70	5.00	350			350	1
1/4" Copper 90° Elbow		12	.85	10			10	1
1/2" Copper Union		12	1.27	15			15	3
2" Copper Union		12	9.61	115			115	3
1/4" Copper Union		8	.50	4			4	1
			TOTALS					

(1) INDICATE APPROPRIATE CODE NUMBER:  
 1. BEST ESTIMATE, 2. VENDOR QUOTE,  
 3. CATALOG PRICE, 4. RECENT PURCHASE

COMMENTS:

**PURCHASED PARTS and/or SERVICES ESTIMATE**

560 HELIOSTAT ARRAY

QUANTITY PRODUCT

MARTIN MARIETTA CORP., DENVER DIVISION

SUPPLIER

FILE NO.

PROC. NO.

ITEM NO.

PHASE NO. ZONES A, B, C, D&E

PAGE OF

SANDIA PART NO. OR DESCRIPTION	VENDOR (if known)	QTY TO BE PUR	PARTS COST		OTHER COST		TOTAL COST	PRICE CODE (1)
			Price	Amount	Set-up	Tooling		
Precision Scale		1	212.50	213			213	3
Micro Switch		2	1.00	2			2	1
I.C.	Siliconix	6	41.00	246			246	3
I.C.	National	1	67.50	68			68	3
I.C.	T.I.	4	7.93	32			32	3
I.C.	T.I.	5	7.21	36			36	3
I.C.	Analog Devices	1	306.00	306			306	2
Resistor	Cramer	82	.46	38			38	3
I.C.	T.I.	25	.84	21			21	3
Resistor	Cramer	25	.29	7			7	3
I.C.	T.I.	6	5.00	30			30	2
I.C.	T.I.	11	5.20	57			57	3
Thermistor	Fenival	8	1.00	8			8	1
Switch		20	2.00	40			40	1
Amplifier	Rosemont	4	295.00	1180			1,180	2
Temp Probe	Rosemont	4	100.00	400			400	2
Adapter Chassis	Rosemont	1	220.00	220			220	2
Logger	United System Corp.	1	2895	2895			2,895	2
Decade Resistor	General Radio	3	145	435			435	2
Chassis	Bud	1	237.65	238			238	3
Solar Cell Assy.		64	75.00	4800			4,800	1
Density Filter		10	600.00	6000			6,000	1
			TOTALS					

(1) INDICATE APPROPRIATE CODE NUMBER:  
1. BEST ESTIMATE, 2. VENDOR QUOTE,  
3. CATALOG PRICE, 4. RECENT PURCHASE

COMMENTS:

**PURCHASED PARTS and/or SERVICES ESTIMATE**

560 HELIOSTAT ARRAY

QUANTITY PRODUCT

MARTIN MARIETTA CORP., DENVER DIVISION

SUPPLIER

FILE NO.

PROC. NO.

ITEM NO.

PHASE NO. ZONES A,B,C,D&E

PAGE OF

SANDIA PART NO. OR DESCRIPTION	VENDOR (if known)	QTY TO BE PUR	PARTS COST		OTHER COST		TOTAL COST	PRICE CODE (1)
			Price	Amount	Set-up	Tooling		
Misc. PC Bds et.		1 Lot	250.00	250			250	1
I.C.	Motorola	4	15.00	60			60	2
I.C.	Motorola	1	69.00	69			69	2
I.C.	Motorola	1	15.00	15			15	2
I.C.	Motorola	8	18.15	145			145	2
I.C.	T.I.	1	6.30	6			6	3
I.C.	T.I.	1	5.77	6			6	3
Light Source	Optical Radiation Corp	1	58500	58500			58,500	2
RTV Dispenser		65	84.00	5460			5,460	1
Mirror Holders		14000	20.00	280000			280,000	2
Manual Control Box		6	1000.00	6000			6,000	1
HIM (Drawer)		6	1120.00	6720			6,720	1
Stimulus Box Tester		2	800.00	1600			1,600	1
HIM Stim. Box Tester		2	1000.00	2000			2,000	1
Mirror Frames		560	250.00	140000			140,000	2
Yoke		560	375.00	210000			210,000	2
Rio Grande Tooling		1 Lot		7900			7,900	2
Bridge Crane		1	31000.00	31000			31,000	1
Leveling Device		1	8000.00	8000			8,000	1
Reflection Screen		1	1138.00	1138			1,138	4
Reflection Pasties		1 Lot	240.00	240			240	4
IRIS (Alum.)		1	5110.00	5110			5,110	1
			TOTALS					

(1) INDICATE APPROPRIATE CODE NUMBER:  
1. BEST ESTIMATE, 2. VENDOR QUOTE,  
3. CATALOG PRICE, 4. RECENT PURCHASE

COMMENTS:

**PURCHASED PARTS and/or SERVICES ESTIMATE**

560 HELIOSTAT ARRAY

QUANTITY PRODUCT

MARTIN MARIETTA CORP., DENVER DIVISION

SUPPLIER

FILE NO. \_\_\_\_\_  
 PROC. NO. \_\_\_\_\_  
 ITEM NO. \_\_\_\_\_  
 PHASE NO. ZONES A,B,C,D&E  
 PAGE \_\_\_\_\_ OF \_\_\_\_\_

SANDIA PART NO. OR DESCRIPTION	VENDOR (if known)	QTY TO BE PUR	PARTS COST		OTHER COST		TOTAL COST	PRICE CODE (1)
			Price	Amount	Set-up	Tooling		
Solar Cell Sensor		1	2140.00	2140			2,140	1
Horiz. Sliding Door		1	3000.00	3000			3,000	1
Solar Collector		1	300.00	300			300	1
Insulation		1	1000.00	1000			1,000	1
Target Frame		1	2100.00	2100			2,100	1
Target Pivot		1	1700.00	1700			1,700	1
Subcontract - Local Hire				209326			209,326	2
	Total						3,823,869	
	MAF						55,032	
	Escalation						254,301	
	Prorates						1,622	
	Total						4,134,824	

(1) INDICATE APPROPRIATE CODE NUMBER:  
 1. BEST ESTIMATE, 2. VENDOR QUOTE,  
 3. CATALOG PRICE, 4. RECENT PURCHASE

TOTALS

COMMENTS:

**RAW MATERIALS ESTIMATE**

FILE NO.

PROC. NO.

560

HELIOSTAT ARRAY

QUANTITY

PRODUCT

ITEM NO.

ZONES A,B,C,

MARTIN MARIETTA CORP., DENVER DIVISION

PHASE NO. D & E

SUPPLIER

PAGE OF

SANDIA PART NO. OR DESCRIPTION	QTY TO BE MF'D	MATERIAL REQUIRED			TOTAL COST
		Type	Quantity	Price	
Alum. Sheet 5/32		6061T4	7.2 Sq. Ft.	3.81Sq Ft	\$ 27
Alum. Angle 3/4x3/4x1/8		6061	1200 Ft	.24 Ft	288
14x14x1/2 Sq Tube x 162		Structural Steel	7943 Ft	23.708 Ft	188,312
7 3/4x3/8 Tube x 15		Structural Steel	700 Ft	15.106 Ft	10,574
14x38 WF Beam x 146		Structural Steel	14205 Ft	8.63 Ft	122,595
5 9/16x.258 Tube x 216		Structural Steel	10080 Ft	3.822 Ft	38,526
5 9/16x.258 Tubex54		Structural Steel	2520 Ft	3.822 Ft	9,631
2x4x1/8 Sq Tube x 245		Structural Steel	57167 Ft	1.014 Ft	57,967
Steel Sheet 3/32		1010	28 Sht	33.85 Sht	948
2x4x.083 Sq. Tube x 185		Structural Steel	43167 Ft	.663 Ft	28,620
Steel Strip 3/16x2 1/4x144		LC Hot Rolled	168000 Ft	.252 Ft	42,336
1 1/2x1 1/2x.083 Sq. Tubex46		Structural Steel	107333 Ft	.341 Ft	36,600
Steel Sheet 3/16		1010	14 Sht	71.21 Sht	997
Mixer Assy.		Make Item Raw Mat'l	1	1.00	1
Temp. Chamber		Make Item Raw Mat'l	2	5.00	10
1" Sq. Rod		Phenolic	102 Ft.	3.20 Ft	326
1/2" Tube		Hard Copper	120 Ft	.65 Ft	78
2" Tube		Hard Copper	60 Ft.	3.94 Ft	236
1/4" Tube		Hard Copper	20 Ft.	.50 Ft.	10

COMMENTS:

TOTAL

\$ 538,082

## 4. Rates and Factors



#### 4.0 Rates & Factors

This section provides supplementary data in support of the cost proposal and includes the following:

1. The basis for development of labor rates.
2. Overhead and G&A rates.
3. The basis for travel costs.
4. Current rates for computer support.
5. Other rates and factors.
6. Addresses for our cognizant Administrative Contracting Officer and the Defense Contract Audit Agency.
7. Our Disclosure Statement Certificate.

#### 4.1 Direct Labor Rate Development

Direct labor rate projections were developed from October 1975 actual plant-wide straight-time rates for each labor grade that will participate in the performance of the anticipated contract. From these base straight-time rates, factors of escalation and overtime premium were added. These factors are discussed in the succeeding paragraphs.

- a. Salary - Salary rate escalation which covers merit increases, was negotiated with the local Air Force Plant Representative's Office (AFPRO) on 17 June 1975, letter 75-Y-13136.

<u>1975</u>	<u>1976</u>	<u>1977</u>
7.0%	6.5%	6.0%

- b. Hourly - Rate adjustments covered by a three year labor union agreement negotiated as of 1 November 1975 with the International Union, United Automobile, Aerospace and Agricultural Implement Workers of America, Local 766 is as follows:

- 1) **General Increase** - Each labor grade receives an amount increase which is between 1% and 3% in November of each year.
- 2) **Cost of Living Adjustment** - Adjustment is based on the Consumer's Price Index as published monthly by the U. S. Department of Labor, Bureau of Labor Statistics. Annual amounts are projected as follows:

<u>1975</u>	<u>1976</u>	<u>1977</u>
\$ .10 (Nov/Dec)	\$ .31	\$ .31

- c. **Overtime Premium** - This proposal contemplates no planned overtime. However, "emergency" overtime (6.09%) is included in the calculation of the direct hourly labor rate. The 6.09% is based on our history of other previous programs.

Overtime compensation for hourly personnel is included at time-and-one-half of the straight time rate per Union Agreement.

#### 4.2 Overhead and G&A Rates

Overhead pricing rates are periodically negotiated with the local AFPRO, with representatives from various government agencies in attendance. Our forecasted rates have been submitted to the AFPRO for negotiation on 24 September 1975, letter 75-Y-15444.

##### Denver Division Overhead Rates

	<u>CY 1976</u>	<u>CY 1977</u>
Engineering	96.0%	97.0%
Factory	171.0%	164.0%

The engineering overhead rate is applied against Engineering and Other Technical Services direct labor dollars. The factory overhead rate is applied to Tooling, Manufacturing, Quality and Test direct labor dollars.

### General & Administrative

	<u>CY 1976</u>	<u>CY 1977</u>
Denver	22.7%	19.8%
Data Center	15.0%	15.0%

The Denver G&A rate is applied against Denver direct and overhead cost. Data Center Management and Administrative is applied against the Data Center direct and overhead cost. The Data Center projected M&A rate has AFPRO concurrence per letter 75-Y-14291 dated 18 August 1975.

### Denver Offsite Overhead and Flow-Down Rate

	<u>1975 &amp; On</u>
Offsite Overhead	66.0%
Flow-Down Rate	10.8%

The offsite overhead rate is applied against the offsite direct labor dollars. The flow-down rate is applied against offsite material and subcontract direct dollars. The offsite overhead has been negotiated with the local AFPRO per letter 75-Y-14291 dated 18 August 1975.

#### 4.3 Travel

##### a) Travel and Per Diem

Trips made to Customer and Vendor facilities are estimated based on two men for one day (Albuquerque) and two men for three days (Los Angeles and Milwaukee); round trip (coach) airfare; car rental and mileage (50 miles per day) @ \$14 per day and 14¢ per mile at Albuquerque, \$11 per day and 16¢ per mile at Los Angeles; taxi fare to and from the Denver Airport @ \$20/round trip; and subsistence @ \$33 per day.

Albuquerque Trips

Air Fare @ \$86.73/round trip	\$173
Vehicle	14
Mileage	7
Taxi Fare	40
Per Diem	<u>66</u>
Trip Cost	\$300

Los Angeles Trips

Air Fare @ \$156.73/round trip	\$313
Vehicle	33
Mileage	24
Taxi Fare	40
Per Diem	<u>198</u>
Trip Cost	\$608

Milwaukee Trips

Air Fare @ \$166.73/round trip	\$333
Vehicle	42
Mileage	21
Taxi Fare	40
Per Diem	<u>198</u>
Trip Cost	\$634

	<u>Albuquerque Trips</u>	<u>Los Angeles Trips</u>	<u>Milwaukee Trips</u>
Zone A	15	3	1
C	15	3	1
D	15	3	1
E	15	3	1
B	21	3	1
A, B	21	3	1
A,C,D,E	23	3	1
A,B,C,D,E	23	3	1

b) Semi-Permanent Travel is estimated based on mileage from Denver to Albuquerque (440 miles one-way) and 15¢ per mile for each person traveling to Sandia for the installation and checkout; one round-trip air fare (coach) per month per man; and subsistence @ \$25 per day for the first 60 days and \$21 per day thereafter, averaged at \$23 per day. \$23 per day x 30 days/mo = \$690 plus \$86 air fare per month = \$776 per month. The field installation and checkout team required for each zone determines the number of months.

Zone A	51 mos @ \$776/mo = \$39,576
C	53 mos @ \$776/mo = \$41,128
D	54 mos @ \$776/mo = \$41,904
E	53 mos @ \$776/mo = \$41,128
B	78 mos @ \$776/mo = \$60,528
A,B	122 mos @ \$776/mo = \$94,672
A,C,D,E	111 mos @ \$776/mo = \$86,136
A,B,C,D,E	159 mos @ \$776/mo = \$123,384

#### 4.4 Computer Rates

The Automatic Data Processing Equipment (ADPE) referenced below is utilized by the Data Center for the Denver Division at the following projected forward pricing machine utilization rates.

<u>Description</u>	<u>1975 &amp; On</u>
CDC 6000	\$725
IBM 370	\$342
Keypunch	\$ 14

The CDC 6000 is a digital system dedicated to solving engineering problems. The IBM 370 essentially is used to perform administrative and production tasks. The keypunch is used with the IBM 370 for data entries. These rates have AFPRO concurrence per letter 75-Y-14291 dated 18 August 1975.

#### 4.5 Other Rates and Factors

##### a. Material Factors

- 1) Material Adjustment Factor (MAF) - The material adjustment factor provides for those material costs that will occur and cannot be quantified/identified to a specific procurement item. A factor of 3.0% based on previous contract history, has been developed to encompass the following cost elements:

Material Spoilages - Damage due to crating, uncrating, handling, inspection, cutting, shearing, and temperature.

Miscellaneous Vendor Charges - Cost associated with premium freight, special overtime and bottlenecks.

Normal Production Allowances (NPA) - Materials purchased over and above basic hardware quantities.

Rework - Material consumed as a result of changes in design, fabrication or processing.

Shortages - Material consumed as the result of loss or insufficient quantities.

- 2) **Economic Escalation** - Economic escalation has been added to all buy history and bill of material data based on historical escalation experienced through calendar year 1973. A 6% annual escalation factor has been applied for calendar year 1976, amounting to approximately 2% escalation for the period of expenditure.
- 3) **Engineering Prorate Material Factor** - Engineering material prorate is estimated as a factor of the Engineering labor. This factor is \$.04 per direct engineering labor hour based on past history and covers material and parts common to several programs, and often referred to as standard or bulk items. The factor has been submitted for approval to the AFPRO per Denver Division letter 75-Y-16048 dated 29 October 1975.
- 4) **Freight Costs** - Freight was estimated based on shipping the calibration screen, the focus and alignment screen, and the control boxes and harnesses from Denver to Albuquerque.

**Heliostat Prototype**

**HAC/Computer**

**Various Test Boxes** \$ 2,000

**Calibration Screen (All Zones)**

**Focus and Alignment Screen (All Zones)**

**Control Boxes and Harnesses:**

4) Freight Costs (Continued)

		<u>Total Freight</u>
Zone A	\$1,200	\$ 3,200
Zone C	\$1,200	\$ 3,200
Zone D	\$1,200	\$ 3,200
Zone E	\$1,200	\$ 3,200
Zone B	\$3,250	\$ 5,250
Zones A & B	\$3,250	\$ 5,250
Zones A,C,D & E	\$8,500	\$10,500
Zones A,B,C,D & E	\$8,500	\$10,500

4.6 Cognizant Government Agencies

The cognizant Government agencies for Martin Marietta, Denver Division are:

Air Force Plant Representative  
Martin Marietta Corporation,  
Denver Division  
P. O. Box 179  
Denver, Colorado 80201  
ATTN: Mr. C. R. Kennemer

Defense Contract Audit Agency  
Martin Marietta Corporation,  
Denver Division  
P. O. Box 179  
Denver, Colorado 80201  
ATTN: Mr. Arnold M. Mohn

The above agencies have full cognizance in their respective areas.

4.7 Disclosure Statement

DISCLOSURE STATEMENT CERTIFICATION

CERTIFICATE OF PREVIOUSLY SUBMITTED DISCLOSURE STATEMENT(S)

The offeror hereby certifies that Disclosure Statements and amendments were filed as follows:



Date of Disclosure Statement(s)

Names and Addresses  
Cognizant ACO(s) Where Filed

Denver Division

31 July 1975

Deemed Adequate 15 August 1975

Air Force Plant Representative

Martin Marietta Aerospace

Denver Division

P. O. Box 179

Denver, Colorado 80201

ATTN: Mr. C. R. Kennemer

Aerospace Group Headquarters

10 October 1972

Deemed Adequate 10 October 1972

Corporate Office - Rockville, MD.

2 November 1972

Deemed Adequate 2 November 1972

Amended 11 March 1974

No Determination Received

Data Systems Division

25 April 1973

As Amended by Amendments 1 & 2

Submitted 6 November 1973

Deemed Adequate 22 February 1974

Calvin R. Tieman

Corp. Admin. Contracting Office

Defense Supply Agency

Hq. Defense Contract Adm. Services

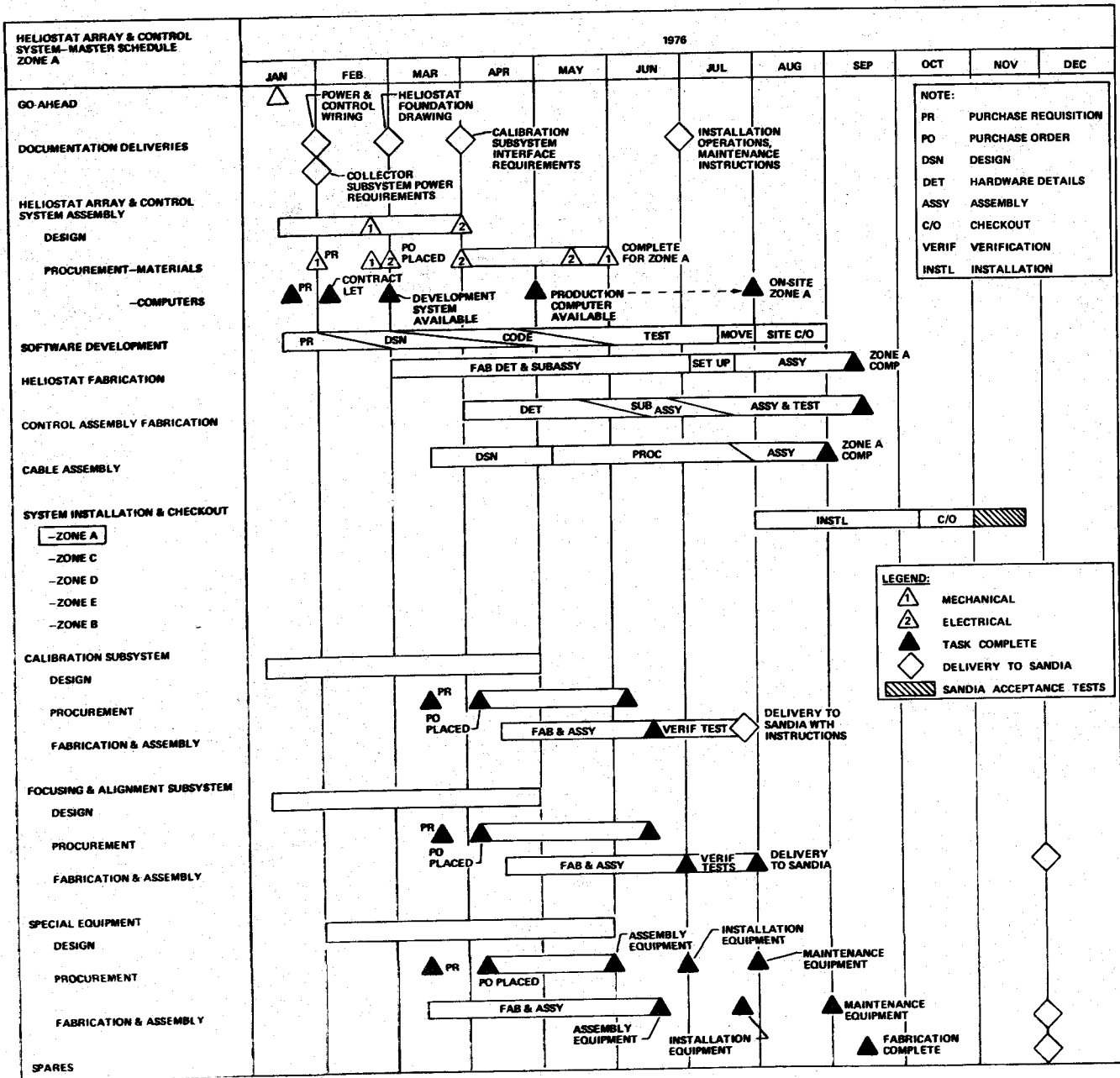
Region, Philadelphia

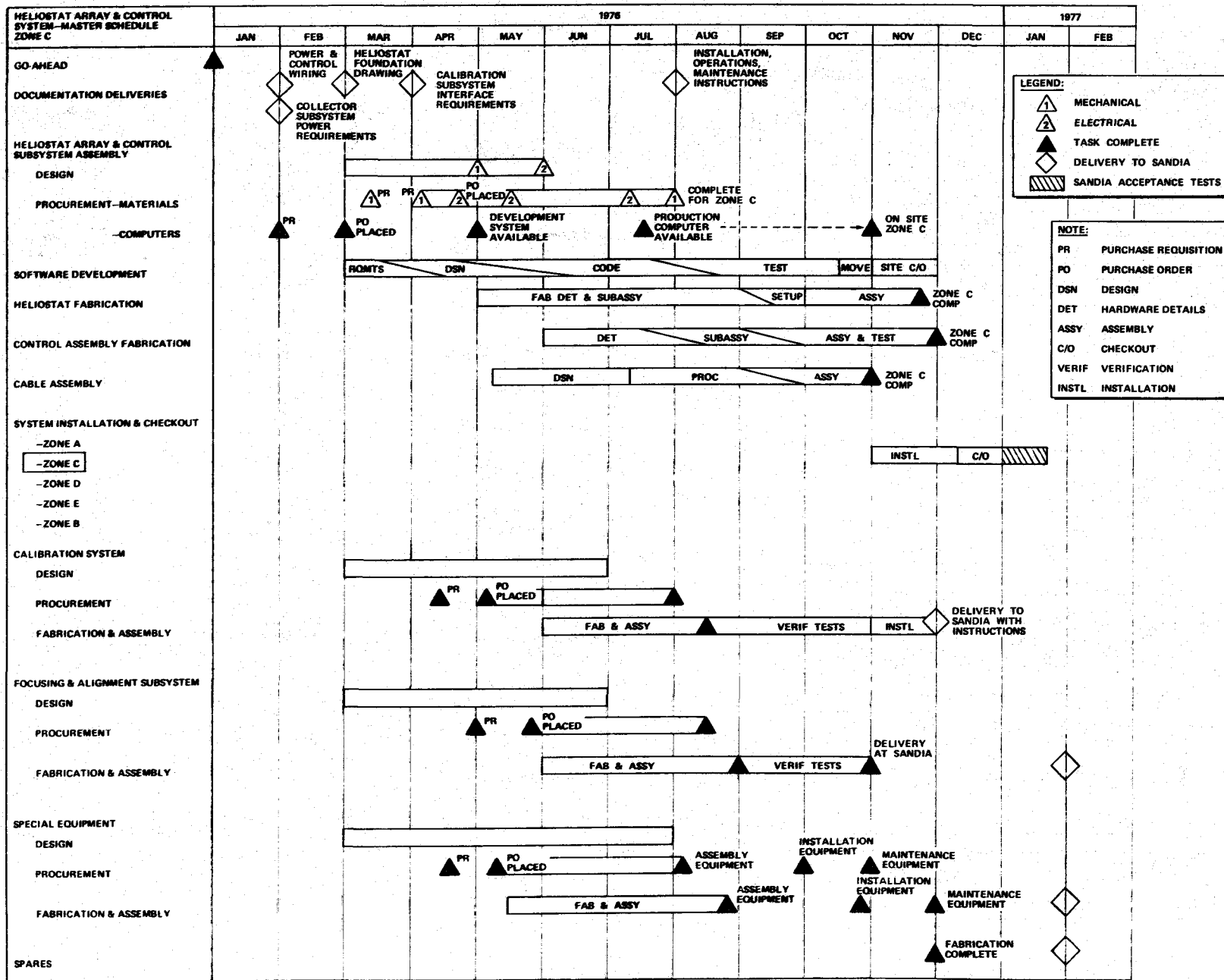
Baltimore DCAS District Bldg. 22

For Holabird, Maryland 20212

The current revised disclosure statement considered cost accounting standards through 407.

## 5. Master Schedules



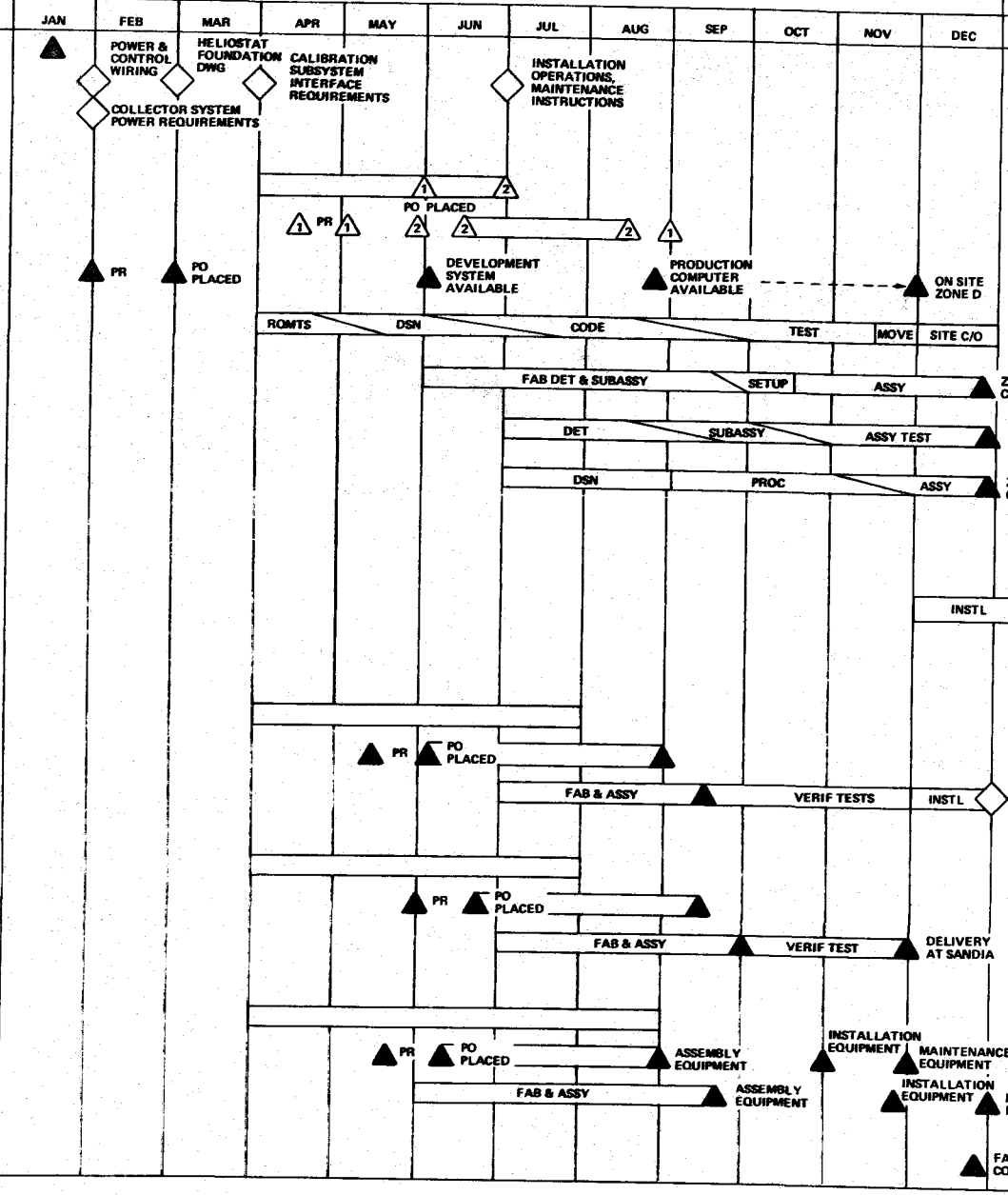


HELIOSTAT ARRAY & CONTROL SYSTEM-MASTER SCHEDULE ZONE D

1976

1977

- GO-AHEAD
- DOCUMENTATION DELIVERIES
- HELIOSTAT ARRAY & CONTROL SUBSYSTEM ASSEMBLY
  - DESIGN
  - PROCUREMENT-MATERIALS
  - COMPUTERS
- SOFTWARE DEVELOPMENT
- HELIOSTAT FABRICATION
- CONTROL ASSEMBLY FABRICATION
- CABLE ASSEMBLY
- SYSTEM INSTALLATION & CHECKOUT
  - ZONE A
  - ZONE C
  - ZONE D
  - ZONE E
  - ZONE B
- CALIBRATION SUBSYSTEM
  - DESIGN
  - PROCUREMENT
  - FABRICATION & ASSEMBLY
- FOCUSING & ALIGNMENT SUBSYSTEM
  - DESIGN
  - PROCUREMENT
  - FABRICATION & ASSEMBLY
- SPECIAL EQUIPMENT
  - DESIGN
  - PROCUREMENT
  - FABRICATION & ASSEMBLY
- SPARES



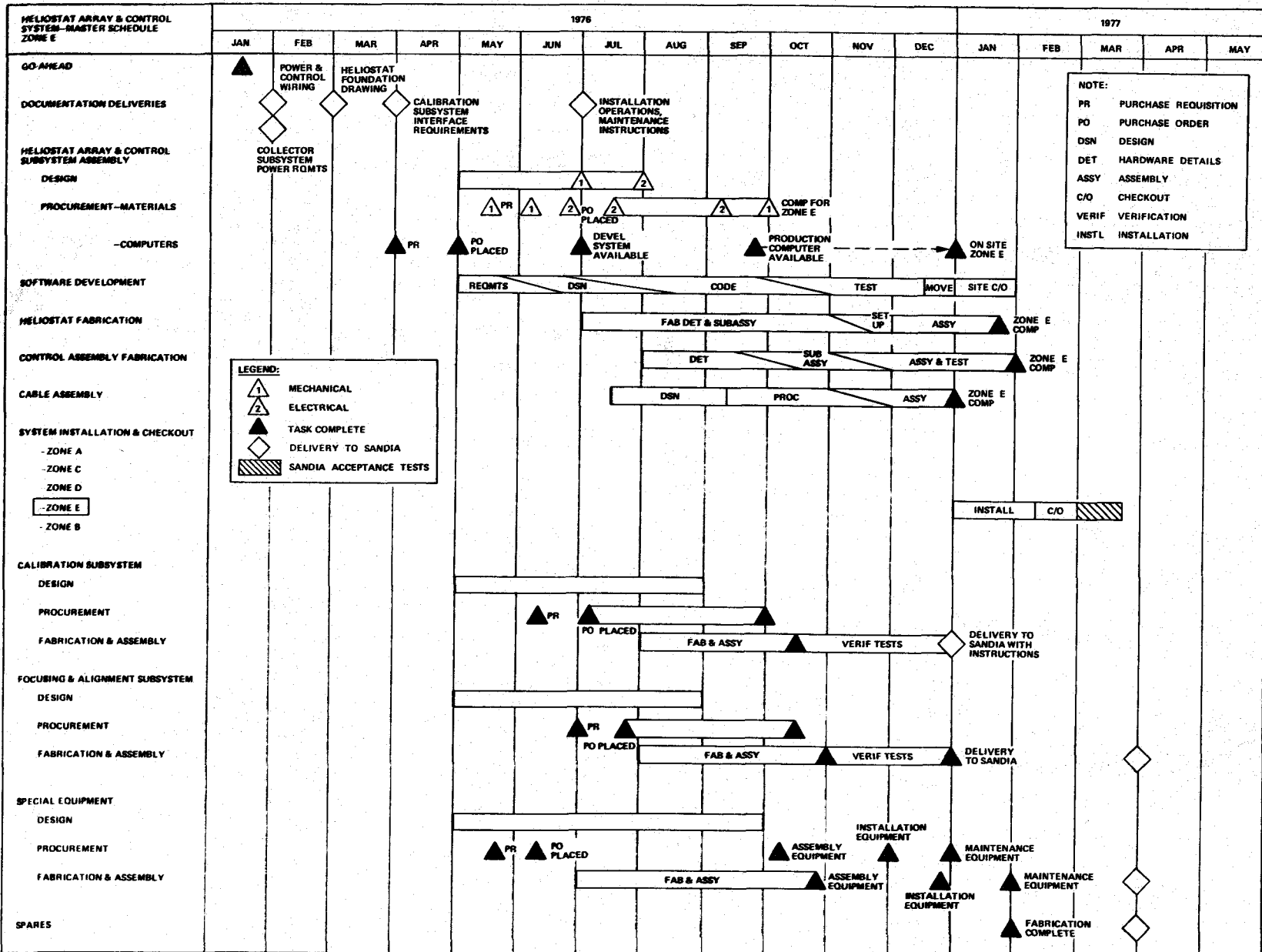
**LEGEND:**

- ▲ MECHANICAL
- ▲ ELECTRICAL
- ▲ TASK COMPLETE
- ◇ DELIVERY TO SANDIA
- ▨ SANDIA ACCEPTANCE TESTS

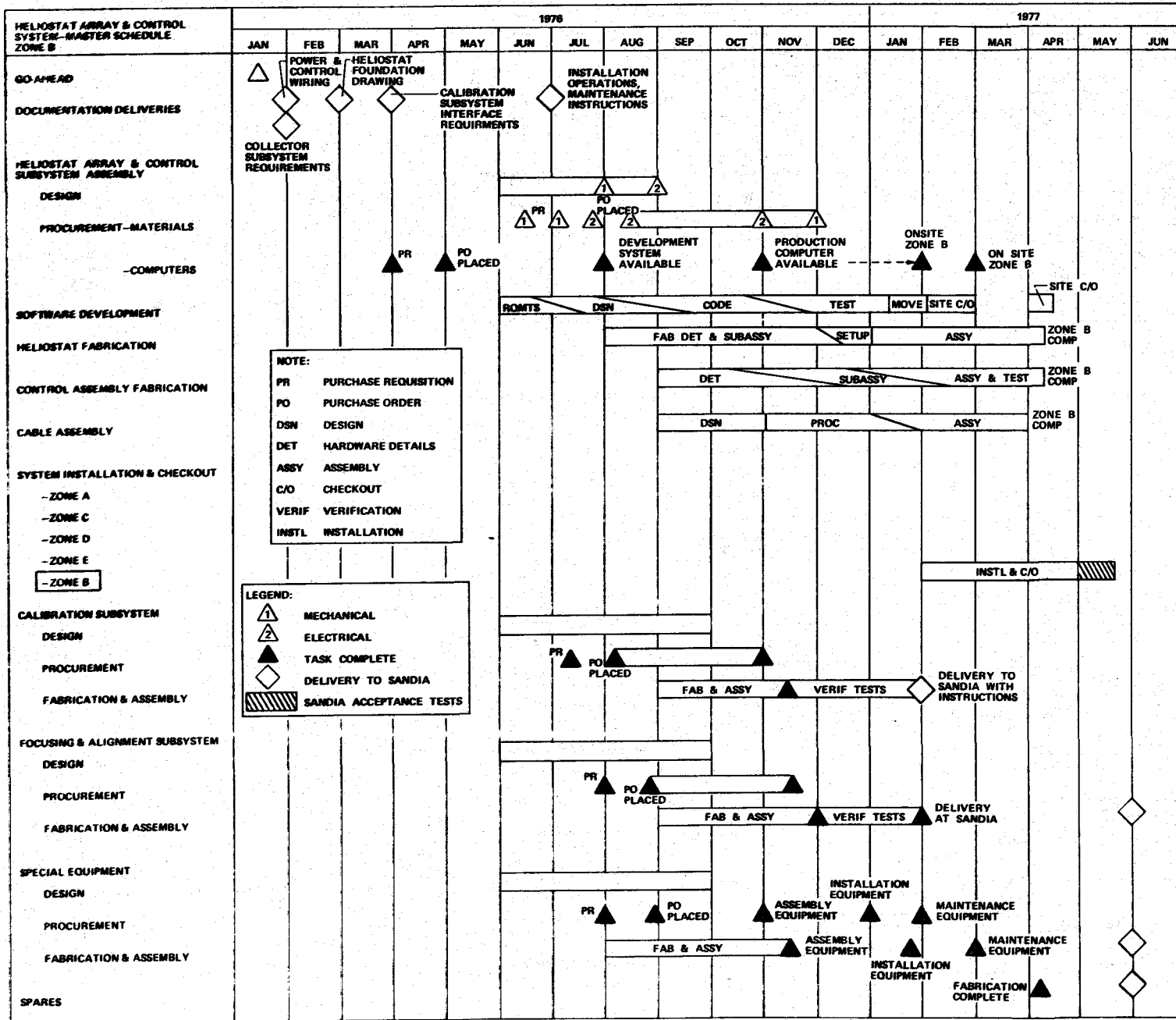
**NOTE:**

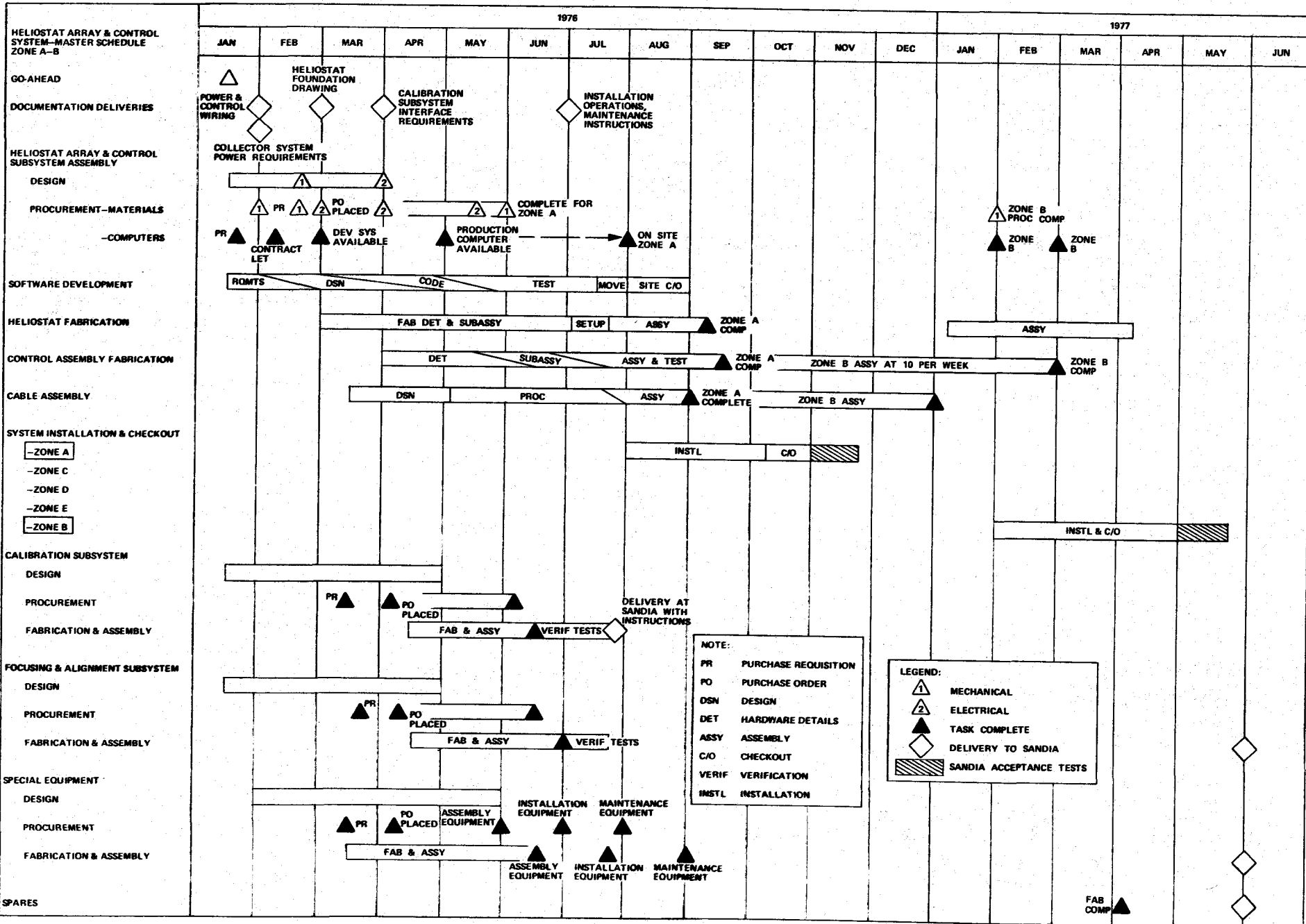
- PR PURCHASE REQUISITION
- PO PURCHASE ORDER
- DSN DESIGN
- DET HARDWARE DETAILS
- ASSY ASSEMBLY
- C/O CHECKOUT
- VERIF VERIFICATION
- INSTL INSTALLATION

5-3

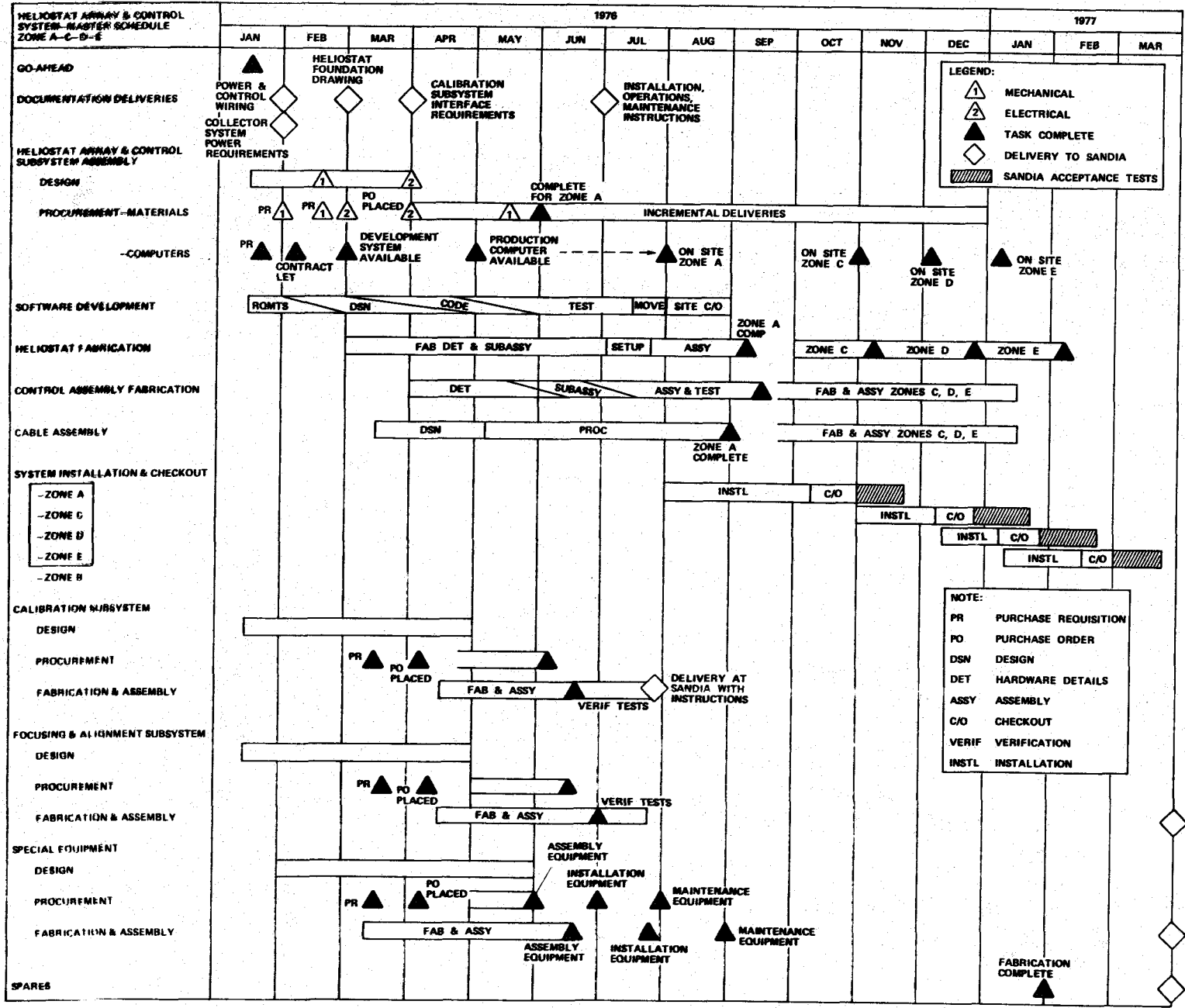


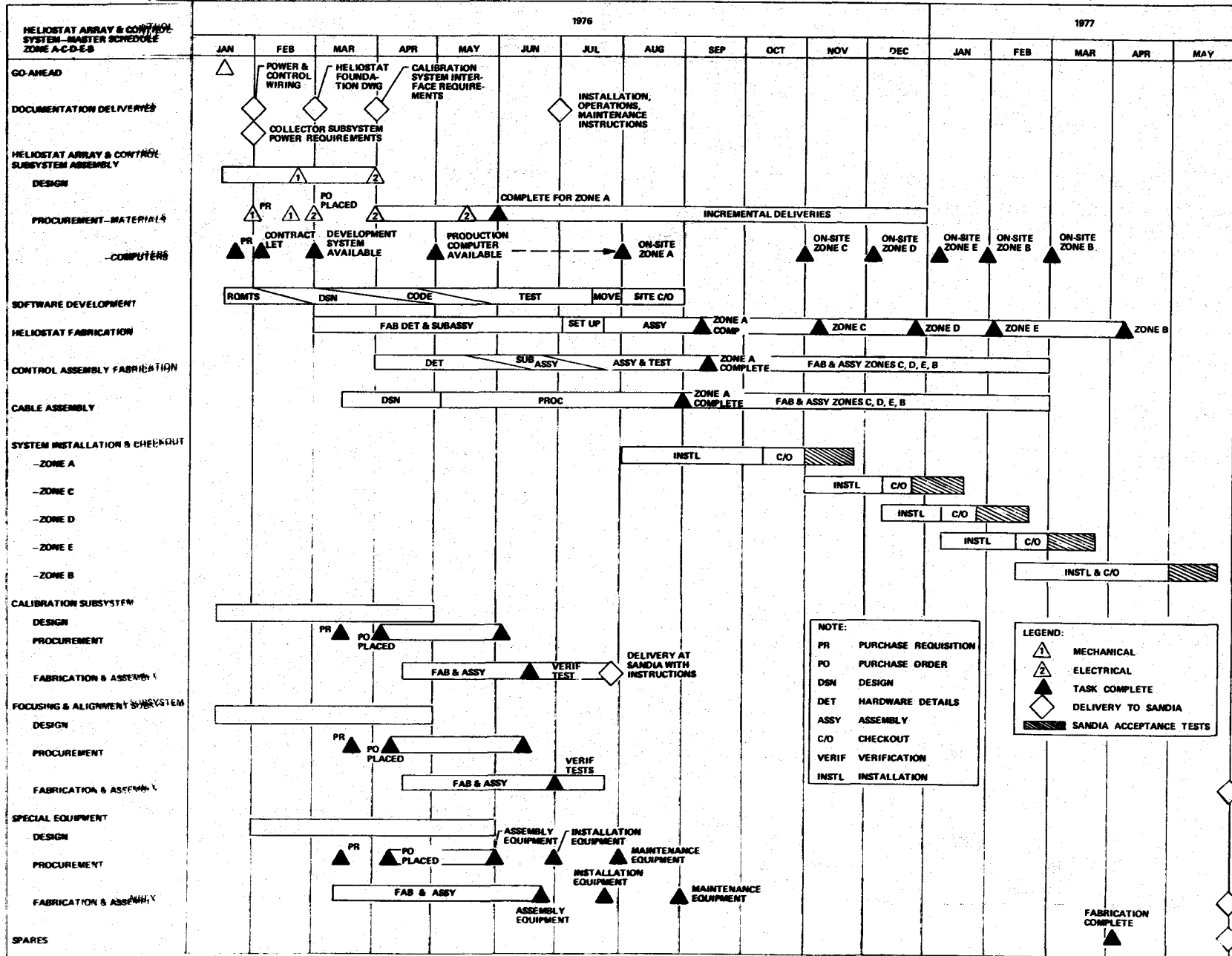
5-4











## 6. Contractual Information



# REQUEST

C  
O  
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MARTIN MARIETTA CORPORATION  
 P. O. BOX 179  
 DENVER, COLORADO 80201  
 APTN: MARK HINTZE, PROGRAM MANAGER  
 MAIL NO. S-0403

REQUEST FOR: QUOTATION (RFQ) NO. 03-3731/FGH  
 INFORMATION (RFI) NO. \_\_\_\_\_  
 DATE: 11/10/75

FOR A POSSIBLE:

- CONTRACT
- BASIC ORDERING AGREEMENT
- \_\_\_\_\_

BETWEEN SANDIA CORPORATION, WHICH OPERATES SANDIA LABORATORIES IN PERFORMANCE OF ITS PRIME CONTRACT AT (29-1)-789, AS AMENDED, WITH THE U.S. ATOMIC ENERGY COMMISSION (AEC) AND THE CONTRACTOR NAMED AT THE LEFT.

COMPLETE THE  
 REQUIREMENTS  
 ON THE  
 REVERSE

THIS REQUEST INCLUDES, AND ANY RESULTANT PROCUREMENT SHALL INCORPORATE:

1. THE PROVISIONS ON BOTH SIDES OF THIS FORM
2. THE FOLLOWING SPECIFIC CONDITIONS ON THE REVERSE:
3. PROPOSED SECTION I; HERETO ATTACHED
4.  SECTION II, FORM SF 6432- B (7-75)  
 HERETO ATTACHED  IN YOUR POSSESSION
5.  ADDENDUM 2, FORM SF 6432- CAW (10-75)  
 HERETO ATTACHED  IN YOUR POSSESSION

PLEASE PROVIDE YOUR REASONS FOR QUOTING ON ANOTHER BASIS OR FOR DECLINING TO SUBMIT A QUOTATION

AND NO OTHER PROVISIONS, TERMS AND CONDITIONS EXCEPT AS EXPRESSLY AGREED UPON IN WRITING.

PRICING ARRANGEMENT COST PLUS FIXED FEE	QUOTATION DUE DATE AT SANDIA CLOSE OF BUSINESS 12-1-75	REQUESTED DELIVERY DATE SEE ARTICLE III
--	---	--

CONTRACTOR: COMPLETE THE FOLLOWING		
PROMPT PAYMENT DISCOUNT * N/A	FOB POINT PER ARTICLE III	QUOTED DELIVERY SEE ARTICLE III

\*Sandia may take either contract or invoice prompt payment discount. FOR SANDIA LABORATORIES (SANDIA CORPORATION) FOR CONTRACTOR (DO NOT SIGN WITHOUT COMPLETING THE REPRESENTATIONS ON THE REVERSE.)

BY J. G. Higgins SIGNATURE (AUTHORIZED REPRESENTATIVE) George W. Morgenthaler

NAME F. G. HIGGINS TYPE OR PRINT GEORGE W. MORGENTHALER

TITLE Sandia Contracting Representative TYPE OR PRINT Vice President Technical Operations

PHONE (505)264-5201 TYPE OR PRINT (303) 979-7000 Ext. 2906

PURCHASING ORGANIZATION 3721 DATE SIGNED 2 December 1975

ALBUQUERQUE, NEW MEXICO 87115 TWX 910-989-1600 TELEX 66-0446

LIVERMORE, CALIFORNIA, 94550 TWX 910-386-8338

CONTRACTOR: USE NAME, ADDRESS AND ORGANIZATION NO. SHOWN AT LEFT, FOR SUBMITTING YOUR QUOTATION, AND FOR ALL OTHER CORRESPONDENCE.

GOVERNMENT PRIORITY: DO-E-2  
 CERTIFIED FOR NATIONAL DEFENSE  
 USE UNDER DMS REGULATION 1.

QUOTATION PROVISIONS:

1. All requirements must be met irrespective of acceptance or performance on prior contracts.
2. Price each item individually.
3. Certification of cost or pricing data may be required upon agreement on price (Form SF 6432-AAA)
4. If schedule requirements cannot be met, submit quotations for best schedule under normal operations, and for special effort necessary to meet best possible schedule. Break out any overtime required, direct premium rates, and special loading factors, if any.
5. Special tooling and/or facilities, if chargeable, shall be priced and listed separately.
6. For use of Government tooling and/or facilities (other than Sandia furnished) provide: description of items; Government Agency Contracting Officer, name and address, and telephone; contract number controlling the items; estimated savings to Sandia and period items required.
7. If any items quoted are available on GSA Federal Supply Schedules, please quote those prices in addition to your best commercial quotation. Furnish Government Contract nos. and expiration dates.
8. For any item proposed which is of foreign origin per the Buy American Act of Section II, state and country of origin.

QUOTATION CONDITIONS (Applicable as indicated in Statement 2 on the face of this form)

1. Drawings, designs, and/or specifications are in Contractor's possession.
2. Sandia may contract for any or all items.
3. Sandia may contract for all items with one Contractor.
4. Furnish an estimate of your billings by month for the duration of the proposed contract.
5. Furnish itemized cost details for raw materials, purchased materials and/or services, labor hours and rates by labor category, indirect expense rates and profit (or fixed fee).
6. Complete enclosed Sandia Forms SC6432-A through -AF in triplicate.
7. Contractor's quotation is a firm offer and may not be withdrawn for 30 days after the date listed for "quotation must be received by" without the written consent of the Sandia Contracting Representative.
8. This is merely an inquiry and not a solicitation for a firm offer.
9. Contractor shall complete and return with quotation, PROPERTY PROTECTION QUESTIONNAIRE (SF 6432-AH).

(CONTRACTOR TO COMPLETE) BY SIGNING THIS FORM, CONTRACTOR REPRESENTS THAT:

1. All State or Local Sales, and Use Taxes, or TAXES upon or measured by receipts from sales, have been separately stated and that the price does not include any contingencies for such taxes.
2. (For Fixed Price Contract) the quoted price  does,  does not, include a charge or reserve for INSURANCE (including self insurance) covering damage to GOVERNMENT PROPERTY (a) caused by any peril while the property is in transit off the Contractor's premises, or (b) caused by any of the excepted perils enumerated in Article B19 of Section II while the property is on Contractor's premises, or on any other premises where such property may properly be located or by removal therefrom. If Contractor represents "does not", Section II Article B19 will be substituted for Article A10.
3. (If the EQUAL OPPORTUNITY Article of Section II is applicable) the Contractor  has,  has not, participated in a previous contract or subcontract subject to either the Equal Opportunity Article herein or the clause contained in Section 202 of Executive Order No. 11246 or the Executive Orders superseded thereby, and that he  has,  has not, filed all required compliance reports and he is deemed to have signed and agreed to the provisions of the "CERTIFICATION OF NONSEGREGATED FACILITIES" below. Failure to agree to this CERTIFICATION will render quotation nonresponsive. Any award may be cancelled if all required compliance reports have not been filed.
4. (If the EQUAL OPPORTUNITY Article of Section II is applicable) the Contractor (1)  has developed and has on file  has not developed and does not have on file at each establishment Affirmative Action Programs as required by the rules and regulations of the Secretary of Labor (41 CFR 60-1 and 60-2), or (2) he  has not previously had contracts subject to the written Affirmative Action Program Requirement of the Rules and Regulations of the Secretary of Labor.
5. It understands that items normally subject to Patent Royalties payable to Western Electric Co., Inc., may be royalty-free when sold to Sandia. Accordingly, unless specifically set forth in the quotation, the quoted price includes no element or factor dependent on or derived from such Royalties, whether payable or paid.
6. The Contractor's Business is:  Large  Small  Educ. or Non-Profit  Govt. Facility
7. The Number of Notices required per: Equal Opportunity 0; Service Contract Act 0; Walsh-Healey Public Contracts Act 0
8. Except as otherwise provided herein, the supplies to be furnished are new (not used or reconditioned and not of such age or so deteriorated as to impair their usefulness or safety).

CERTIFICATION OF NONSEGREGATED FACILITIES

By signing this quotation, contractor certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. He certifies further that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. Contractor agrees that a breach of this certification is a violation of the Equal Opportunity Article in this contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin, because of habit, local custom, or otherwise. He further agrees that (except where he has obtained identical certifications from proposed subcontractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity Article; that he will retain such certifications in his files; and that he will forward the following notice to such proposed subcontractors (except where the proposed subcontractors have submitted identical certifications for specific time periods):

Notice to Prospective Subcontractors of Requirement for Certifications of Nonsegregated Facilities

A certification of Nonsegregated Facilities must be submitted prior to the entering into of a subcontract exceeding \$10,000 which is not exempt from the provisions of the Equal Opportunity Article. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semi-annually, or annually).

NOTE: The penalty for making false statements is prescribed in 18 U.S.C. 1001.



**ARTICLE 1 - STATEMENT OF WORK**  
-----

**DESIGN, FABRICATE, AND FURNISH:**

**ITEM QTY DESCRIPTION**  
-----

- 1 LOT COMPONENT PARTS FOR A HELIOSTAT ARRAY AND CONTROL SYSTEM INCLUDING ALL NECESSARY INSTALLATION, MAINTENANCE, AND OPERATION INSTRUCTIONS, WHICH WILL MEET ALL CONDITIONS AND REQUIREMENTS OF SANDIA SPECIFICATION ENTITLED, "SOLAR TEST FACILITY, HELIOSTAT ARRAY AND CONTROL SYSTEM REQUIREMENTS", DRAWING NO. K93681, ISSUE B.
- 2 LOT CALIBRATION SYSTEM FOR THE HELIOSTAT ARRAY AND CONTROL SYSTEM SPECIFIED IN ITEM 1 ALONG WITH APPLICABLE INSTRUCTIONS.
- 3 LOT HELIOSTAT FOCUSING AND ALIGNMENT SYSTEM INCLUDING ALL NECESSARY HARDWARE AND INSTRUCTIONS FOR HELIOSTAT ALIGNMENT, FOCUSING AND REFOCUSING.
- 4 LOT SPECIALLY DESIGNED MAINTENANCE, ASSEMBLY, OR INSTALLATION EQUIPMENT WITH INSTRUCTIONS.
- 5 LOT SPARE PARTS, NOT COMMERCIALY AVAILABLE, NECESSARY TO SUPPORT THE EQUIPMENT FOR 5 YEARS OF OPERATION.

**ASSEMBLE, INSTALL, FOCUS, AND ALIGN:**

- 6 LOT HELIOSTATS, HELIOSTAT ARRAY CONTROLLERS AND CALIBRATION SYSTEM, AT THE SOLAR ENERGY TEST FACILITY AT SANDIA LABORATORIES, AREA III, ALBUQUERQUE, NEW MEXICO



ARTICLE II - PROPOSAL REFERENCE - T24 (11-65)  
-----

THE TERMS OF ANY PROPOSAL REFERRED TO IN THIS CONTRACT ARE INCLUDED AND MADE A PART OF THE CONTRACT ONLY TO THE EXTENT OF THE NATURE AND DESCRIPTION OF THE GOODS OR SERVICES CONTRACTED FOR, AND THEN ONLY TO THE EXTENT THAT SUCH TERMS ARE CONSISTENT WITH THE TERMS AND CONDITIONS OF THIS CONTRACT.

ARTICLE III - DELIVERY  
-----

ITEM 1 -

A. HELIOSTAT FOUNDATION DESIGN  
-----

TWELVE COPIES OF DESIGN DRAWINGS FOR THE HELIOSTAT FOUNDATION SHALL BE SUPPLIED TO SANDIA LABORATORIES BY THE CONTRACTOR BY MARCH 1, 1976. A PLOT PLAN WITH HELIOSTAT FOUNDATION LOCATION SHALL BE INCLUDED WITH THIS INFORMATION.

B. POWER AND CONTROL WIRING REQUIREMENTS  
-----

THREE COPIES OF THE DESIGN REQUIREMENTS FOR POWER AND CONTROL WIRING SHALL BE SUPPLIED TO SANDIA LABORATORIES BY FEBRUARY 1, 1976.

C. POWER REQUIREMENTS  
-----

THREE COPIES OF THE COLLECTOR SYSTEM POWER REQUIREMENTS SHALL BE SPECIFIED BY FEBRUARY 1, 1976 AND DELIVERED TO SANDIA LABORATORIES.

D. INSTRUCTIONS  
-----

THREE COPIES OF INSTRUCTIONS FOR INSTALLATION, OPERATION, AND MAINTENANCE SHALL BE SUPPLIED TO SANDIA LABORATORIES BY JULY 1, 1976.



**ARTICLE III - CONT'D**

**E. HELIOSTAT ARRAY AND CONTROL SYSTEM**

DELIVERY AT SANDIA LABORATORIES SOLAR TEST FACILITY SITE, ALBUQUERQUE, NEW MEXICO, SHALL BE MADE WITH A UNIFORM DELIVERY RATE PER THE FOLLOWING SCHEDULE:

HELIOSTAT ZONE	FIRST HELIOSTAT	REMAINING HELIOSTATS	HELIOSTAT ARRAY CONTROLLERS
A	JUNE 1976	JULY, AUGUST, SEPTEMBER 1976	JULY 1, 1976
C		NOVEMBER 1976	NOVEMBER 1976
D		DECEMBER 1976	DECEMBER 1976
E		JANUARY 1977	JANUARY 1977
B		FEBRUARY & MARCH 1977	FEBRUARY & MARCH 1977

**ITEM 2 - CALIBRATION SYSTEM**

- A. THREE COPIES OF CALIBRATION SYSTEM INTERFACE - THE MECHANICAL AND ELECTRICAL INTERFACE REQUIREMENT FOR THE CALIBRATION SYSTEM SHALL BE SUPPLIED TO SANDIA LABORATORIES BY 3-31-76.
- B. A CALIBRATION SYSTEM AND THREE SETS OF OPERATING INSTRUCTIONS FOR THE HELIOSTAT ZONES INDICATED BELOW SHALL BE DELIVERED AS FOLLOWS:

HELIOSTAT ZONE	CALIBRATION SYSTEM DELIVERY
A & B	JULY 1976
C	DECEMBER 1976
D	JANUARY 1977
E	FEBRUARY 1977





# Sandia Laboratories

PURCHASING ORGANIZATION

ALBUQUERQUE, NEW MEXICO 87115  
LIVERMORE, CALIFORNIA 94550

## PROPOSED SECTION 1

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### ARTICLE III - CONT'D

- ITEM 3 - DELIVER TO SANDIA LABORATORIES WITHIN 30 DAYS AFTER COMPLETION OF THE HELIOSTAT INSTALLATION.
- ITEM 4 - DELIVER TO SANDIA LABORATORIES WITHIN 30 DAYS AFTER COMPLETION OF THE HELIOSTAT INSTALLATION.
- ITEM 5 - DELIVER TO SANDIA LABORATORIES WITHIN 30 DAYS AFTER COMPLETION OF THE HELIOSTAT INSTALLATION.
- ITEM 6 - INSTALL HELIOSTAT ZONES IN ACCORDANCE WITH THE FOLLOWING SCHEDULE:

HELIOSTAT ZONE -----	SCHEDULE -----
A	AUGUST, SEPTEMBER, OCTOBER 1976
C	DECEMBER 1976
D	JANUARY 1977
E	FEBRUARY 1977
B	MARCH & APRIL 1977



ARTICLE IV - ESTIMATED COST, FIXED FEE AND OBLIGATION OF FUNDS

ZONE	HELIOSTATS AND H A C	FOCUSING AND ALIGNMENT	SPECIAL MAINTENANCE, ASSEMBLY AND INSTALLATION EQUIPMENT	SPARE PARTS	INSTALLATION
A	-----	-----	-----	-----	-----
A & B	-----	-----	-----	-----	-----
A, C, D, & E	-----	-----	-----	-----	-----
A, B, C, D, & E	-----	-----	-----	-----	-----
B	-----	-----	-----	-----	-----
C	-----	-----	-----	-----	-----
D	-----	-----	-----	-----	-----
E	-----	-----	-----	-----	-----

ZONE	CALIBRATION SYSTEM
A & B	-----
C	-----
D	-----
E	-----

See Section 2.2 for this data, which is shown in a comparable format.

PLEASE FURNISH YOUR QUOTATION IN ACCORDANCE WITH THE ABOVE OR A COMPARABLE FORMAT.

FOR SANDIA EVALUATION AND BUDGETARY PURPOSES, ALSO FURNISH YOUR ESTIMATED COST FOR HELIOSTAT FOUNDATIONS INCLUDING MATERIALS AND INSTALLATION.

Budgetary estimate for this effort is \$1,500.00 per Heliostat Foundation.



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## ARTICLE IV - CONTINUED

Zones A,B,C,D & E

TOTAL ESTIMATED COST	\$ 7,268,956
FIXED FEE	<u>545,172</u>
TOTAL ESTIMATED COST AND FIXED FEE	\$ 7,814,128

## ARTICLE V - INCORPORATION OF SECTION IIB ARTICLES

IN ACCORDANCE WITH SECTION 11 OF THIS CONTRACT, THE FOLLOWING ARTICLES ARE MADE A PART HEREOF:

- B4 - FIELD OPERATIONS REPRESENTATIVE SUPPORT
- B5 - BACKGROUND PATENTS
- B6 - BACKGROUND TECHNICAL DATA
- B9 - SMALL BUSINESS SUBCONTRACTING PROGRAM
- B10 - LABOR SURPLUS AREA SUBCONTRACTING PROGRAM
- B11 - CERTIFIED COST OR PRICING DATA
- B20 - MINORITY BUSINESS ENTERPRISES SUBCONTRACTING PROGRAM
- B21 - (A) SAFETY, HEALTH, AND FIRE PROTECTION;  
(B) ACCESS TO SANDIA-CONTROLLED PREMISES;  
(C) LIABILITY

## ARTICLE VI - DRAWINGS, DESIGNS, AND SPECIFICATIONS- T58 (3-69)

THE FOLLOWING PARAGRAPHS ARE HEREBY ADDED TO THE ARTICLE OF THIS CONTRACT ENTITLED "DRAWINGS, DESIGNS, AND SPECIFICATIONS":

ALL DRAWINGS, SKETCHES, DESIGNS, DESIGN DATA, SPECIFICATIONS, NOTEBOOKS, TECHNICAL AND SCIENTIFIC DATA, AND ALL PHOTOGRAPHS, NEGATIVES, REPORTS, FINDINGS, RECOMMENDATIONS, DATA AND MEMORANDA OF EVERY DESCRIPTION RELATING THERETO (HEREINAFTER CALLED "MATERIAL"), FURNISHED BY SANDIA TO THE CONTRACTOR SHALL REMAIN THE PROPERTY OF THE GOVERNMENT.

IF ANY MATERIAL, WHICH MAY BE EITHER THAT FURNISHED BY SANDIA TO THE CONTRACTOR OR THAT PREPARED OR DEVELOPED IN CONNECTION WITH THE PERFORMANCE OF THE WORK UNDER THIS CONTRACT, IS OF SPECIAL SIGNIFICANCE IN THE SENSE THAT ITS USE BY THE CONTRACTOR FOR OTHER THAN PERFORMANCE OF THIS CONTRACT OR ITS DISCLOSURE TO OTHERS MIGHT GIVE COMPETITIVE ADVANTAGE TO THE CONTRACTOR OR THE RECIPIENT OR BE PREJUDICIAL TO THE BEST INTERESTS OF THE GOVERNMENT, THEN SUCH MATERIAL SHALL



ARTICLE VI - CONTINUED  
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BE USED ONLY FOR THE PURPOSE OF ENABLING PERFORMANCE OF THIS CONTRACT AND THE CONTRACTOR SHALL USE ITS BEST EFFORTS TO PREVENT DISCLOSURE TO OTHERS EXCEPT WHEN NECESSARY IN THE PERFORMANCE OF THIS CONTRACT.

ARTICLE VII - PATENTS - TT55 (7-75)  
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THE FOLLOWING ARTICLE IS SUBSTITUTED IN PLACE OF ARTICLE A-14 - PATENTS:

(A) WHENEVER ANY INVENTION OR DISCOVERY (INCLUDING IMPROVEMENTS AND INNOVATIONS) IS MADE OR CONCEIVED BY THE CONTRACTOR OR ITS EMPLOYEES IN THE COURSE OF OR UNDER THIS CONTRACT, THE CONTRACTOR SHALL PROMPTLY FURNISH THE ERDA WITH COMPLETE INFORMATION THEREON; AND THE ERDA SHALL HAVE THE SOLE POWER TO DETERMINE WHETHER OR NOT AND WHERE A PATENT APPLICATION SHALL BE FILED, AND TO DETERMINE THE DISPOSITION OF THE TITLE TO AND THE RIGHTS IN AND TO ANY INVENTION OR DISCOVERY AND ANY PATENT APPLICATION OR PATENT THAT MAY RESULT; PROVIDED, HOWEVER, THAT THE CONTRACTOR, IN ANY EVENT, SHALL RETAIN A NON-EXCLUSIVE, REVOCABLE, ROYALTY-FREE LICENSE UNDER SAID INVENTION, DISCOVERY, PATENT APPLICATION, OR PATENT. SUBJECT TO THE LICENSE RETAINED BY THE CONTRACTOR, AS PROVIDED IN THIS PARAGRAPH, THE JUDGMENT OF THE ERDA ON THESE MATTERS SHALL BE ACCEPTED AS FINAL; AND THE CONTRACTOR, FOR ITSELF AND FOR ITS EMPLOYEES, AGREES THAT THE INVENTOR OR INVENTORS WILL EXECUTE ALL DOCUMENTS AND DO ALL THINGS NECESSARY OR PROPER TO CARRY OUT THE JUDGMENT OF THE ERDA.

(B) NO CLAIM FOR PECUNIARY AWARD OR COMPENSATION UNDER THE PROVISIONS OF THE ATOMIC ENERGY ACT OF 1954, AS AMENDED, SHALL BE ASSERTED BY THE CONTRACTOR OR ITS EMPLOYEES WITH RESPECT TO ANY INVENTION OR DISCOVERY MADE OR CONCEIVED IN THE COURSE OF OR UNDER THIS CONTRACT.

(C) EXCEPT AS OTHERWISE AUTHORIZED IN WRITING BY THE ERDA, THE CONTRACTOR WILL OBTAIN PATENT AGREEMENTS TO EFFECTUATE THE PURPOSES OF PARAGRAPHS (A) AND (B) OF THIS ARTICLE FROM ALL PERSONS WHO PERFORM ANY PART OF THE WORK UNDER THIS CONTRACT, EXCEPT SUCH CLERICAL AND MANUAL LABOR PERSONNEL AS WILL NOT HAVE ACCESS TO TECHNICAL DATA.

(D) EXCEPT AS OTHERWISE AUTHORIZED IN WRITING BY THE ERDA, THE CONTRACTOR WILL INSERT IN ALL SUBCONTRACTS PROVISIONS MAKING THIS ARTICLE APPLICABLE TO THE SUBCONTRACTOR AND ITS EMPLOYEES.

(E) IT IS RECOGNIZED THAT DURING THE COURSE OF THE WORK UNDER THIS CONTRACT, THE CONTRACTOR OR ITS EMPLOYEES MAY FROM TIME TO TIME DESIRE



**ARTICLE VII - CONTINUED**  
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TO PUBLISH WITHIN THE LIMITS OF SECURITY REQUIREMENTS, INFORMATION REGARDING SCIENTIFIC OR TECHNICAL DEVELOPMENTS MADE OR CONCEIVED IN THE COURSE OF OR UNDER THIS CONTRACT. IN ORDER THAT PUBLIC DISCLOSURE OF SUCH INFORMATION WILL NOT ADVERSELY AFFECT THE PATENT INTERESTS OF THE ERDA OR THE CONTRACTOR, PATENT APPROVAL FOR RELEASE AND PUBLICATION SHALL BE SECURED FROM THE ERDA PRIOR TO ANY SUCH RELEASE OR PUBLICATION.

(F) WITH RESPECT TO ANY U.S. PATENT APPLICATION FILED BY THE CONTRACTOR ON ANY CONTRACT INVENTION OR DISCOVERY MADE OR CONCEIVED IN THE COURSE OF THE CONTRACT, THE CONTRACTOR WILL INCORPORATE IN THE FIRST PARAGRAPH OF THE U.S. PATENT APPLICATION THE FOLLOWING STATEMENT:

"THE INVENTION DESCRIBED HEREIN WAS MADE IN THE COURSE OF, OR UNDER, A CONTRACT (IF DESIRED, MAY SUBSTITUTE CONTRACT WITH IDENTIFYING NUMBER) WITH THE ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION."

DOCUMENTS INCORPORATED BY REFERENCE, ENCLOSED:

DRAWINGS, DESIGNS AND SPECIFICATIONS LISTED ELSEWHERE IN SECTION I.

It is requested that application of Section 1 Article VII Patents and the following Section II Articles, A15 Patent Indemnity, Article B5 Background Patents and Article B6 Background Technical Data be held in abeyance until the current Patent policy discussions in the ERDA are incorporated into the ERDA Procurement Regulations.

Pursuant to Section II, Article A6 Payments, it is requested that the contractor be authorized to submit invoices and vouchers on a weekly basis.



In accordance with Sandia contract requirements for the safeguarding and protection of Government property furnished to Contractors (Section II Article A10), you are requested to complete and return this questionnaire to me by

Sandia Contracting Representative  
Organization \_\_\_\_\_

GOVERNMENT PROPERTY PROTECTION QUESTIONNAIRE

	<u>YES</u>	<u>NO</u>
1. PROTECTION OF GOVERNMENT PROPERTY COMMENSURATE WITH ITS VALUE AND AT SAME LEVEL AS CONTRACTOR'S OWN PROPERTY OF SIMILAR VALUE?.....	X	
2. FIRE AND EXTENDED COVERAGE INSURANCE ON GOVERNMENT PROPERTY?.....	X	
3. FIRE INSPECTION BY INSURANCE COMPANY OR INSPECTION BUREAU OF AREA IN WHICH GOVERNMENT PROPERTY IS MAINTAINED?.....	X	
4. PLANT PROTECTED WITH AUTOMATIC FIRE SPRINKLERS?.....	X	
5. SPRINKLERS SOUND ALARM AT LOCAL FIRE DEPARTMENT?.....*		
6. WATCHMAN OR SURVEILLANCE SYSTEM DURING ALL NON-WORK HOURS? DEFINE. FULL TIME CONTRACTOR SECURITY SERVICES.....	X	
7. CONTROLLED ACCESS OF VISITORS TO AREAS CONTAINING GOVERNMENT PROPERTY?.....	X	
8. OTHER PERTINENT INFORMATION:		

Answers to 1 through 7 relate solely to Contractors Jefferson Co. Colorado Facility.

\* We maintain our own fire department.

Martin Marietta Corporation  
Denver Division  
Program Manager  
Contracts New Business

*[Signature]*  
FOR CONTRACTOR (SIGNATURE)

TITLE DATE